

**Progress towards the knowledge driven economy
Response by the Institute for the Management of Information Systems
to the call for inputs to the Trade and Industry Select Committee**

1. Introduction and Key Points

1.1 Background: relevant IMIS experience

1) IMIS, the Institute for the Management of Information Systems, is the professional body for those with responsibility for delivering the benefits of ICT-based systems. It has around twelve thousand members who work in both public and private sectors and for suppliers as well as users. With the movement of the ICT industry, first hardware, then software and now services and support to India and the Far East, over half of the IMIS membership is now outside the UK. IMIS is therefore in a better position than most to consider the causes for that movement. This response is, however, based mainly on inputs from those who believe that the UK can, and should, be a competitive location for the private sector wealth creation and employment that is essential for a healthy and socially inclusive information society.

2) Progress has been made in some of the areas addressed by the White Paper “Our Competitive Future: Building the Knowledge Economy” but less than that made by our main overseas competitors. Most overseas IMIS members and their employers can offset investment in training and equipment against local personal and corporate tax and operate in areas where governments (both state and municipality) compete vigorously for wealth creating jobs and taxpayers.

1.2 The Key Determinants of “Competitiveness”

3) There is confusion in policy circles between competitiveness and competition. An example is when regulators, such as Oftel, count success by the number of suppliers, even if most merely resell a single network, rather than by the quality/cost of service available in the UK compared to that in other nations. Examples of the consequences include the recent change from 192 to 118xxx as well as the collapse of investment in UK broadband infrastructure after the decision to promote local loop unbundling.

4) In reviewing the comparative progress of the UK over the past five years, the limitations of the White Paper and its objectives are more significant than its commitments. The priorities of those who “decide” the location of new businesses (e.g. venture capitalists deciding where to look for opportunities or corporate planners recommending where to site new development facilities or other strategic operations) are well documented and can be counted on one hand:

- the overall taxation package (including the impact on key employees) net of incentives and benefits, over the planning horizon of the business (commonly longer than that of local politicians)
- the skills available locally, not just researchers, designers, professionals and managers, but also the skilled technicians and support staff essential to most value-added operations (including research, development and design as well as manufacturing, publishing, marketing etc.)

- whether the location is one where key staff (brought in from elsewhere or recruited and training locally) would like to live and raise a family (including education, law and order, health care, welfare etc. - usually in that order).
- international, national and local communications, for products and services as well as people, now including electronic communications
- regulatory climate, including local planning and other rules.

1.3 The limited role of DTI unless it is the lead on cross-cutting initiatives

5) DTI is not the lead department for most of these. It is, however, the lead department for the supply of high level R&D skills (as developed on publicly funded research projects), the electronic communications infrastructure (including as sponsor for the ICT industries), the regulatory climate (most, but not all, regulation and regulators come under DTI) and the legal frameworks for intellectual property rights and e-commerce. It is also the sponsoring department for most of the professional and technicians skills relevant to the knowledge economy.

6) Initiatives on improving competitiveness beyond these areas need the buy-in of other departments and ministers. An example of the cross-cutting approach needed is that for the 21st Century Skills White Paper, organised by DfES but with sign off from the Prime Minister, Chancellor of the Exchequer and Secretaries of State for DTI and DWP as well as DfES, for which inputs are due by the end of January.

1.4 The need for priorities and action plans and to overcome initiatives

7) The White Paper listed 92 DTI commitments. These were classified by topic but not prioritised and the relevance to promoting UK competitiveness was not always obvious. The implication was that DTI had not changed the approach described in 1982 by the first Minister for IT (then Kenneth Baker MP) as “throw enough mud against a wall and when the sun comes out some of it will stick.” That approach has been blamed for the failure of the many subsequent attempts to replicate the success of the industry-driven, DTI-supported campaigns during IT Year. DTI-driven, industry-exhorted is rarely anything more than a waste of public funds.

8) IMIS agrees with the points made by EURIM and Intellect on the need to not merely list departmental initiatives but to prioritise them and show how they interact (including with the plans of other departments) to achieve the stated policy objectives. More-over initiatives need to be based on consultation and research (to provide evidence that they are likely to achieve their stated objectives without too many unintended consequences) and followed by action plans, with timetables, responsibilities, dependencies and critical paths and performance monitoring.

9) The recommendations in the EURIM (www.eurim.org) briefings on consultation processes (September 2001) and programme management (January 2002) are relevant. IMIS also agrees with the comment in the December EURIM newsletter that “there is also a long overdue need to consider the motivations of all those expected to help deliver the objectives, whether as part of the target audience (entrepreneurs,

researchers, trainees etc.) or as public servants or private partners charged with delivering commitments”

10) Initiativitis is a rational response to the current motivational pressures on ministers - “I announce therefore I have done something”, officials - “I provided something for the minister to announce therefore I have earned promotion points” and advisors - “my idea has been turned into an initiative, therefore I am influential”. It also supports a growing army of consultants, contractors, co-ordinators, promoters, regulators et al. There will therefore be no change until such time as the motivational pressures are changed to reward the focussing of resources on improving mainstream delivery. This might be the subject of an inquiry by this or another select committee.

1.5 The six priorities for DTI action

11) In the meantime IMIS believes that the six DTI priorities for ensuring UK competitiveness in the knowledge economy should be:

- to work with DfES and others to ensure that the UK workforce (at all levels from technicians to researcher, including managers, entrepreneurs and investors) has world-class skills and constructive motivations.
- to reform the intellectual property regimes in the UK to ensure a world-class environment for the creation and exploitation of knowledge, including for the benefit of the UK economy as a whole.
- to change the frameworks for funding and exploiting UK science so as to ensure that the majority of effort goes into programmes which will benefit the UK economy, with an urgent focus on sustainable knowledge and technology transfer.
- to ensure that the City of London (as a virtual as well as physical proxy for UK plc) remains a globally trusted centre for international commerce (electronic as well as physical), including the resolution of disputes, under whatever legal framework and in whatever language customers and suppliers wish to operate.
- to work with other government departments (including DETR and ODPM) to ensure that all UK business and industry locations (and their teleworkers) have globally competitive transport and communications, including broadband.
- to ensure that all regulation impacting on e-commerce is subject to rigorous impact assessment (with the burden of proof and cost of consultation and assessment borne by the proposers) and to institute a rolling review of existing regulation, including that on data protection/sharing.

12) The precise objectives, action plans and performance monitoring routines in each of these areas should be set in partnership with industry, using the full range of market research disciplines to overcome the problem that current consultation processes do not reach the vast majority of those likely to be affected (intentionally or otherwise) by any initiatives or regulations.

1.6 The three priorities for DTI to help drive cross-cutting action

13) IMIS and its members have done considerable work with regard to skills development issues in the UK and overseas and believe that DTI also needs to work with DfES, DCMS and Treasury, as well as with industry (both suppliers and customers) and with education and training Providers (both public and private), Professions and Trades Unions in three specific areas:

- reducing the after-tax cost of professionally recognised training (including matching the incentives in most overseas competitors)
- improving local access to world-class courses and qualifications (including via international learning networks)
- removing barriers (organisational as well as funding) to UK participation in global learning networks

IMIS is planning work in all three areas and would be pleased to provide more detail.

14) Much work is also needed in other areas, such as ensuring a competitive (including predictable and understandable) tax regime to encourage growth and wealth creating businesses, but most of this appears to fall outside the remit of DTI.

2 The scale of the challenge from the developing nations

2.1 The consequences of Chinese economic recovery

15) Ten years ago AT&T, IBM and a dozen or so of the other major US ICT players of the time, funded a major study into jobs of the 21st century as part of their contribution to the initiatives planned by Vice-President Gore. The study included analyses of long-term trends in the location of industries and employment. Until the 18th century the GDP of China was greater than that of the rest of the world added together. Until the 1870s it was still larger than that of the United States. It took nearly a century of civil war, invasion and revolution to bring China to its knees. But by the 1990s after little more than a decade of stability, China was recovering fast.

16) The expectation was that, given peace and stability, the GDP of China would overtake that of the United States by 2020 and that it would have become the main industrial production centre for the world rather sooner. The prosperity of America in the 21st Century would depend on being at the heart of the global knowledge economy, collecting royalties on research and content (generated and distributed over the Internet) under United States copyright and patent law.

17) Last year China became the largest generator of Internet traffic outside the United States, well ahead of forecast. It is also starting to leapfrog America in key ICT technologies. For example the development of IPV6 is no longer being driven through the Internet Engineering Task Force. It is being driven by China, Korea and Japan through the International Telecommunications Union with an 18 month cycle for the agreement of standards and a six week fast track routine.

2.2 The consequences of the growing Far Eastern domination of broadband

18) The nations of the Pacific Rim need such standards NOW for the inter-active visual computing products and services they are already rolling out over their mass-market broadband networks. They already have 29 million broadband users (June 2003) as against 25 million for the US and Canada and 12 million for the whole of the EU. More-over their circuits are “real” broadband 2, 8, 12 and now 50 meg circuits to the home at less than the price of half a meg ADSL in the UK. They are set to lead the economic and social transformation of the 21st Century in the way that the nations of the Atlantic Rim led those of the 19th and 20th centuries.

19) Korean housewives in Seoul tower blocks are already video-gossiping with friends and neighbours. From replays of soap operas, through 22 player interactive football to inter-active cartooning and on-line kareoke groups - the mass-market consumer applications of the Far East may seem a joke to us. But the joke is ON us when it comes to the way the same networks have also been used to transform the skills of the workforce, the ways that products are designed and developed and that assembly and distribution are organised.

20) We can see the physical consequences by visiting the Tottenham Court Road (where the price of DVDs or miniature TVs has fallen to under £70) or Felixstowe Docks (where the pyramid of China Line containers now dominates the skyline). Most of the R&D for consumer products and end-user systems has also moved from the US and Europe to the Far East, for production in plants ranging from Korea to Indonesia. But it is not just consumer products. China, home of rocketry and printing, now dominates civilian aerospace and has leading edge research establishments in a growing number of industries, from cars to communications to cryptography.

21) Meanwhile the whole of Asia, from Beijing to Bollywood, is leapfrogging the west into a world of visually based education, training, entertainment content which we cannot even view in Europe because we lack the bandwidth, even when the content is available in English.

2.3 English is no longer the automatic language of choice

22) Barely a third of the users of the Internet now have English as their first language. Chinese has overtaken Japanese as the second language with Spanish (including for South America) fourth. As the West falls behind the East in networked R&D we can no longer afford to assume that leading edge research in areas such as visual processing and multi-media technologies will automatically be available in English. Twenty years ago the Japanese call for partners for research into fifth generation computing led to the Alvey Programme in the United Kingdom. Even then did not bother to translate their parallel call for research into intelligent bioreactors (the production technology for genetically engineered products) into English because they saw no worthwhile partners in the United States or Europe.

3 Responding to the Challenge of rebuilding the UK skills base

3.1 Near top of the league on research skills, near bottom on workforce skills

23) In responding to the challenges we need to be realistic about our strengths and weaknesses. The United Kingdom still comes in the top dozen OECD nations with regard to academic skills and research ranking but was ranked bottom last year with regard to workforce skills (as measured by qualifications) .

24) “Real” apprentice skills (NVQ levels 3 and 4) have been outside UK priorities for over twenty years and we can see the consequences. Technician level qualifications ceased to be a UK priority when the focus became centres of excellence at one end of the scale and social inclusion (up to NVQ 2) at the other. Programmes to give technician level ICT skills and work experience to the long-term unemployed (like TOPS and Threshold) or to first entrants (like City and Guilds 726) were scrapped as “too expensive”. Even the University MSc conversion courses have now ended. The Sector Skills Councils and the Learning and Skills are currently publicly funded and targeted only for “modern apprenticeship” skills up to NVQ levels 2.

3.2 The effects of tax

25) In 1996 IMIS, then called IDPM, prepared a number of ideas for the then Shadow Chancellor of the Exchequer to use tax breaks to encourage training. These built on research into what actually impacted the decisions of employers and individuals. The ideas included exempting trainees from national insurance and income tax for the time spent under training to industry and professionally recognised standards, as well as the ability to offset personally funded training, including in preparation for career change, against tax. Some of the ideas are now being piloted with the Learning and Skills Councils but only in the context of low-level skills (NVQ 2 and below). The failure of the Individual Learning Accounts and controversy over IR35, with no subsequent replacements, have meant that the UK is almost unique in requiring most individuals to pay for technician and professional level courses out of after tax income and in taxing employees under training as though they were fully productive.

3.3 The employer “walk-away” and collapse of the UK training market

26) The polarisation of research and skills funding on centres of excellence and social inclusion has led many UK employers to disengage from government programmes, including consultations supposedly intended to align policy with their needs. A meeting of 20 HR Directors from large ICT suppliers in January 2001 found that they received, on average, at least half a dozen surveys a day, most from government departments and agencies. Most were routinely binned while those they supported for their own planning purposes were ignored by government as “commercial”

27) This situation helped compound the lack of relevance of UK ICT skills programmes so that those wanting well-trained, up-to-date technicians and professionals now sub-contract or relocate to where these are in good supply (e.g. India and the Far East). Meanwhile not only are public sector courses suffering from poor take-up and placement but the UK private sector training market is in its third year of decline. The economy may have picked up but the training market has not.

3.4 The need for rigorous market research not just more consultation

28) Only 7,000 companies have more than 250 staff. 27,000 have 50 to 250. 1.2 million have less than 50 employees and there are 2.8 million sole traders. Few are active in any professional body, trade association or trades union, even if they are members. The identification and implementation of workable solutions to their needs therefore depends on changing from current methods of “consultation” to the use of well structured market research

29) Most responses to most consultations are from those seeking to run future programmes. Unless those running consultations have had the budgets necessary to follow good market research practice to achieve representative feedback, the results are commonly worthless as a measure of the views of the target audience. There is no evidence as to any such research into how most of the 92 commitments in the White Paper would have improved UK competitiveness had they been well implemented.

30) Rigorous market research is not cheap and may not produce happy results. In 1991 West London Training and Enterprise Council was able to assemble the funding to employ NOP Industrial and Financial to survey a structured one in ten sample of all employers in its area, using computer-assisted telephone interviewing. NOP achieved a response rate of over 50%. The results were very different to expectations and helped change accepted wisdom in a number of areas. But the most significant findings for local training provision could not be acted on. Few of the programmes that the TEC had inherited were relevant to the needs of the target audiences and the TEC was unable to get clearance to focus on the identified needs, because these were contrary to national policy and funding structures - then and now.

3.5 The gulf between public and private sector attitudes to training provision

31) Most employers wanted help in finding well-motivated recruits and just-in-time, intensive training modules, with as little time as practical away from the job. Given such help they would meet the training costs and help the TEC get the long-term unemployed and disadvantaged into work. Meanwhile the TEC was motivated to pay for low cost-per-day training, even if this multiplied the number of days, provided it led to an NVQ. Little appears to have changed since. We have yet to find ways of bridging the gap between employers happy to pay for a couple of 4 day £1,500 private sector courses leading to a certificate of competence on a computer simulation and FE colleges offering lower priced courses, which may well take a couple of days a week for six months leading to an NVQ which many, or may not, cover the same ground,.

3.6 The potential for effective action

32) Responses to a major cross cutting consultation on 21st Century Skills (led by DfES) are due for the end of January 2004 and DfES is also currently consulting on the need for an Integrated E-learning Strategy. One of the identified problem areas is the means of improving the UK e-learning market and the role of government in achieving this.

33) DfES believes that private sector employers spend six to ten times more than the public sector on adult training and retraining. From the global networks of players like the CISCO Academy or the British Aerospace Virtual University through the national networks of the High Street names (from Banks to Pubs) and commercial training providers like Whirlpool to franchise operations, like the Pitmans Open Learning Centres there is a wealth of knowledge, experience and content.

34) Some of the world's largest electronic course and content providers, like Pearson and Reed-Elsevier, are still headquartered in the UK, although most of their education and training operations are now focussed overseas. Hundred of millions of pounds are spent by parents, particularly Asian and Afro-Caribbean parents, whose children are trapped in inner city schools, and by individuals seeking to obtain commercial qualifications or otherwise retrain for a better job. Much of this now goes on hybrid courses, mixing on-line and off-line content with some of the best material designed for the English-speaking world at large, not for GCSEs or NVQs.

35) While home-based and workplace learning are suitable and desirable for many, it is important to remember that there are limitations to the value of e-learning. Much of the most effective learning is communal or requires tutorial and technical support to be fully effective. Also for many of those in the most deprived areas, particularly in inner cities, the home may not be a safe learning environment.

3.7 From UK Online Centres to Broadband Community Access Points

36) The way forward may, therefore, include building on the UK-Online and Learn Direct centres (many in FE colleges, schools or libraries) and the study centres (pioneered by the Prince of Wales' Trust) to provide local access to world class training. But current funding for many of these (as well as for many related programmes) comes to an end in March 2004.

37) IMIS has therefore agreed to help organise a study to look at linking the best of the current centres as "Broadband Community Access Points" (CAPs), in quality-controlled "franchise" networks which bring public and private spend together on a sustainable basis to provide local and affordable access (through playgroup, school, college, library, museum, community centre¹, home, workplace, hospital, prison, retirement complex etc.) to world class, life-long, education and training content.

3.8 Global Learning Lifelong Learning Networks

38) IMIS plans to link its contribution on the CAP proposal to a broader exercise on the creation of international lifelong learning networks to bring the graduate and professional development and workforce-updating programmes of the professions and trade associations alongside the alumni operations of leading universities and the training programmes of major employers and their suppliers. The aim is to promote sustainable operations to maintain and validate skills over time while generating the funds necessary to support trustworthy accreditation as well as world-class content.

¹ community centre includes pubs, clubs, village halls, churches, mosques, temples etc.

Given growing workforce mobility this will require local, national and global networking to enable the garage mechanic in Dolgellau be mentored from Sunderland or Tokyo and the Civil Engineer on site in South America to “attend lectures” in Cambridge, in much the same way as the staff of Rolls Royce, BAe, CISCO or IBM can already follow their update programmes, where-ever they are in the World

39) One of the UK strengths and a prime reason for the popularity of UK-sourced qualifications, such as those of IMIS as a professional body, is trust in the independence and rigour of our accreditation processes and the way in which these can act as feeders to UK universities where students will be mentally stretched. This is particularly important to societies where the children of the elite may be treated with undue respect by local teachers and/or the rigor of local examinations is suspect.

40) The UK position has, however, been placed at risk by quality reduction resulting from attempts to cut the cost of accreditation, including with regard to workforce updating and professional development. We need to recognise the risk and act accordingly, building on the reputations of those who have not yet compromised on quality in order to meet short-term funding constraints or numbers targets.

41) While the monitoring and accreditation of global update programmes should be treated as an export earning business in its own right, it also presents an opportunity to upgrade the content of UK delivered courses to ensure that these too remain world class. We also need to act to address a situation where not only do UK students not have access to the best material from around the world but courses developed in Britain to meet international standards are not available in the UK because they lie outside our current public sector funding and accreditation regimes.

4 Development of new products, processes and services

4.1 Funding priorities

42) Some IMIS members have strong views on the need to focus a much larger proportion of the UK public science budget on those areas of science where there is clear potential for commercial spin-off. Others have equally strong views on the need to preserve our remaining centres of excellence. Funding priorities need to be more openly debated and full recognition and encouragement given to those whose research is funded by industry or from outside the UK. Current ratings give priority to projects with research council funding, because only these go through the associated reviews.

4.2 Technology Transfer


43) There is also a need to disseminate the lessons from those technology transfer operations which succeeded: such as the original Cambridge Computer Club (which helped spawn so much) which mixed mundane topics, such as the importance of collecting payment for the last job before you start the next one, with discussions of new technologies and cut rate travel deals to visit overseas partners.

44) Much is now known about what works and what does not with regard to university spin-offs, science parks and technology transfer but good practice is all too often not followed, because of the pressures and politics of academic, department and research council tenure, prestige and funding. We also appear to have lost the mixed workloads and flexibility that lie at the heart of the symbiotic relationships between the most successful US universities and their venture capital and research operations.

5 Development of Science and Knowledge bases to underpin new technologies


5.1 The crumbling of support for current Intellectual Property frameworks

45) Intellectual property rights have a critical role in a knowledge-based world. Their creation, control and exploitation is increasingly the basis of wealth. Affordable access is central to economic and social inclusion. There are growing concerns that current regimes do not correctly encourage or reward their creation, nor do they balance “fair” routines for non-commercial access with the prevention of abuse.

46) This has led to pressures for change from all sides. But there is no consensus on how current IPR regimes should be reformed to better reflect the ways that knowledge and content are now created, to recognise, encourage and reward creativity and to protect investment and identity, within socially acceptable and enforceable frameworks. The consequences include a rising tide of infringement, from those who claim moral or academic justification, through grey (and not so grey) areas of industrial and artistic imitation to the involvement of organised crime in large scale copying, as well as an apparent decline in the rate of genuine innovation. 

5.2 Who is lobbying for what?

47) The active lobby groups might be summarised (in no particular order) as:

- Film and Music industries seeking to prevent the unauthorised distribution (including commercial piracy) of new productions and back archives
- Technology and infrastructure suppliers seeking flows of cheap or free content to stimulate Internet and/or Broadband take-up and sales of equipment
- Life science industries (Pharmaceuticals and Biotechnology) whose IPR protection is greatly shortened by the timescales for very expensive Western testing and approval routines
- Developing countries who see royalties and premium prices used to fund research and testing routines that do not appear relevant to their needs and priorities
- Publishers and distributors seeking to protect existing revenue flows while exploring new business models
- Academics and educators seeking uncharged access to content and cheap or free software akin to that which they have enjoyed in the past via libraries (including deposit libraries) and educational licenses
- ICT service providers, including outsource suppliers, seeking cheaper, more reliable software (? open source) to help meet customer needs and improve margins
- ICT software suppliers seeking premium prices for value-added proprietary software which may build on IPR which has been put in the public domain under licenses which include conditions on future use 

- Communications service providers (Telcos and ISPs) seeking cash flows from value-added content carriage to survive, but not wishing to be piggy-in-the-middle in disputes over ownership or access rights
- Communities of enthusiasts seeking to exploit technologies and use legally-acquired content in ways not foreseen or explicitly authorised by rights-holders
- Libraries (including deposit libraries) and museums seeking to make their collections available to wider audiences and/or to generate new sources of revenue
- Creators (including staff and contractors) who feel that their rights are devalued by society or have been transferred under pressure (e.g. IPR clauses in standard terms and conditions for employment)

48) The situation becomes more complex when one tries to map players onto lobby groups. Major organisations, public or private, may have different divisions and departments active in competing lobbies. Those with mixed motives may, however, also be those with most interest in finding ways forward to satisfy conflicting needs by providing win-win solutions.

49) Many of the issues that DTI and its agencies will have to address for the UK to remain a location of choice for the creation and exploitation of wealth-creating IPR are long-standing but some of the equally long-standing compromises, which made past policies acceptable, appear to have broken down. The reasons include:

5.3 The growing complexity of modern products and services.

50) In some industries the main investment is often no longer in the original creation of the product but in testing it for use. This can mean that the period of protection, once the product has been brought to market, is too short to give an adequate reward. It can also result in the premature launch of inadequately tested products.

51) Pharmaceuticals provide one example. Compounds are commonly patented when first produced but it may be years before their potential use and side effects are identified. There is then a period of assessment as to whether they have a potential market that could repay the hundreds of millions it can cost to get them through the approval systems of the US and EU. At this point the majority “vanish” - not available to other than the rights owner who has decided they are not worth the effort of proceeding. It may then take a decade or more to get safety approval, with many compounds failing on the way. The company may then have only 4 - 5 years of patent protection in which to secure a return on investment.

52) Computer Software is another example. The cost of thoroughly testing complex software before it is launched on the market can be many times the cost of the original specification and coding, whether covered by patent protection or copyright. In consequence there are pressures to release before it has been properly tested, for the early users to find the errors, alias “bugs”: hence part of the case for “open source software” (under a variety of licenses, many of which are not “free”) with suppliers and users co-operating in the testing process and users having access to the information necessary for amendment.

53) Computer software also provides a good example of the growing range of products and services where the ownership of the IPR is unclear. Much software now routinely incorporates code and sub-routines from a wide variety of sources under different terms and conditions, some commercial, some not.

5.4 The increasing separation between creation and ownership.

54) The enforcement of rights and collection of copyright revenues after the creators are dead is not new, nor are the symbiotic relationships between author/artist and publisher/agent, nor is the generation of patents by a research centre for licensing elsewhere. But the growth of organisations whose main purpose is to collect revenues for portfolios of trademarks, patents or copyrights (whether local or overseas), without providing local value-added services, provides an easy political target for those who wish to avoid paying.

5.5 The growing financial pressures on all concerned.

55) The pressures on corporations to generate returns to pay the pension funds and insurance companies who now own them are matched by the pressures on schools, colleges and universities to deliver more for less and on developing nations to bootstrap their own economies while maintaining debt repayments. Museums and libraries are under similar pressure to generate revenues from collections (e.g. of letters, diaries, photographs et al) where the IPR may be complex.

5.6 Changes to the nature of creation and dissemination

56) The technology has fundamentally changed the dynamics of some forms of research, development, content creation and publishing but not others. The creation of knowledge is increasingly being networked around the world and it is said that more information now resides in mailboxes (organisational or personal) than in structured databases or archives, let alone rights management “systems” (digital or traditional). Meanwhile the costs of bringing a new film, pharmaceutical or software product from concept to market have grown, while the cost of replication has tumbled. This has led to a growing view that “one size does not fit all”.

57) Technology now allows levels of access (via Fair Usage, Statutory Deposit Libraries and National Archives) which could undermine the commercial models of many content publishers. This problem is particularly acute where material has high production costs and small paying audiences or where the rewards from commercial piracy are high. This has led to proposals for legally supported Digital Right Management systems, originally to protect material from unauthorised use, now increasingly to actively promote revenue-earning access. This has also lent urgency to calls to review the principles of Fair Usage in a world where “open access” to knowledge and education can be seen a “right”, as one of the main wealth creating industries of the future or as both.

5.7 The breakdown of past compromises

58) The Wellcome Foundation (NB Foundation not Trust) justified its prices to Third World countries by funding non-commercial research programmes to meet their direct

needs and donating supplies to those unable to pay. Those policies were so successful that others felt compelled to set up their own charitable trusts to compete. After the Foundation was sold those programmes were shut down and the donations of product ended. Soon afterwards the first country threatened, successfully, to bypass Western patent protection unless prices were slashed.

59) To get the private members' bill to extend copyright to cover computer software through both Houses of Parliament without opposition, the founding members of the Federation Against Software Theft agreed to make their software available for educational use at 1p per licensed copy. Some drafted "swing licenses", with a royalty to swing if the system was also used for commercial purposes (as might happen with a University computer bureau being used by an oil company for complex analyses), but these were complex and most lapsed. So too did the 1p educational licenses. A major driver in recent years for the use of uncharged, shareware (not necessarily the same as open source) has been the cost of proprietary software at a time when student numbers are rising faster than University revenues. Nonetheless, large software firms are often aware of the value added to their market positions by educational use and provide special terms.

60) "Fair usage" routines have grown up over many decades to enable scholars and others to use limited amounts of copyright material without buying a copy or paying a royalty. These first came under pressure with the growth of charged on-line abstracting, when it was claimed that the abstract should be viewed as an uncharged advertisement. When on-line full text distribution became practical the routines began to breakdown. Now we also have library and museum digitisation projects stalled because the copyright ownership of much of the material donated and archived this century is unknown (e.g. war time diaries and photographs), even before allowing for the possible rights of those portrayed.

5.8 The emerging challenges

61) The areas of growing difficulty, uncertainty and controversy include:

- Routines and responsibilities for disputes resolution, both national and international, including clashes between IPR regimes and regulators (e.g. US patents on business methods or traditional medicines)
- IPR in research which is networked across individuals and organisations with different objectives and funding sources (including the future of PhD and citation based academic structures)
- Routines for the availability of publicly funded (or more often part funded) material
- Routines for the availability of material where the rights ownership is unknown, unclear or in dispute
- The use of IPR to suppress innovation (e.g. the long life light bulb designs patented from the 1920s onwards which were finally brought to market over 50 years later) and/or IPR controlled by those unable to bring it to market (lack of skills, resource, technology etc.)
- Patent/copyright in DNA and image (do we have copyright in our own, if so ...)
- The position of rights management, copying and reverse engineering tools
- Cross-border and cross-agency co-operation when commercial piracy or industrial espionage is linked to organised crime or terrorism, sometimes with state participation

- Pressures for compulsory licensing for strategic (defined by governments) products/services conflicting with pressures (via WTO) for control by rights owners.
- Conflicts between academic creativity based on the free exchange of knowledge and pressures on Universities and funding agencies to exploit IPR generated in the programmes they fund

5.9 One size no longer fits all

62) Patent, copyright and other forms of IPR provide different incentives, economics and protections and some may have been stretched to cover forms of creation and exploitation better covered by different regimes over different timescales.

63) There is need for constructive debate, across interest group boundaries, to identify those areas where consensus can be reached around a new set of compromises that will command the social support necessary for future creativity to be encouraged and fairly rewarded. “Keeping science open: the effects of intellectual property policy rights on the conduct of science” www.royalsoc.ac.uk/files/statfiles/document-221.pdf produced by the Royal Society contains many recommendations directly relevant to the UK position as a hub for developing and exploiting the knowledge bases which will underpin the new technologies available to industry. DTI should organise consultations with a view to the rapid implementation of those not requiring primary legislation or international agreement,

6 Promoting the UK as a location of choice for Electronic Commerce

6.1 The changing balance of power between East and West

64) Most discussion of electronic commerce policy assumes that after a period of confusion there will be global legal frameworks negotiated through the World Trade Organisation under which the language will be American, the values those of Hollywood, CNN and the Star Ship Enterprise and the legal frameworks will be based on those of the United States. But the dotcom boom and bust was also the zenith of Pax Americana. The Western model of the Information Society is no longer the only one, even if Europe and America could agree what it was.

65) As said above.(paragraph 16) the Far East (Japan, Korea, China and Japan) now has more broadband users that the rest of the world added together. More-over many of them already have “real broadband” (i.e. 8 megs and above, suitable for broadcast quality video) as opposed to the “not-quite-so-painfully-slow-Internet-access” (at one meg or less) of most of the Western world.

66) They are driving the growth of interactive visually based products and services, including the underlying products and service concepts, just as they now dominate the production of high street consumer goods. Meanwhile India is leading the market for English-language support services. And the non-western world has much the same disrespect for western intellectual property protection regimes as the United States had for those of the “Old World” during the 19th and early part of the 20th centuries.

6.2 The growth of alternative technologies, including mobile

67) Over half the world's retail outlets are not connected to reliable electricity supply networks let alone line-based telephone systems. They are therefore leapfrogging the West into a world of low cost, battery or solar powered mobile communications, because they cannot afford and do not need, the cost of fixed infrastructures. There are increasing signs that they are also beginning to leapfrog the world of Windows and Internet browsers into one of open-source, mobile electronic commerce, accessed by GSM video-phones, with smart cards and TV zapper controls triggering audio-visual responses based on local language and pictograms.

68) We read dramatic claims of the growth of trade over the Internet but the volumes are still less than those over the traditional EDI systems of the Banks, Airlines and Stock Exchanges. More-over transactions over digital TV and data mobiles (including text messaging) appear to be growing very much more rapidly than those over PCs and browsers.

69) UK market research indicates that over 80% of consumer purchases are made within 10 miles of home. Distance selling (from simple mail order upwards) has long been common in states with scattered populations (from the Highlands and Islands of Scotland to the mid-West of America). But indications from Finland and Sweden (the western nations furthest into mass use of the Internet and both previously heavy users of mail order to far flung communities) are that the bulk of Internet transactions are also local. Cross-border consumer transactions (as opposed to business to business contractual transactions) remain a rarity. Amazon.com has found it necessary to set up national operations in its main markets. Meanwhile payment problems mean that many websites, particularly in the United States, no longer accept credit cards issued outside the country.

6.3 The emerging global electronic bazaar

70) With 60 million Chinese users, the main languages of the Information Society are now, in order, English, Chinese, Japanese and Spanish (see also paragraph 22). Barely a third of users have English as their first language and the proportion is falling as usage outside the West rises. One of the oldest messages of international trade is that you sell in the language of the customer, you buy in your own.

71) The Global Electronic Market place is more likely to have the feel of an oriental bazaar than of a western shopping mall. International business is as likely to be conducted under Chinese, Indian or Islamic Law as it is under Common or Roman Law. The issue is whether "informed" customers and suppliers are allowed to choose which law, language, currency and tax regime under which they are to do business - and which applies if they do not agree. .

6.4 The regulatory and legal jungle

72) The image of the Internet and of Electronic Commerce as outside the law is misleading - as many are discovering to their cost. The image of untraceable anonymity is also misleading. Even the idea that the United States does not have data protection is wrong. It may be outside the Federal Constitution but many States,

including California, have laws protecting financial or medical information and have handed also out multi-million million dollar fines to those who breach local fair trading laws - by claiming to protect customer information and then selling it. When Americans accuse the Europeans of hypocrisy over Data Protection they have a much better case than many assume.

73) Those whose facilities are used to access content that is already illegal under existing laws around the world can, under a wide variety of circumstances, be held liable. The UK Government by no means alone in the view that the same law applies (or should apply) on-line as off-line. In consequence the Internet has lurched over barely five years from being the least regulated to the most regulated (at least in theory) medium the world has ever known. Corporate lawyers advise that you should not place on your website any material that could not safely be included in a newspaper advertisement any of the nations where you do business - and you should refuse orders from where you do not know the law - or at least take care to be paid in advance and not to subsequently visit, lest you be detained pending the resolution of cases tried and decided in absentia..

74) In most nations of the world the Communications Service Provider who has been warned they are carrying illegal content becomes liable if they fail to take action - although there are significant differences as to what is illegal and the action expected. The ISP may also share liability for breach of copyright, libel and slander as well as breaches of consumer protection laws, particularly those applying to mail order, alias distance selling. The international transfer of personal data may also be an offence under local data protection legislation.

6.5 The role of DTI

75) Much discussion on e-commerce policy is driven by those seeking to protect current positions or to actively promote new technologies and infrastructures. But we are on an evolutionary path where the pace, direction and timing of change are uncertain. Moving too soon may be worse (in closing opportunities to local law-abiding businesses) than moving too late (to halt genuine abuses).

76) DTI should therefore give priority to halting regulatory creep in those areas where it has responsibility - from financial services to communications infrastructure and content. All new proposals should be publicly subjected to rigorous impact assessment, including the basic tests::

- Who is it intended to protect against what?
- Is it cost effective and fair?
- Can you explain it to the public?
- Will it work?

77) DTI should also actively work with Industry, both suppliers and users (e.g. via the new Electronic Regulatory Alliance) to ensure that regulation and law are subject to balanced consultation and review, technology independent and are not built around assumptions of either continuity or change that may be equally wrong.

6.6 Preserving the City of London (proxy for UK plc) as a globally trusted hub

78) The international legal frameworks for cross-border disputes have moved on little, if at all, since the last days of Pax Britannica - when the captain of the tramp steamer was agent for the owners of the goods on board and, in the event of dispute, the law of the nation with the biggest gunboat in wireless distance applied.

79) In the event of stand-off, the compromise was usually adjudication in London (before 1914 because the Royal Navy had more gunboats, from 1914 - 1939 because most were in the Far East and the American and Japanese could never agree and after 1945 because American lawyers were too expensive).

80) The standard of fairness set in those days has meant that the reputation of London as a place for disputes resolution has survived. The largest court case in London in recent years was two middle-eastern trading houses suing each other under the Sharia.

81) Hence the concern of so many players that neither the UK government nor the European Union nor the United States should be allowed to jeopardize the ability of those doing business across borders over the Internet to decide for themselves where they wish any disputes to be adjudicated, under what law and in which language.

82) That desire might appear to fly in the face of practical politics, but the stand-offs between vested interests and lobby groups around the world appears set to guarantee the failure of any attempts by governments to agree an alternative. The precise politics will change as the economic balance of power between west and east changes, but the proposals on which governments can agree are unlikely to ever be more than a rationalization of the compromises already reached by those who really do want to do business electronically, direct with customers or suppliers in other nations.

83) The freight forwarders, scrivenors, notaries and their equally numerous Chinese, Arab and Indian equivalents will therefore retain the business of those who do not wish to open local subsidiaries and therefore need guidance to find practical ways of handling the incompatible demands of governments around the world..

84) Central to the future competitiveness of the UK as a centre for international E-Commerce is the way in which City of London (as a proxy for UK plc), for all its faults, remains trusted in ways that the government in Whitehall has never been. If that trust is lost then nothing that DTI could ever do would make up the difference. It is more important that DTI oppose any policies or regulatory initiatives that might threaten that trust than that it seek to promote those that would supposedly enhance it.

85) Allied to that trust are the efficiency of Heathrow as a global hub for air-freight-forwarding (not just people forwarding) and of the communications of the capital (both electronic and physical). For the benefits to be spread to the rest of the UK there is, however, a need to give much higher priority both to maintaining and improving these and to improving the transport and communications infrastructures linking London to the rest of the British Isles. DTI again needs to be more active in those areas where it has lead responsibility, especially national broadband roll-out.