Digital Britain

Creating the Skills for the Digital Economy: A summary of recommendations for action

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Following the publication of 'Digital Britain: the interim report', Lord Stephen Carter asked the Sector Skills Councils e-skills UK and Skillset to provide input to the Digital Britain work, covering:

- An assessment of productivity and skills gaps;
- An assessment of the existing education and training infrastructure;
- The case for change;
- Recommendations for action.

This paper is a summary of that input.

1. INDUSTRY PERSPECTIVE

This section sets summarises the strategic vision, sector profile and skills needs, and the case for change in relation to Skills for Digital Britain.

1.1 Strategic vision

Digital Britain is setting an ambitious agenda based on the UK's ability to fully exploit the dramatic shift to digital technology; this paper focuses on the skills needed to create Digital Britain and to create economic value from Digital Britain.

The UK needs to pursue an ambitious strategy to secure a greater share of the world's high value added work, with a vision of being a global leader in delivering value from technology and in developing creative media content. The UK must become a magnet for digital talent, and for high value technology-enabled and content-driven businesses. There is an economic imperative to generate greater wealth from the export of global technology services and from the development of world-class content which is highly dependent on skills.

1.2. Sector profile and skills needs

The creation of Digital Britain fundamentally depends on a vibrant, highly skilled workforce of Digital Professionals – the 1.1 million Digital Technology Professionals people whose job it is to create and derive value from systems, software and communications technologies, and the 0.5 million in Digital Media, whose job it is to create and derive value from content [1]. Significant skills gaps already exist across this workforce, and all available research points to significant worsening over coming years unless decisive action is taken. For example, 131,200 new entrants a year are needed to fill increasingly complex and high level roles in the Digital Technology sector alone, over a fifth of companies trying to recruit Digital Technology Professionals report difficulties in attracting applicants with the right skills, and 92% of these companies report a negative impact on their company's business as a result[2].

Further, it is notable that half of Europe's productivity gains in recent years can be attributed to IT investments[3]. However, US multinational firms are, on average, 8.5% more productive than UK domestic owned firms, and 80% of this advantage is explained by better use of IT[4]. Leading factors in achieving these productivity gains include the capabilities of leaders in the strategic management of technology and the IT-enablement of employees. There is a pressing need for increased 'Digital Economy' skills amongst the UK's 4 million leaders and managers and 'Digital Work' skills amongst the 22 million people needing to use technology in their jobs.

1.3 The case for change

The decisions taken today will have a major influence on the nation's future. There are three key reasons to act:

- **Growth of £86 billion GVA contribution**

  The UK's Digital Industries alone[5] already produce an annual Gross Value Added (GVA) of around £86 billion, 10.9% of the UK total[6]. The IT industry for example, delivers a GVA per job which is nearly three times that of the average for the UK[7]. In January 2009, the Office of National Statistics' assessment of UK GDP trends highlights only one area of growth, computing, set against an overall contraction of 1.5% in the fourth quarter of 2008. The creative industries are leading the way in developing new business models to enable strategically important growth. Action on skills to enable the continued growth of this £86 billion GVA contribution is a clear economic imperative for the UK.

- **£35 billion productivity boost**

  Fully exploiting technology is the single most powerful lever the UK can employ to achieve wholesale productivity gains right across the economy. The prize is the potential to generate an additional £35 billion of Gross Value Added (GVA) within the next decade[8]. The ability to achieve this productivity gain depends on the quality of the digital skills pool.

- **Job creation**

  In Western economies, with high labour costs and aging populations, technology and its effective application will be the primary driver of growth. It will underpin the majority of job creation most particularly the high value, wealth-creating knowledge economy roles. 1 in 20 of the UK's working population is already employed in the Digital Technology Sector[9], a near doubling of the workforce in little over a decade. If the vitality of the sector is maintained, this proportion will continue to increase over time, along with creation of new technology-intensive ('Digital Media' and 'Digital Economy') jobs throughout the economy. The ability to generate new jobs in the UK in all sectors depends on the quality of the digital skills pool.

The implementation of Digital Britain should drive the uptake of technology and content. But without strategic action on Digital Skills - technology and content - the UK will be unable to derive value from upgraded infrastructures, to sustain the high value jobs on which the whole economy increasingly depends, or to achieve the productivity gains achievable through improved access to technology and information. Increasingly, work can be sourced from any country. Countries with the best supply of skills are emerging as the global winners.

2. SKILLS POLICY

This section summarises current skills policy and its fit to the needs of Digital Britain.

The overall framing of the UK wide policy was set by Lord Leitch in his report dated 2006. The report identified skills as one of the key drivers for economic success and in the positioning of UK businesses in the global market. It was hugely influential, evidenced by the fact that the majority of recommendations are now being implemented across the UK.

The report and analysis keyed into the evident need to ensure that the working population (existing and potential) had the basic skills to perform effectively. The UK lags behind competitors in these skills and school/training attainment. Targets for literacy, numeracy and level 2 and 3 Skills (equivalent to GCSE and 'A' Level) were set as the priority to ensure the UK moved up the global skills league table and to help deliver social justice. Higher level skills were recognised as being needed to support the 'knowledge economy' but investment at this level was seen as the responsibility of employers with little support from the public purse.

In addition, Government recognised the need to address Leitch's findings which highlighted the lack of collaboration between employer demand and public investment in the supply of education and training. SSCs were asked to step up to this challenge to broker the necessary change.

2.1 Industry Influence

Over recent years there have been many systemic changes to skills policy and funding arrangements introduced by governments across the UK. However, because the overall framing for government action has focused on lower levels and basic skills, the increased influence of industry enabled by such policies has only impacted on parts of the education and training system, and has had relatively little impact for the highly skilled, knowledge economy sectors.

Below are examples where some influence is being achieved, but also where the Digital Technology and Media sectors, in general, have as yet little leverage to influence policy and funding. These examples are largely drawn from the skills system in England. Skills are a devolved policy issue and although the general themes translate, there are significant differences across the four nations in priorities and skills policy. A similar analysis can be produced for Scotland, Wales and Northern Ireland in order to progress the skills and education priorities of Digital Britain.

2.2 14-19: Schools and Colleges

At school and college level, the new Diplomas in IT and Creative Media in England and Northern Ireland have provided a vehicle for broad, industry inspired programmes of learning. They include skills development alongside understanding of processes and the development of problem solving and entrepreneurial skills. However this is but one qualification offered in schools to 14-19 year olds and industry support will be an ongoing requirement if the vision is to be sustained.

A wider UK wide Vocational Qualification reform programme provides employers with influence on qualifications such as NVQs/SVQs and technical certificates (for example BTEC or City and Guilds craft qualifications). These qualifications are mainly delivered through Further Education colleges, where most public funding for vocational training is routed. The focus is on lower level qualifications which are, in the main, not as relevant to the Digital Technology and Media sectors, given the emphasis on graduate entry level employment. There are also qualification design issues, with funding only available for the delivery of whole qualifications rather than modules and 'bite sized' learning which is required by employers.

2.3 The challenges of shaping Higher Education

The industry influence on these types of programme has been improved by government policy, and the SSCs continue to shape provision through Further Education. However, there is no similar policy in place to address the qualifications in Higher Education provision or to inform the content of degrees, each of which are validated by the individual universities. There are hundreds of degrees aimed at the digital technology and media sectors, but without an effective brokerage and means of influence, many are not delivering the content needed by the industry. The funding body (HEFCE) is not a strategic funding council, and Higher Education operates a market system to attract investment and student numbers which has relatively weak alignment to employer needs. Whilst recognising that degrees are general academic programmes, many students (and their parents) prefer to invest their money in courses they believe will lead to better employment opportunities. Employers, meanwhile, are looking for educated individuals with high level skills. Without improving alignment, investment, time and opportunity are lost.

DIUS is aware of this need and is launching a Higher Education strategy paper shortly. The department recognises the pioneering work delivered by Skillset and e-skills UK to create HE/industry partnerships, and indicate a value in SSC brokerage and the maximisation of investment from Government to meet these needs.

2.4 Apprenticeships and Internships

Across the UK, Apprenticeships are promoted as an alternative to full time Further Education and Higher Education, and new flexibilities are making them more attractive to employers. However, the current funding is, again, aimed at lower skills levels (Apprenticeships at levels 2 and 3). Skillset and e-skills UK both promote Apprenticeships at these lower levels to increase the diversity of the entry points to our industries. Both SSCs are also working on the development of Higher Level Apprenticeships, for example Apprenticeships which offer Foundation Degrees as the core qualification, so Apprentices can work and study at either Further or Higher Education level. These pilots are being funded by DIUS and HEFCE.

However the digital technology sector and the digital media sector also require Apprenticeships for graduates. These new Apprenticeships would capture the need for 'post graduation' work related training and would be designed to operate, if appropriate, across employers. A Digital Apprenticeship aimed at graduates would provide a structured and supported training

framework to convert broad, graduate level skills into the professional skills required in employment and to be successful on a contract or freelance basis.

Shorter term Internships have also been identified as a way of harnessing employer support and deepening the experience of shorter term work placements, which is particularly valuable in the current economic climate. Internships, either as part of a Higher Education course or after graduation, would incentivise a more structured approach to work experience, but without formal qualifications as part of the programme, and the development of entry level skills, experience and confidence. The more formally structured Apprenticeships for graduates and shorter Internships could be targeted at attracting a more diverse entry level pool to the sector.

2.5 Support for Businesses and Brokerage

Support for Continuing Professional Development and government funded programmes is currently delivered by Train to Gain. This brokerage service is aimed at supporting employers directly with a diagnostic and signposting service, and in the last few days, this has been pulled into a wider business support service which offers a range of business solutions. However, as explained above, in the main the current skills programmes supported by government are aimed at non-graduates with a focus on funding support for lower level skills. Arrangements to integrate sector specific needs have been developed through 'sector compacts' but again the impact is mainly on lower level skills. The service, both skills based and offering a general business support programme, is regionally delivered, with different regional arrangements and priorities and with brokerage offered by different companies. There is not a uniform, sector approach to offering brokerage or signposting at a sector level.

So while all of these developments are positive and the re-licensed SSCs will gain more responsibility to change parts of the system on behalf of their industries, it is clear that more needs to be done to meet the needs of the Digital Technology and Media sectors as critically important sectors for the UK's future.

In summary, the current DIUS policy addresses the more traditional lower level skills parts of the economy more effectively than the needs of the higher level knowledge economy. We know this 'one size fits all' approach is changing and will, we hope, be able to also, in future, allow for focus on higher level skills and support for businesses in growing, strategically important sectors.

3. ISSUES AND RECOMMENDATIONS

This section summarises the key issues to be addressed and corresponding recommendations for action to realise the strategic vision set out in section 1. Annex A provides specific proposals to implement these recommendations.

3.1 Ensure a healthy pipeline of talent into the workforce

Careers

- For both Digital Technology and Digital Media sectors, there are significant gaps in the provision of accurate careers information, advice and guidance. Students at all levels, and adults within and outside the workforce, are not receiving the high quality advice needed to understand the opportunities across the Digital Sectors and make appropriate subject and career choices.

> *Recommendation 1.1: Promote 'Digital Careers'* with a coherent programme that transforms the understanding and attitudes of young people and which signposts adults to appropriate training.

Degrees

- There are not enough courses aligned to industry needs in the areas of employment growth. For both Digital Technology and Digital Media, barriers remain in creating cross-disciplinary pathways in education that would add significant value. For Digital Technology Professionals, there is strong demand from employers for more degree courses to reflect the need for the professionals of the future to have greater levels of business competencies as well as deep technical capability. For Digital Media Professionals, there is a need to bring students together across disciplines to collaborate, innovate and pursue new Research and Development and offer CPD programmes. Across the whole Digital Professional area, industry needs to be more engaged with Higher Education to help shape provision, support delivery and provide work experiences that enable graduates to become more work ready.
- The number of UK applicants to Computing degrees has fallen by 50% in the last five years down to only 13,500 people a year, despite the importance of this subject as a source of talent into the 1 million strong and growing Digital Technology Professional workforce. There are three particular issues:
  - The 14-19 technology curriculum: neither IT-related A-levels or GCSEs are respected by employers or Higher Education, and disjoints in terms of progression are evident through the system. The ICT GCSE is a primary cause of the decline in student interest in IT-related education and careers.

- 14-19 teaching: many teachers without relevant qualifications are teaching the subject, and the lack of teacher skills in this area are widely recognised, including by government, as a major inhibitor to a high quality educational experience.
- STEM policy: technology is typically not included within STEM policy, meaning that, for example, there is no strategic support for technology degrees through Additional Student Numbers or exemption from the Equal or Lower Qualifications policy.

Recommendation 1.2: Enable increased alignment of university provision with industry need, including expanding student places on degrees with sector-approved technology content and digital media content; and supporting SSCs in brokering sector-wide partnerships (multiple employers / multiple universities) to create curricula which support sector growth, including cross-fertilisation between disciplines.

Recommendation 1.3: Address inhibitors to the uptake of technology-related degrees with a particular focus on the technology curriculum in schools and the skills of teaching staff.

3.2 Support the growth of entry level employment

- The Digital Professional workforce needs strategic support to stimulate increased investment in entry level skills. This will require changes and additions to the policy that restricts Apprenticeships to only those without a Level 4 qualification already; this is a major inhibitor to uptake in a sector which has a predominantly graduate workforce, and where most graduates entering the sector do not have a relevant degree and need extensive training in their first job.

Recommendation 2: Launch Apprenticeship and Internship programmes for graduates entering Digital Professional careers. Complementing current Apprenticeship policy, these programmes would enable graduates to undertake employer-designed Apprenticeships for graduates and shorter-term Internships, with flexible training content that meets industry needs.

3.3 Accelerate the development of the existing workforce

- Because of the dependence on higher level skills, the Digital Technology and Digital Media sectors are almost entirely unsupported by current government skills policy and funding. Investment by the industry should be incentivised and grown with a change of emphasis to:
  - enable funding for higher level skills for the digital sectors;
  - enable funding for 'bite size' learning and learning credits;
  - establish an investment programme of mixed funding from public sector, private sector, employers and individuals.

Recommendation 3: Launch a Digital Professional Skills Development Fund. Complementing the current lower skills policies, this fund should, through a highly flexible approach to supporting strategic skills with public funding, accelerate the development of the strategic, higher level skills of Digital Professionals needed to fuel growth across the economy.

3.4 Invest in the capability of businesses to add economic value

- Innovative approaches, involving employers supporting employers, are needed to help small companies develop the capability to fully exploit technology. Traditional skills development approaches tend not to be appealing to SMEs and it is necessary to lead into increased skills via business productivity cases and support tools.

Recommendation 4: Establish strategic priorities for government support for small businesses in all sectors in relation to Digital Britain, including the capability of small companies to exploit digital technologies and the development of sustainable digital businesses.

3.5 Invest in the capability of individuals to add economic value

- There are large communities of IT users needing special focus in terms of upskilling, from entry level to level 3 plus, but funding attached to 'full NVQ' programmes will typically not work as employers may not commit the time for a full NVQ that is not job specific. Targeted funding for flexible upskilling is needed.

Recommendation 5: Provide flexible support for the Digital Work Skills of priority groups, whose skills gaps are holding back company productivity or personal employability.

ANNEX A: IMPLEMENTATION PLAN

This Annex provides specific proposals to implement the recommendations set out in Section 3.

Whilst the issues and high level recommendations are largely common across both e-skills UK's and Skillset's footprint, the solutions needed are often different by sector. The following table summarises the proposed solutions, organised by recommendation and lead SSC; the SSCs would work in partnership to maximise synergies where appropriate and there are a number of suggestions listed below which will facilitate cross SSC activity to support successful implementation.

The proposals below build on work already underway by employers working with government and education via the Sector Skills Councils, as well as introducing new innovation.

SKILLS FOR DIGITAL BRITAIN: RECOMMENDED IMPLEMENTATION PLAN AND PROPOSED BUDGETS			
Recommendation		**Solutions - Digital Technology (e-skills UK-led)**	**Solutions - Digital Media (Skillset-led)**
1. Ensure a healthy pipeline of talent into the Digital Professional workforce			
1.1	Promote Digital Careers.	Turn the employer-backed 'BigAmbition' programme from a successful pilot into a major national programme which changes the attitudes of a generation of 14-19 year olds towards technology-related degree courses and careers. Enable students in every school in the UK to benefit from CC4G as a girl - boy, and family-friendly educational programme which inspires 10-14 year olds to learn about technology.	Develop and provide an online careers service for young people and adults aiming to work in the digital media sectors providing an email response service for careers enquiries. This will link to existing sources of information and relate to careers across digital technology and media sectors. For those already in work, run a helpline and direct signposting service and a referral system to the professional careers advice and guidance service Skillset has established. Offer face to face sessions to those made redundant or changing careers or moving across sub-sectors.
1.2	Enable increased alignment of university provision with industry need.	Through the application of Additional Student Numbers and exceptions to the 'Equal or Lower Qualifications' policy, support the expansion of degrees with sector-approved technology content, including e-skills UK's Information Technology Management for Business degree. Support the development of new models of undergraduate provision and curricula for other priority growth areas of the sector, along with work to encourage cross-fertilisation between	Support Skillset in establishing a brokerage service to facilitate employer HE engagement. Develop practical projects to support employer/HE engagement including; a work experience database, online booking system for master classes, mentoring and other employer support. Transform digital media higher education by creating digital hubs whereby a small number of Skillset Media Academies are supported to create cross disciplinary learning environments, instigate research and development across digital media sub

		technology and other disciplines.	sectors to explore new business models and to create new curricula and bring together creative and technical specialists. Provide funding for industry approved specialist degrees, particularly at postgraduate level, to support the development of specialist skills required across the Digital Media sectors.
1.3	Address inhibitors to the uptake of technology-related degrees.	Reform the technology curriculum in schools in order to transform uptake of technology-related degrees. Deliver a step-change in the skills of teachers of IT for 14-19 year olds, including a comprehensive, UK-wide upskilling programme supported by employers and universities, and new incentives to attract teachers into this discipline.	
2. Support the growth of entry level Digital Professional employment in the UK			
	Launch an Apprenticeship and Internship programme for graduates entering Digital Professional careers.	Develop, promote and establish collaborative delivery partnerships for Apprenticeships and Internships for graduates entering priority Digital Technology roles.	Develop, promote and establish collaborative delivery partnerships for Apprenticeships and Internships for graduates entering priority Digital Media roles.
3. Expedite the development of the UK's Digital Professionals			
	Launch a Digital Professional Skills Development Fund	Leverage the fund, via the National Skills Academy for IT, to increase investment in higher level strategic skills for the Digital Technology sector. This will include: - A co-funding offer for priority skills; - The development of, and funding eligibility for, new short courses for upskilling and career changers; - Enabling greater participation in professional CPD by the Higher Education sector.	Leverage the fund for provision through the UK network of Screen and Media Academies and industry training providers and employers, to increase investment in higher level strategic skills for the Digital Media sector. This will include: - A co-funding offer for priority skills; - The development of, and funding eligibility for, new short courses for upskilling and career changers; - Pioneering programmes of creative and technical work-based study to address cross-platform content development; - Enabling greater participation in professional CPD by the Higher Education sector.

4. Invest in the capability of businesses to add economic value			
	Establish strategic priorities for government support for small businesses.	Enable a step change in the 'Digital Economy Skills' of smaller companies, increasing the capability of SMEs to understand and exploit digital technologies for increased business competitiveness by embedding the Business IT Guide in the BERR led "Transformational ICT" pilot delivered through the Regional Development Agencies.	Support the development of sustainable digital businesses through cross industry collaborative research into emerging digital business models, intellectual property, routes to market, high level business skills and business mentoring and training for creative leaders and managers.
5. Invest in the capability of individuals to add economic value			
	Provide flexible support for the Digital Work Skills of priority groups.	Invest in the upskilling of the Digital Work Skills for priority groups, in particular older workers, with targeted, highly flexible LSC funding and a new project supported by employers and unions.	

Working together we will:

- Develop a Cross Careers Service promotion campaign
- Cross promote relevant CPD and career pathways
- Work with Research Councils and TSB to target funding at innovation within both technical and creative content and services across HE and industry
- Seek to commission research with HE to further understand new markets and business models
- Jointly develop models for and promotion for Apprenticeships and internships
- Develop approaches to cross sector and cross disciplinary 'Digital Hubs' through Skillset Academy Network and e-skills NSA and new partners where appropriate
- Drive technical and creative industry support and investment
- Set CPD priorities which reflect Digital Britain's workforce needs and where relevant, support cross industry provision

ANNEX B: DIGITAL SECTORS WORKFORCE

This Annex provides further information on terminology and definitions used with this document.

B1 Sector Skills Councils overview

e-skills UK is responsible for the Digital Technology Sector (the Digital Technology Industry and Digital Technology Professionals in all sectors). This includes those involved with:

- Business services such as consulting, business process re-engineering and change management;
- IT services including solution design, systems integration, internet and web;
- Software development including applications and games;
- IT operations including information management, security, service delivery and systems maintenance;
- Networking and communications, including mobile and fixed line telecommunications;
- IT project and supplier management.

e-skills UK also takes the lead on the IT-related skills needs of business leaders and managers and of individual workers in all sectors.

Skillset is responsible for the skills and business support needs of the Creative and Digital Media industries which comprises of Film, TV, Animation, Photo Imaging, Computer Games, Publishing, Radio, Interactive Media and Facilities. It includes the following occupational areas:

- Film: Production, Post production, Distribution, Exhibition
- Television: Broadcast, Cable and Satellite, Independent Production and Community
- Other Content Creation: Commercials, Corporate Production, Pop Pomos
- Radio: Public, Commercial
- Animation
- Interactive Media: Content Creation and Design, Infomatics and IT, Database and Services
- Games
- Facilities: Post Production, Studios, Outside Broadcast, Equipment Hire, System Integration

- VFX/ Commercials, Special Physical Effects.
- Publishing: Books, Journals, Newspaper, News Agencies, Magazines and Business Media, Directories and Databases.
- Photo Imaging: Photography, Labs and Processing, Picture Libraries, Photo retail, Manufacture, Support Services

B2 Terminology

Terminology	Definition
Professionals	
Digital Professionals	Digital Technology Professionals in all sectors and Digital Media Professionals in all sectors.
Digital Technology Professionals	Those in Digital Technology occupations in all industries as defined by SOC code (IT & Telecommunications occupations).
Digital Media Professionals	Those in Digital Media occupations in all industries (advertising; video, film & photography; publishing; radio & TV occupations).
Industries	
Digital Technology Industry	The Digital Technology Industry vertical as defined by SIC code (IT & Telecommunications industry vertical).
Digital Media Industry	The Digital Media Industry vertical (advertising; video, film & photography; publishing; radio & TV industries).
Digital Industries	The Digital Technology Industry plus the Digital Media Industry.
Creative Industries	Digital Media Industry plus software, computer games & electronic publishing; architecture; art & antiques; crafts; design and designer fashion; music and the visual & performing arts.
Sectors	
Digital Technology Sector	The Digital Technology Industry plus the Digital Technology Professionals in other industries.
Digital Media Sector	The Digital Media Industry plus the Digital Media Professionals in other industries.
Digital Sectors	The Digital Technology Sector plus the Digital Media Sector.

[1] Advertising; video, film & photography; publishing; radio and TV.

[2] Technology Counts: IT & Telecoms Insight 2008, e-skills UK

[3] 'It ain't what you do it's the way that you do I.T. Testing explanations of productivity growth using US affiliates.' Nick Bloom, Raffaella Sadun and John Van Reenen, Centre for Economic Performance, London School of Economics.

[4] 'IT investment, ICT Use and UK Firm Productivity', Rafaella Sadun, Shikeb Farooki, Giles Gale, Mark Lever, Office for National Statistics.

[5] See Annex B for definitions

[6] Office for National Statistics (ONS) Annual Business Inquiry 2009.

[7] Annual Business Inquiry 2006.

[8] Technology Counts: IT & Telecoms Insights 2008, e-skills UK

[9] The IT industry, the Telecoms industry and IT professionals in other industries.