

Microsoft Submission to the Digital Britain Interim Report

Introduction

Thank you for the opportunity to comment on the Interim Digital Britain report. Many of the topics it raises have been growing in importance on the policy agenda. The timing of the report is also significant. The economic downturn means that government needs to seek a variety of methods to help the UK emerge from the recession in a strong position. Microsoft believes the Digital Economy is central to the UK's future in a global economy and that the regulatory approach taken by government will be crucial for the future development of the businesses that will drive the economic growth. Government has an opportunity to develop a framework that encourages innovation. In our view, industry can be a willing partner in developing a new regulatory approach as we move from an analogue to a digital world.

Microsoft has a growing internet business based in London with over 600 people working on MSN, Microsoft Advertising and our other internet businesses. We announced recently that we would be establishing a Search Technology Centre in London as well as in Munich and Paris. The European Search Technology Centre will work on significant improvements across three key areas - delivering the best search results, simplifying key search tasks and innovating in the business model.

As well as our online business, Microsoft has made two major investments in the UK computer gaming industry, bringing video game developers, Rare and Lionhead, into the Microsoft Gaming Studios. We also produce the Xbox games console. We develop IPTV technologies such as Microsoft Media Room to enhance consumer's TV experience, and we have significant interests in mobile devices. Finally, our traditional business is software applications provided via the desktop, but in time plan to adapt our business model to offer software plus services. This will mean that software will still be available on the desktop, but will also be hosted on servers available for consumers to use via the internet.

The Microsoft UK Partner Programme is a network of over 32,000 business throughout the UK, the vast majority of which are Small and Medium Enterprises (SMEs). SMEs will contribute significantly to the Digital Economy, providing innovative solutions to the market through competition, flexibility and efficiency. It is important that the regulatory burden allows these businesses to enter the market.

Our response is ordered to correlate to the Report:

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Summary

Digital networks are directly linked to the success of UK plc and the country's achievement in the global economy. Changing methods of delivery and increased quality and range of content mean that these networks will need to be high performance. Government should take into account the rate of technological change as it considers the options around investment in the network infrastructure. The increased performance of networks is directly linked to the advent of new methods of sharing and copying content have led to increased discussion and debate amongst the stakeholders of the intellectual property regime. Content licensing and infringement online is an important subject and we welcome further discussions and consultations on these topics with both the Digital Britain team and the wider BERR department. Respect for intellectual property is fundamental in enabling the creative industries to contribute to the wider Digital Economy.

The Interim Report seems to imply a need for stricter regulation of the online industry, from content providers to publishers and advertisers. However, it's important to note that the industry already follows a number of voluntary and self-regulatory codes, including notice and take down procedures for the removal of illegal content; clear info on how personal data is collected, used and shared; clear and effective labelling of content and easily available content filters. Equally important are the difficulties that would be produced should the regulation of the digital world be approached in the same manner as the regulation of the real world. In the constantly changing world of the internet, Microsoft believes that the self-regulatory approach that currently exists is the most flexible and appropriate way of monitoring and acting on inappropriate content. The Interim Report provides a great opportunity for government to work with industry and other stakeholders to examine, discuss and improve the self-regulatory regime.

The concept of universal access is one that Microsoft fully supports and believes should be encouraged whether through normal market forces or through public intervention in the market. Tied to this is the ability to use the new technology available, such as new license-exempt wireless capabilities. Digital Literacy forms an important part of Microsoft's Education and Citizenship work and we believe very strongly in the benefits that a digitally literate public can bring to the UK's economic and social success.

There are other issues around the long term future of Digital Britain that Microsoft believes are important, but are omitted from the Interim report. For example Digital Identity infrastructures are key to ensuring an end-to-end, commercially viable digital infrastructure for the UK. We will limit our response to the topics covered in the Interim report, but will send in a separate document on Digital Identity and other digital areas that we hope will be a useful contribution to the Review.

We await the Digital Britain Final Report with interest and, if we can be of assistance, would be happy to work with the Digital Britain team on any aspect of the report on which we have commented.

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Digital networks

Digital networks are fundamental to the future success of the UK economy and to its competitive position in the global economy, as the Interim Report emphasises. As well as direct benefits to consumers from an increasingly rich array of new applications, the strength of the UK's network infrastructure will become a key factor in investment decisions across a wide range of sectors. Thus the Government has good reason to look carefully at how to ensure that this vital infrastructure is ready to meet the rapidly growing needs of consumers and industry.

We believe that high performance access networks, starting with a performance of 50 Mbps or greater, will be needed within the next few years to meet growing consumer expectations on content quality and range, combined with increasing numbers of screens per household. Examples of the types of application that would benefit from next generation access performance include:

- Multi-room high definition TV
- Multi-user online gaming with high resolution images
- Multi-device web browsing,
- Increasingly graphical, interactive and dynamic content of web pages and offerings including high resolution images and higher quality video
- Increasing use of online sharing of video and other data, where file transfer times matter

As well as high downlink speed, we also see an increasing need for higher uplink speed, as consumers and businesses want to generate and share more and higher quality audio visual content. Online collaboration and sharing of user generated content is of increasing importance to the economy and society, but is not well served by the current, heavily asymmetric, access networks.

Businesses too will demand increasing performance from their broadband access service. We can foresee that:

- Increasing use of online collaboration and data sharing will augment the requirement for symmetric high performance access
- The attraction of 'software plus services', under which an increasing level of application functionality is delivered online, will raise business' demand for higher performance and reliability of access networks

Next generation access networks would also provide a substantial boost to the UK's digital service economy, encouraging content and service providers to invest in developing offerings to exploit the extra performance. This, in turn, should help Britain's exports of content and expertise, as other major global markets move to the next level of network performance.

UK-based network technology providers should be well positioned to benefit from the upgrade process, preparing them to compete at the forefront of the rapidly developing global market for next generation access.

With governments across the globe looking to generate growth, we can think of no better place to invest stimulus funds than in assisting the creation of an infrastructure that would put the UK at the forefront of the world's digital economy.

Leaving flexibility to scale up performance for the future

We anticipate that demands on the UK's digital networks will grow as content and service providers take advantage of higher performance, so the Government should take this into account in its thinking on the upgrade path.

Fibre-to the-cabinet is considerably cheaper than *fibre-to-the-home* in established residential areas, according to analysis provided in the Caio Report. However when comparing these approaches it is important to take into account the likely needs of consumers and businesses in the future:

- The anticipated growth in capacity requirements as the digital economy develops and consumers embrace a wider portfolio of higher value services delivered online. These services are likely to include more multimedia content at higher quality levels.
- Delivering an adequate quality of service across the full range of potential applications may be complicated by fragmentation from potential variations in software and hardware at the street cabinet level.
- The environmental impact of powered street cabinets in terms of carbon footprint, and space requirements and their potential impact on service reliability and robustness.

Importance of wireless technologies in digital networks

Whilst optical fibre links deliver very high levels of capacity and provide an essential backbone for Digital Britain, wireless technologies play an increasing role in delivering the benefits to end users:

- In access networks, including in-home/in-office, where mobility and flexibility are growing requirements
- In backhaul, particularly in rural networks

As consumers move away from traditional desktop PCs towards the flexibility offered by notebook computers and a growing range of mobile devices of all kinds, local area wireless connectivity is rapidly becoming the norm.

Wireless is also finding increasing application in backhaul, as more rural areas seek to fill gaps in wire-based fixed infrastructure. Whilst fibre is undoubtedly the best infrastructural basis, rural markets often lack the density required to make its roll-out economic.

Investors have recognised the potential of new wireless technologies and have invested significant sums in this area. Recent examples of the results include licence-exempt technologies such as Wi-Fi, UWB, as well as technologies for licensed services, such as LTE.

Regulation is key to sustaining benefits from wireless innovation

Microsoft agrees that spectrum regulation has a key role to play in enabling a fully digital Britain. We support the principle of letting the market decide the best use of spectrum, with auctions, trading and liberalisation all playing a role. We also support Ofcom's introduction of *administrative incentive pricing* as a means of encouraging existing users to increase efficiency and release spectrum they no longer require.

We recognise the tremendous value that mobile operators have brought to consumers through affordable personal communication services that are growing ever more sophisticated and valuable across society.

What is lacking from the Interim Report, however, is any mention of the role that spectrum sharing and licence-exemption could play in enabling consumers and citizens to enjoy greater benefits from Digital Britain.

The key principle is to lower barriers to accessing spectrum as much as possible, creating as many opportunities for new services and applications.

Licensing is one very effective way of managing spectrum: creating incentives for operators to invest in infrastructure and services.

However, we believe that the top-down approach that licensing encourages does not, by itself, enable the full value of spectrum to be obtained. Recent surveys of spectrum use across the UK, by Ofcom, demonstrate the comparative underuse of many bands.

Spectrum sharing and licence-exemption are complementary methods of unlocking the value of spectrum, which are particularly powerful when harmonised on a worldwide basis. Analysis presented in Ofcom's *Licence Exempt Framework Review*¹ supports the view that the licence-exempt mode of spectrum access is capable of yielding social value on a par with licensed applications². In addition to the value consumers obtain from their own applications, service providers can aggregate licence exempt infrastructure to add value to their customers.

Whilst Ofcom has made commendable progress in identifying licence-exempt use in higher frequency bands, we feel that spectrum regulators in general have tended to undervalue the role of licence exemption – particularly in lower frequency bands, such as UHF.

We consider licence exemption to be an important source of wireless communications capacity for the future, because of the low barrier to entry it provides. Licence exemption enables a more rapid translation of innovation from the research lab to the consumer's pocket and enables new wireless technologies to be incubated. Compare the rapid advances in Wi-Fi, Bluetooth and UWB with the time required to secure licensed spectrum – let alone the cost³.

Funding the new infrastructure

Under normal circumstances we would expect the market to deliver the necessary infrastructure improvements, directly meeting the needs of most consumers.

However, given the step change in performance that is needed, together with current market conditions, it may be difficult to match national needs with industry incentives. The likely payback

¹ <http://www.ofcom.org.uk/consult/condocs/lefr/>

² The Role of Licence-Exemption in Spectrum Reform, by Pierre de Vries and Gary Tonge.
http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1086313

³ For 3G, the first regulatory discussion started around 1989, but it was not until 2005 or later that consumers really started to enjoy the benefits – slow compared to recent wireless technology innovation

time on a major performance upgrade (such as fibre-to-the-home), together with uncertainty over consumer demand will make it harder to find private backing. Thus the Government may need to complement industry efforts with investment of its own to accelerate the availability of higher speed broadband. This need is particularly clear in areas which are less attractive to commercial operators.

Getting the most out of the market

The Government is right to look first at what the market itself can deliver, within a framework that encourages investment without diminishing the intense competition which has already yielded significant benefits for UK consumers. The recent Caio Report⁴, highlighted some potential improvements in the regulatory framework, including the streamlining of planning application processes, for example. Caio also pointed to the potential for local authorities to reduce some of the substantial civil engineering costs and environmental impact by coordinating road-works.

Regulators need to provide the flexibility for the market to resolve how to fund both high quality content and high quality access. For example, by exercising caution in imposing controls over how internet service providers (ISPs) allocate priority between different types of content or content provider, ISPs may be encouraged to experiment with access and content bundling.

By allowing each part of the digital ecosystem to discover its own optimum business model, unintended distortions might be avoided elsewhere and better value delivered to consumers.

However, consumers need to know of any prioritisation or constraints their access provider has chosen to place on particular services or applications, so that they can choose an access package that will meet their needs. Thus we feel that consumer interests are best protected by having a choice of provider and by encouraging transparency and comparability in access provision, as Ofcom has sought to do in developing a voluntary code of practice for Internet service providers, in consultation with the industry.

Role of Public investment

Public authorities can help in a number of ways:

- Coordinating and facilitating the exchange of best practice between fragmented community groups, through initiatives such as the Knowledge Transfer Networks. This could be extended to embrace initiatives in other parts of Europe and other regions of the world – helping to create a stronger incentive for equipment makers to invest in the appropriate technology
- Commissioning content and providing convenient online access to services
- Using public broadcasters, especially the BBC, to provide attractive content and cross-promotion opportunities to drive wider take-up and appreciation of broadband
- Funding the creation of basic infrastructure, such as fibre links to schools and hospitals, which could also provide inexpensive backhaul for local communication services – relevant for *Action 5* in the *Interim Report*

⁴ <http://www.berr.gov.uk/files/file47788.pdf>

Allowing consumer subsidies intended to support digital TV switchover to be used towards installing broadband access, which then enables access to a range of IPTV services. The growing acceptance of interactive television services is powerfully indicated by the tremendous popularity of the BBC's iPlayer.

Economics of Digital Content

Empowered by new technology, consumers are driving a different type of relationship with brands than before – they want a two way dialogue – pull not just push communications. They want to interact with brands and their products, co create, be entertained and ultimately be in control – only the internet enables this type of powerful engagement today.

Online advertising is currently relatively healthy despite the downturn. In fact it is the only ad medium to forecast positive year on year growth, albeit 1.1%, in 2009 unlike other media such as TV -12% and Press -21.9% and radio -6.9%. What's more the long-term outlook is healthy. Online is where the innovation is happening and faster and mass accessibility to broadband, funded by the government, is only going to strengthen the growth of online ad market. It is forecast that online ad spend will grow to 30% of overall ad spend by 2012 (online ad spend £4.2bn and total ad spend £14.1bn – source Enders Analysis). It is worth noting that there are many UK companies within the online advertising ecosystem that will benefit from the internet economy including but not limited to media agencies, creative agencies, content providers, media owners, networks and publishers, web analytics, tracking and reporting companies.

Savvy consumers understand that advertising is part of the online experience and funds much of the great content they search for and interact with. According to IAB research 85% of consumers prefer advertising than paying for content, so ad funded content is a vital to the ecosystem. Without advertising, there would be limited quality content and minimal engagement by consumers. The format of the advertising will undoubtedly change over time but advertising is what makes the wheel of the internet ecosystem turn. Given that the internet is a medium without geographical borders, it can help UK based brands easily target consumers outside the UK and more importantly attract additional revenue to the UK by enabling advertisers based in other continents. For example, the Tourism Board of Malaysia, Sony Electronics in Japan and Kia cars have invested with UK based media owners to target UK consumers.

Microsoft believes that there is a strong track-record of successful self-regulation among major participants in Internet publishing and communications businesses in the United Kingdom. Examples include adherence to the Advertising Standards Association in areas such as marketing to children. Advertising of alcohol and gambling is tight and constantly reviewed in the light of public opinion and emerging trends. Microsoft's work with the industry on child protection is also a good benchmark for self-regulation in broader areas of publishing.

Rights and Distribution

The Digital Britain Interim Report raised three broad issues in Section 3.2 (“Investment in Content: Rights and Distribution”):

- The creation of a new “Rights Agency”;
- A “new approach” to civil enforcement: and
- The passing of legislation creating new duties for ISPs in the context of unlawful peer-to-peer (P2P) Filesharing.

We understand that the Rights Agency proposition is to be the subject of a discussion process, due to be launched shortly. Similarly, we understand that BERR will be leading a consultation on the P2P file-sharing proposals. Microsoft will be engaging in both exercises.

Regarding Action 11, we note that BERR has put in place a discussion forum facility on its website to solicit opinion regarding the potential role that the Rights Agency might fulfil. The IPO will, we understand, be undertaking a similar exercise. The Rights Agency is expressed to be a broad proposition in the Report, and so these exercises will be important in coalescing a variety of viewpoints. Regarding the suggestions made in the Interim Report, Microsoft agrees that it would be helpful to have a forum for all stakeholders to work together on agreed ways to deal with content licensing and infringement online. Given the scope, variety, technical complexity and scale of these issues, solutions in this area can only really have effectiveness and legitimacy if they are developed by co-operation and consensus among all relevant stakeholders—content providers, online services, internet service providers and indeed consumers.

Regarding Action 12, it is probably worth noting that there has been relatively little done as far as exploring with “both distributors and rights-holders their willingness to fund, through a modest and proportionate contribution, such a new approach to civil enforcement of copyright within the legal frameworks applying to electronic commerce, copyright, data protection and privacy” is concerned. Discussions to date of the costs and how they should be assessed and allocated have been overly general and polarised, in part because accurate, detailed assessment of the incremental costs of new forms of online enforcement has not been done adequately. The issue of cost mechanisms needs to be studied much more carefully, based both on sound respect for copyright and on accurate, detailed information as to the actual costs of enforcement activities. In all events it would be disproportionate, unfair and inappropriate to impose any sort of piracy “levy” on consumers in order to “compensate” for unlawful use of copyright.

Action 13 concerns the P2P file-sharing proposals. Given that there is an imminent consultation on that matter, Microsoft will reserve its comments until the consultation exercise is commenced.

Universal Access

Microsoft supports the objective of ubiquitous and affordable broadband Internet access as a vital goal for the future of the economy and society as a whole. We recognise that while the market can do much to deliver the benefits, there is likely to be a continuing need for public intervention to ensure universal access. However, if the costs of providing universal access are largely to fall on network providers rather than tax payers as a whole, we believe that they should be shared in an equitable, scalable and sustainable way, so that new entrants and investment are not discouraged.

Awareness and availability are both essential

Universal access is a multifaceted issue, embracing awareness of the benefits of connectivity as well as the availability of networks. Both need to be present, to gain the full benefits of investment in digital communications.

Raising awareness of the benefits

In communicating the message about the importance of broadband, the Government needs to consider social networks as well as traditional media. BSkyB has shown how marketing channels such as road-shows and coffee mornings can be used creatively and productively to broaden the reach of new digital services to those who would not normally have considered them relevant.

At the other end of the age scale, children and young adults readily take to new communications and are less afraid to explore its potential.

We welcome the Interim Report's recognition of the importance of creating a 'skills infrastructure' to maximise the benefits of digital communications for people of all ages, abilities and backgrounds.

Wireless is key to increasing availability

As the report acknowledges, wireless technologies have a vital role in bridging the connectivity gap. As well as rural areas, where wire-based infrastructure is often weaker, there are also opportunities for wireless connectivity in urban settings, since not all householders have chosen to or are not able to take wire-based broadband services. For example, students or temporary workers may find that wireless access suits their needs better.

The Interim Report amply covers the important role that mobile operators can play in extending the availability and accessibility of broadband across the community and the UK. It also acknowledges that spectrum regulation has a key role to play in lowering barriers for operators to roll-out new wireless technologies and services.

Again, what we missed was recognition of the key role that licence exemption might have in facilitating cost-effective wireless broadband access, especially in less commercially attractive areas. In particular, the opportunity to use white space in UHF could be a significant boost to the viability of wireless broadband access in less densely populated areas. With up to 200 MHz available, typically in rural areas, this would enable less well connected communities to gain much more from the Digital Dividend without cost to anyone else. With the anticipated global market for white space devices, we expect the cost of white space technology to fall rapidly, further assisting roll-out viability.

As well as facilitating cheaper and quicker network start-up, license-exemption also avoids the spectrum partitioning which normally applies to licensed applications. It would enable local

communities to decide for themselves when they want to enjoy improved connectivity, rather than being dependent on the roll-out priorities of the major operators.

Enabling community area networking

As a globally adopted licence-exempt technology, Wi-Fi has proved very successful in promoting the take-up and use of broadband, by diversifying access. Now consumers using wireless-enabled devices ranging from laptops, through cameras to digital radios can benefit from a growing range of new services and applications. However the power restrictions on the Wi-Fi and propagation characteristics of the 2.4 GHz band typically limits its use to in-building hot-spots.

Enabling license-exempt use of UHF white space opens the door to wider area networks with the potential to embrace whole communities, because of the increased range it offers (compared to bands typically used for wireless broadband access). This greater range makes it possible to cover a whole village, campus or town more cost effectively than before. White space technology can also offer scalability and robustness⁵ – with implications for network availability in emergency situations. Recent gale damage to the Connected Communities’ broadband network in the Western Isles shows the potential vulnerability of communications infrastructure and the value of providing diverse communication routes.

A wide range of applications could be enabled by such wide-area connectivity, ranging from estate security to in-home care for the elderly and local transport information – including video feeds from key road junctions, for example. Rather than have the data shipped off to remote metropolitan communication hubs, following the constraints of existing network architectures, community area networks would allow locally generated content to circulate where it has greatest value – locally.

Licence-exemption flexibility could boost the effective local communications capacity

In many rural areas, spectrum licensed to 3G operators lies fallow because it is not economic to roll out networks that far. In contrast, using license exemption, the whole of white space is available for local communications. This can amount to around 200 MHz in some areas. If leading edge communication technologies were applied, potentially delivering ~ 4 bits/Hz, this would provide a healthy 800 Mbps boost to local connectivity. At typical rural densities of around 100 people per square kilometre, and assuming say a 50:1 contention ratio, this could provide around 2 Mbps (bi-directional) per person over an area approaching 100 square kilometres. Introduction of future access technologies in white spaces could boost this still further.

Whilst we have been emphasising the opportunity of white space in UHF, because of its low cost coverage, it is perfectly possible for white space devices to use a range of licence exempt (and licensed) bands. Because of their coverage potential, the UHF channels could provide a useful coordination medium for the use of capacity across whichever bands may be available in a particular location, depending also on network topology and device capabilities.

Government and regulatory action to promote white space exploitation

We welcome Ofcom’s recent proposals to allow cognitive devices in the Interleaved spectrum (UHF), which appear to offer an important step forward in enabling white space capacity to be used towards the Government’s universal connectivity goals. We have worked with Ofcom and industry

⁵ Using mesh networking technology, for example.

stakeholders in laying the foundations for this and will be providing feedback to Ofcom's consultation in due course.

Digital Media Literacy

Microsoft agrees that in order to reap the benefits of becoming a digital nation there are a number of key factors that need to be addressed. We focus on four key areas:

- **Access** to a device or devices. Providing the ability for people to have access to a device at their home or in a convenient location. This may be a PC but may also be a mobile phone, IPTV or games console
- **Connectivity**. It is clear that a device which is not connected to the internet or other devices has far less potential than one that is. A solution needs to be found to enable all UK citizens to have affordable, reliable and fast connectivity regardless of their location
- **Attitude & motivation**. Many who remain e-excluded do not see the benefit from a device and connectivity; they are certainly not interested in studying for qualifications. We need to focus more on getting people to just give technology a go. Informal learning, with appropriate person to person support, has a critical role to play here
- **Skills**. Once we get people on the road we need to ensure there are always options for them to develop their skills around technology with the associated benefits to them personally, to Government and the economy as a whole. As mentioned above, there is an important role for informal learning

Connectivity has already been covered in detail earlier in our response and the majority of this section will focus on skills, which to us includes safeguards and security. However, we would like to spend a few moments on access and attitude and motivation.

Access to technology

The interim report briefly mentions access and highlights the Home User Access programme of which Microsoft is a member of the core working group and is committed to helping the programme realise its full potential. However, over the last thirty years and in future years we continue to work on a breadth of programmes to address this issue. With 17m citizens still digitally excluded we need programmes and initiatives which can tackle the problem at **scale**. The best example from the past is Home Computing Initiative (HCI) which was reaching approximately 450k+ people per year and UK online centres continue to provide the best existing example. Moving forward as well as the Home Access programme we are also involved in large scale programmes to target other excluded groups including Computer, Skills and Training (CST) programmes from the Digital Inclusion Technology Group (DITG), the [Digital Skills for Citizens programme](#) through local authorities and also our Deskless Worker solutions. However, we still need to look into similar solutions for other excluded groups such as over 65s, those in receipt of incapacity benefit and childless households. Volume also drives commercial interest which is critical in providing investment and resource to deliver change.

Attitude and motivation

Unfortunately many people still do not see the benefit from access and connectivity. We need to focus some of the effort on helping get people started. Presently funding is either linked to qualifications or split into too many disparate pots. Funding for those organisations operating on the ground to get people using a computer for the first time needs to be made much simpler to access and to simplify the funding streams – fewer, more flexible and less prescriptive. In addition more emphasis needs to be placed on funding infrastructure and service delivery not on a course or

qualification. Such an approach provides flexibility for local action and local partnership adapted to local needs. In addition, it's key that not only is there funding for new initiatives e.g. setting up a new community centre, but also the funds to operate on a long-term basis.

Education and learning

Overall Microsoft is committed to ensuring that everyone in the UK is able to take their place in the information society and realise their full potential. This extends from young people into the workforce, including the IT industry, and beyond into wider society.

Our focus on skills covers the following areas:

- Skills for the Employability of Young People
- Skills for a 21st Century Workforce
- Skills for a World-class IT Industry
- Skills for an Inclusive Information Society

Microsoft works alongside public and private sector partners and makes significant investments to ensure that people have the skills to use technology as part of their personal and professional lives and to ensure that the UK benefits from a strong and competitive knowledge economy.

Skills for the employability of young people

The Leitch report describes a future competitive environment requiring a significant upshift in skills levels and the virtual disappearance of low skills jobs. By 2010, the knowledge economy will represent 50% of UK GDP and jobs in this sector require higher skills (43% are graduates) and the ability to use IT effectively.

1. Skills need to be relevant and clearly lead to employment if young people are to remain in formal education which requires employers to become an organic part of the education system. There has been steady progress on employer engagement over the past decade that Microsoft has consistently participated in:
 - Microsoft sponsors 100 Specialist Schools, 1 Trust School and 1 Academy
 - Microsoft participated in the development of the IT specialist Diploma by e-skills
 - Microsoft partnered with the OU to create an ICT Foundation Degree

However, employer involvement needs to make a fundamental shift to a world where employers (public/private, large/small) work in close partnership with every school, college & university. This is a big challenge to employers as well as to education but is vital to our future success. It should be the norm to regularly see employer staff in schools and for teachers to be ex-industry as well as vice-versa.

2. In the modern fast-moving information based economy, skills have a far greater role in success than simple factual knowledge. For example, people leaving university with computer science degrees today and entering the industry find that much of their knowledge, though not their

skills, is out of date. Therefore key skills (what were once called “soft” skills) are at least as important to many employers especially those in the knowledge economy as factual knowledge and should be better reflected by the assessment system. Of course facts are still valuable but they are easy to look up. These key skills include team working, problem solving, research & presentation skills and we value them highly at Microsoft. These skills include the way young people naturally embed the use of IT and employers will benefit if they harness them as demonstrated by recent research commissioned by Microsoft.

Microsoft supports the acquisition of digital literacy skills by young people through the Partners in Learning programme (Enquiring Minds, Innovative Teachers, Gateway) and by the availability of the latest developer tools through the MSDN Academic Alliance.

Skills for a 21st Century Workforce

Leitch calls for a massive increase in the skill level of the UK workforce as the number of unskilled jobs will fall from 6m to 0.5m by 2015. Already 80% of all jobs (even manual jobs) require the use of a computer of some sort. Young people entering the workforce are digitally literate (a recent CBI survey reported 93% of employers being satisfied with the digital literacy of young employees), but there is a big challenge to equip existing workers with digital literacy and IT user skills.

Microsoft believes strongly in this agenda and invests in its delivery

- The Partners in Learning programme is partnering with the TDA and equivalents in Wales and Scotland to enable teachers to embed ICT in their teaching practice.
- The NHS Skills Academy will provide user and professional IT skills to NHS staff, enabling them to use IT as part of their work.
- Through the IT Academy programme, Microsoft has created a network of over 650 schools, colleges and workforce training providers providing training on user and professional IT skills.

Action by government is also required:

- Positive progress on the NVQF and QCF enables employee training to be recognised, indeed Microsoft has integrated its qualifications with the QCF, but more needs to be done turn the majority of the £38bn a year spent by employers on skills into qualifications, especially in small businesses.
- Branding and fragmentation of workforce qualifications is a major issue, there are over 300 IT qualifications alone! GCSEs use one overall brand under which a number of qualifications are grouped and this approach needs to be applied in the vocational space. Support needs to be given to SSCs to drive through a radical simplification of the system.

Skills for a world-class IT Industry

The knowledge economy will represent 50% of the UK economy and IT represents 7% of GDP directly as well as acting as a key enabler to knowledge businesses. Yet there is a skills gap of over 30,000 around the use of Microsoft technology alone. The skills issue is set to intensify as the industry will add another 141,000 jobs and 4,600 businesses by 2011 (IDC). Addressing this systematic skills shortage requires us to 1. Attract more people to the industry and 2. Enable people within the industry to grow their skills.

1. People enter IT from a variety of STEM backgrounds, therefore the current drive to increase the science base (specialist teachers, assessment, curriculum etc) will also benefit the IT industry. However computer science teaching is not as well regarded as other subjects and is not as fully developed as a subject specialism. Microsoft is working with NAACE and other stakeholders to develop a strong subject association similar to the US Computer Science Teaching Association.
 - Women represent 20% of the IT workforce (although it is 30% at Microsoft) and so we could close the entire skills gap by attracting more women into IT. Microsoft supports CC4G and other initiatives that encourage young women to consider an IT career.
 - Microsoft offers circa. 100 year placement opportunities to undergraduates from a deliberately diverse set of backgrounds who want to gain a year's work experience as part of their degree.
2. The UK needs to maximise the number of new tech businesses being established and becoming successful (maybe the next Microsoft) by equipping people considering starting these businesses with the skills to succeed.
 - The BizSpark programme works with emerging technology partners to support their development and growth
 - The Software Business Development curriculum is being delivered directly to graduate entrepreneurs and being embedded into university programmes.
 - The Imagine Cup inspires graduates to envision and start up software based business ideas
 - New Microsoft Innovation Centres will facilitate the transfer of university expertise into new technology businesses.
 - The STEM University Enterprise Network, with Cambridge, Cranfield, Hertfordshire, Oxford, Reading & Southampton Universities will create a network to help generate and support the next generation of UK technology startups.

In order to retain and grow talent in the IT industry a professional framework for IT is needed along the lines of those in professions such as medicine or engineering. Work has been started in this area by e-skills UK and the British Computer Society (BCS) but a strong, credible, integrated professional structure is an urgent necessity.

This structure will need to incorporate the strong IT vendor certification programmes such as Microsoft Certified, which is delivered through a nationwide network of Microsoft Certified Learning Solutions Partners (CPLS). Microsoft will continue to invest in the 50,000 strong UK community of Microsoft Certified Professionals as well as to integrate its own qualifications with broader frameworks as it has already done with the National Vocational Qualification Framework. Microsoft is close to becoming an awarding body for these qualifications.

Skills for an Inclusive Information Society

Many people in society do not have the ability to use digital technology, for example 20% of households with school-age children have no computer. This creates an inequality between the information rich and information poor both in terms of access to opportunity as well as wider entertainment and fulfilment. It also prevents local authorities and other public sector bodies from efficiently reaching citizens with web-enabled services.

Through its Unlimited Potential initiative Microsoft has committed to reaching the next 1bn people worldwide by 2015 and this requires us to help skill these people with at least a basic digital literacy.

- Microsoft is making its digital literacy curriculum available at no cost through UK Online centres or online. 250 centres have been trained and provided with software, 550 have taken the OCR qualification and over 1,000 learners per month are starting the training.
- 35,000 people in the Black Country are being trained and 1,800 helped into jobs through IT skill training
- Through Learndirect Scotland, Microsoft is skilling 100,000 Scots on digital literacy

Media literacy and online safeguards

Microsoft agrees that due consideration for the needs of children, and for privacy, safety and security generally, should be part of the Digital Britain effort. We applaud the approach in the document to look to existing projects to identify the rights steps forward, such as the UKCCIS, which Microsoft was pleased to be asked to support both on the Executive Board, the broader Council and the working groups.

Microsoft is committed to making computing and the Internet safer for children by:

- Giving parents the technological tools they need to help limit their children's exposure to inappropriate content and potential threats. Stable and consistently applied rating and classifications systems are necessary for parental controls to be as effective as they can be (*i.e.* PEGI for Games and BBFC for Film).
- Educating parents and children with practical advice on how to recognize and respond to online issues, including harmful software and inappropriate or even dangerous interactions; and
- Working with governments, law enforcement agencies, educators, children's advocacy groups, and others worldwide to help create a safer computing environment for children.

As Microsoft and several other participants have described in documents on the UK's implementation of the new Audiovisual Media Services Directive, application of protections relating to content online should observe some basic guidelines:

- 1) In order to strike an effective balance between consumer protection on the one hand, and a flourishing on-demand industry on the other, it is vital that any regulation or legislation places regulatory responsibility on the entity which has effective control of the content. As noted above, such responsibility could be met through industry self-regulation, codes of conduct, and the like. We believe that responsible companies should adhere to the self-regulatory codes, including notice and take down procedures.
- 2) Viewers' experience of audiovisual services has already changed, and continues to change, with the dramatic growth of online and on-demand media. It was not the intention of the Directive to lead viewers to believe that the same standards were achievable or appropriate

in novel services. It was the intention, rather, to impose minimum content standards in a light-touch manner.

- 3) We support fostering Media Literacy which, among other things, can advance the objectives of empowerment for parents, smart choices for children, and informed consent for adults.

Microsoft has a number of programmes of work that support equipping everyone to benefit from a Digital Britain, and would be happy to share details of these programmes with the Review team should that be useful.