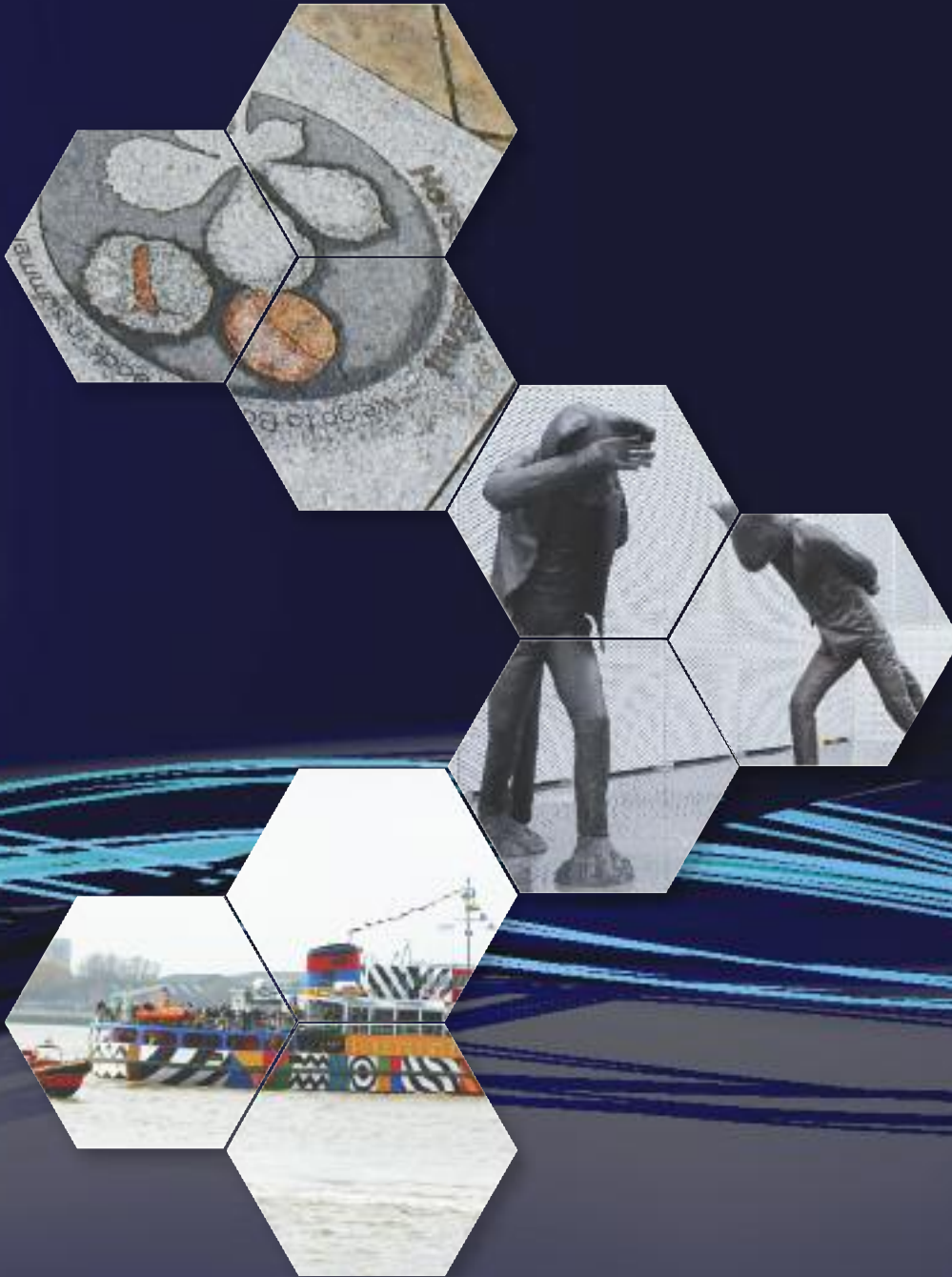




# Liverpool City Region Skills for Growth



**DIGITAL AND CREATIVE**  
A Skills for Growth Agreement



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**“If you want an F1 car for the street, you can’t do better than this”**

Jay Leno on the design of the Liverpool made BAC Mono



## Summary

Liverpool City Region is one of the UK’s fastest growing hubs for digital companies and has long been recognised globally for creativity in sciences and the arts. The City Region has:

- Circa 26,000 people employed in Digital and Creative sectors in the Liverpool City Region, with just over half (57%) based in Liverpool itself;
- High levels of freelance work and micro enterprises;
- A relatively young workforce, with a growing set of digital skills across multiple media and programming platforms; and
- 75% of digital jobs in one of IT Management, Analysis, Programming, Systems or Web design.



**“If you’re not prepared to be wrong, you’ll never come up with anything original”**

Liverpool born Educationalist  
Sir Ken Robinson



# Sector definition and job numbers

The following table shows the definition of the Digital and Creative Sector used for producing the Agreement. It is in line with best practice nationally and as a City Region. The definition is broad and includes IT programming/consultancy, publishing/media and arts/culture. It doesn't include call centre operations, with the exception of any parts of a call centre business involved in IT programming (as opposed to IT helpdesk operations, which aren't included).

DIGITAL AND CREATIVE BUSINESS UNITS AND EMPLOYMENT BY SUB-SECTOR, LCR 2013

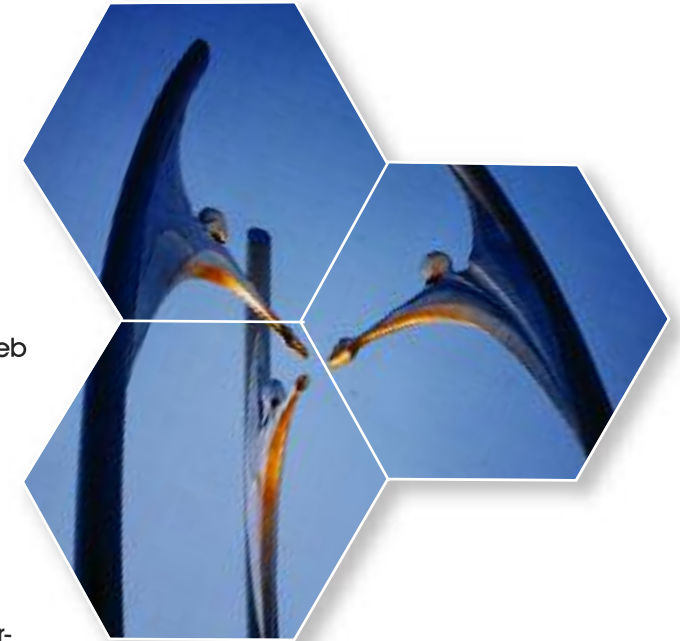
SIC Code	Description	Business Units	Employment
<b>DIGITAL SUB SECTOR</b>			
60	Programming and broadcasting activities	15	105
61	Telecommunications	180	3,228
62	Computer programming, consultancy and related activities	1,355	5,451
63	Information service activities	95	1,419
<b>Total</b>		<b>1,645</b>	<b>10,203</b>
<b>CREATIVE SUB SECTOR</b>			
58	Publishing activities	110	7,122
59	Motion picture, video and television production	120	7,123
73	Advertising and market research	235	811
74	Other professional and technical activities*	875	3,002
90	Creative, arts and entertainment activities	290	1,480
91	Libraries, archives and museums	105	1,657
95	Repair of computers and household goods	140	730
<b>Total</b>		<b>1,875</b>	<b>21,925</b>
<b>DIGITAL &amp; CREATIVE TOTAL</b>		<b>3,520</b>	<b>32,128</b>

Source: ONS (2013) BRES and UK Business Counts - Local Units. \*includes design, photography and translation

# Skills characteristics

In our City Region, the Digital and Creative Sector has:

- High levels of **self-employment and freelancing**
- Skills frequently sourced from within 'known networks'
- **IT Managers, Analysts, Programmers, Systems and Web design** constituting nearly three quarters of jobs in the digital sub sector
- A relatively young workforce profile with around 64% being under the age of 45, compared 59% for the whole economy. However, there are relatively fewer workers under the age of 25. (UKCES national figures)
- **2,900 students securing an A Level in Creative sector-related qualifications** (Design & Technology, Computer Studies, ICT, Art & Design, Drama, Music, Film and TV studies, other communication studies and music) in 2011/12
- **5,078 first year students** studying courses with digital or creative content<sup>1</sup> across the City Region's three Higher Education institutions (University of Liverpool, Liverpool John Moores and Hope University) plus nearby Edge Hill University (HESA 2011/12)



<sup>1</sup> These are taken to comprise: Computing (computer science; information systems; software engineering, artificial intelligence); Architecture & landscape design; Information Services (publicity studies, media studies, publishing, journalism, others in mass communication); and Music, performing and visual arts (fine art, design studies, music, dance, drama, cinematics & photography, crafts, imaginative writing and others in creative arts and design)

# Skills demand

The demand for skilled labour is forecast to increase over the next decade, potentially creating a further 4,000 jobs by 2030 in the Liverpool City Region. Key market drivers of demand include:

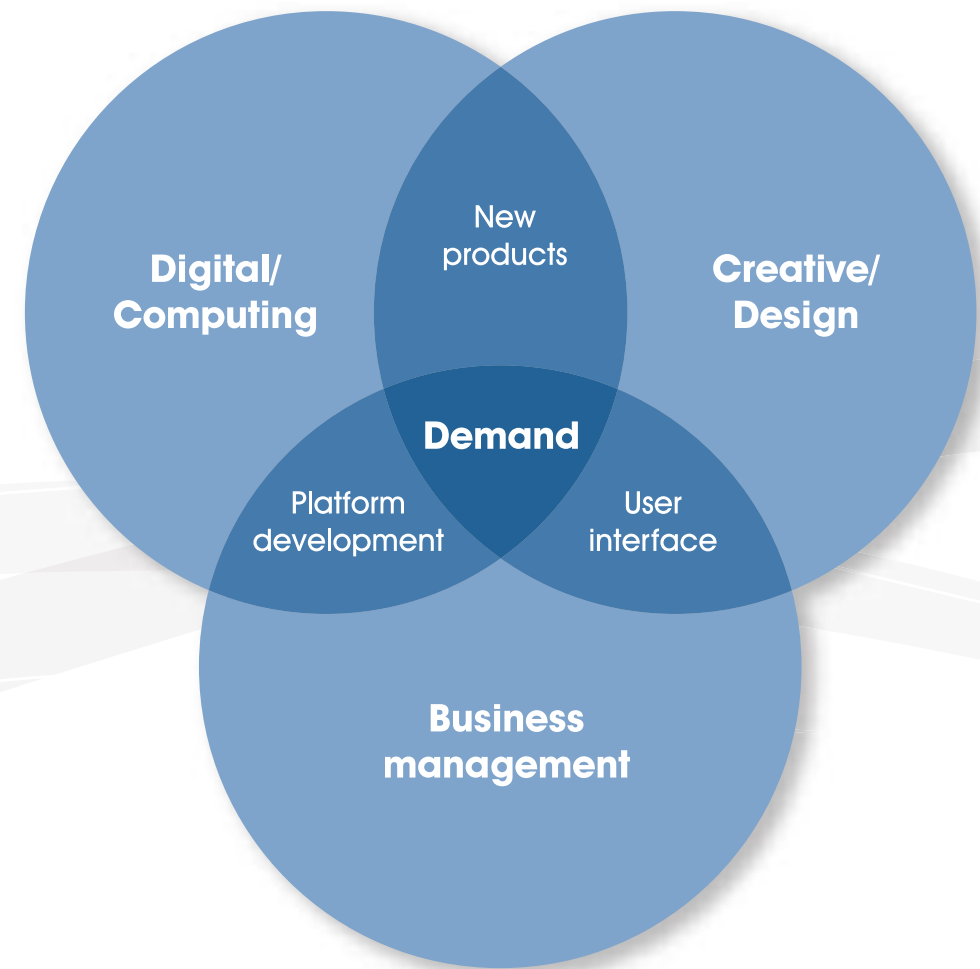
- Computer security and data protection; software and applications to exploiting cloud computing; and communication and IT convergence
- Coding for 'digital fluency'; contributing to animation (artists and graphic design), visual effects and website development; and business management and analytical skills able to commercialise new technology and products
- Team working skills across technology platforms; strong creative and design skills and the ability to explain ideas to clients



# Skills challenges

As a City Region, our key digital and creative skills challenges are:

- Creating a skills offer that is both credible and responsive to the specific needs of the market
- Meeting a 'fusion' challenge welding together technical computing and creative skills to create new digital products and services (Creative Skillset<sup>2</sup>)
- Working with many Digital and Creative employers' preference for competence over qualifications - creating a challenge for skills planning
- Best utilisation of the wide availability of learning materials, self-start guides and open markets in the development of digital products



<sup>2</sup> Creative Skillset is the skills body for the creative industries. See Fusion Skills: Perspectives and Good Practice. Available: [www.creativeskillset.org](http://www.creativeskillset.org)

# Headline actions

1. **Building confidence and communication** - address the mismatch of expectations between employers and learning providers on the role of training for skills in Digital and Creative careers.
  - Build on existing networks and relationships with digital and creative organisations to better understand their current and future skills needs.
  - Arrange a **Digital and Creative sector conference** to discuss how medium and long term skills needs are met.
  - Identify **Apprenticeship Ambassadors** for the sector (via the Apprenticeship Hub).
2. **Recognise the importance of experience** - bring problem solving skills and the ability to apply learning in practice to the fore to address a key requirement of employers.
  - Build the credibility of qualifications by increasing the 'real world' content in training at all levels through developing an online resource of practice projects and materials donated by business.
  - Establish an annual Liverpool City Region competition for 14-18 year olds to bring new digital and creative products to market.
3. **Fusion skills** - respond to an increasing demand by employers for skilled workers to demonstrate that they can combine digital and creative disciplines.
  - Invite Providers to detail to the Employment and Skills Board how they are '**fusing**' training provision to combine digital and creative learning.

Address the mismatch of expectations between employers and learning providers on the role of training for skills in Digital and Creative careers.

An annual Liverpool City Region competition for 14-18 year olds to bring new digital and creative products to market.

4. **Learners as co-producers of skills** - support individuals wanting to enter the sector to take the lead in developing new skills and experience: drawing from online learning materials (e.g. massive online open courses), guides to software design and opportunities to directly access the market.

# Sector briefing - Digital and creative sector

The Digital and Creative sector is a vital and highly productive area of the UK economy. The digital sub-sector comprises technology, software and the platforms through which information is managed and shared. The creative sub-sector includes a wide range of activity such as production of broadcast content, computer games, design, publishing and cultural activity. An important feature of sector development has been the convergence of digital and creative activity, which has both expanded the potential market for business and had important implications for skills.

The Digital and Creative sector makes a substantial contribution to the national economy, with a net output in 2010 of £92 billion; equivalent to 8% of the UK's total output.<sup>3</sup> The sector has been growing significantly over the last decade and has been particularly effective in accessing global markets. The CBI estimate<sup>4</sup> that Digital and Creative sector business contributes around 10.6% of UK exports into an expanding global market.

UKCES report<sup>5</sup> that the Digital and Creative sector has an employment base of 1.9 million nationally which is 6% of UK employment. As a major exporter, the UK sector is ranked sixth in the world in terms of its competitiveness. The productivity of workers is high with UKCES reporting that the digital sub sector has GVA per head three times higher than the UK average for all workers and GVA is also above average per head in the creative sector. Additionally UKCES identify that employment and output in the sector is forecast to rise.<sup>6</sup> Output is growing faster than employment, which suggests efficiency gains through use of technology and streamlining of production processes.

The Digital and Creative sector is dominated by micro and small business operations supported by high proportions of self-employment, when compared to other sectors. A distinctive functional feature of the sector is its operation through project teams - where micro businesses and specialist freelancers come together for a project and disband at its completion to join other project

The digital sub-sector comprises technology, software and the platforms through which information is managed and shared.

The creative sub-sector includes a wide range of activity such as production of broadcast content, computer games, design, publishing and cultural activity.

The Digital and Creative sector is dominated by micro and small business operations supported by high proportions of self-employment, when compared to other sectors.

groups. This highlights both the dynamism of the sector and the importance of high quality technical skills, effective project and programme management, access to networks and the application of communication skills.

<sup>3</sup> UKCES (2012)  
<sup>4</sup> CBI (2014)  
<sup>5</sup> UKCES (2012)  
<sup>6</sup> Ibid



The prospects for the sector are strong with the CBI reporting<sup>7</sup> that expanding high-speed broadband infrastructure and the availability of on-line 'App Stores' offer an important opportunity to small and agile Digital and Creative businesses to develop, advertise and sell new products globally. Operating direct to market, small digital and creative businesses are able to both retain higher levels of profit and IP rights. This opportunity accentuates the need for direct access to finance for product development and skills in order to maintain competitiveness.

## Liverpool City Region

The Liverpool City Region has identified the Digital and Creative sector as a key economic driver,<sup>8</sup> contributing significantly to economic output and reinforcing the global brand and position of the City Region. With an employment base of some 26,000 people across 3,500 business units the sector has a significant economic presence.

The City Region has a depth of business activity across the Digital and Creative sector supported by a learning and support infrastructure. This includes Liverpool Innovation Park and Liverpool Science Park that provide space and support for Digital and Creative businesses; facilities at Liverpool John Moores University and Hope University for Digital and Creative firms that enable knowledge transfer, contribute to the skills base and provide incubation space; and established partnership arrangements including Merseyside ACME and the Liverpool Arts and Regeneration Consortium (LARC).

These facilities, combined with the growing attractiveness of the City Region to graduates and start up business, are an important economic asset. A comparative study of the major Northern Cities in 2009<sup>9</sup> highlighted the strong appeal of the City Region and Liverpool City Centre as a place to live as well to start Digital and Creative enterprises. The combined benefits of a high quality social environment, good infrastructure (digital, transport and housing), graduate skills and a tradition of enterprise have been demonstrated as key ingredients for successful Digital and Creative clusters.<sup>10</sup>

A key challenge for the Digital and Creative sector is creating a labour market that is able to meet the needs of dynamic and skill intensive businesses. In common with other technology rich sectors in the City Region economy, employers require workers to have strong STEM skills (science, technology, engineering and mathematics) as a basis for

The Liverpool City Region has identified the Digital and Creative sector as a key economic driver.

employment in digital industries; arts and language for creative sector; and across all areas, business and enterprise skills. Beyond the generic needs of employers the delivery of skills for Digital and Creative needs to reflect that a majority of businesses are very small and operate within a fast moving market. This has important implications for how training is designed and delivered if it is to contribute to deepening the pool of talent available to employers.

## Digital and creative sector composition

The definitional boundary between digital activity and creative activity is unclear, with significant levels of overlap and convergence, in practice, between the categories used in official data. There is also an important distinction between what could be defined as digital and creative skills, which are present across a range of sectors and occupations, and digital and creative businesses, which are defined more specifically by industrial codes. In order to utilise national datasets, the definitions of Digital and Creative business sector used by the UK Commission for Employment and Skills (UKCES) has been adopted, as shown in figure 1. While this creates some limitations to fully capturing the scale and cross-sectoral importance of digital and creative activity, it does allow for comparison and analysis, which is important for the Skills for Growth Agreement.

FIGURE 1  
SECTOR DEFINITION

DIGITAL		CREATIVE	
SIC	Description	SIC	Description
61	Telecommunications	58	Publishing activities
62	Computer programming, consultancy and related activity	59	Motion picture, video and television production
63	Information service activities	60	Programming and broadcasting activities
95	Repair of computers and household goods	73	Advertising and market research
		74	Other professional and technical activities*
		90	Creative, arts and entertainment activities
		91	Libraries, archives and museums

Source: UKCES (2012) \*includes design, photography and translation

Figure 2 shows data on the number of business units and employees for Digital and Creative sub-sectors for Liverpool City Region. This highlights that the largest sub-sector for business units is computer programming, consultancy and related activities. This sub-sector constitutes over one third of all businesses and one sixth of jobs.

FIGURE 2  
DIGITAL AND CREATIVE BUSINESS UNITS AND EMPLOYMENT BY SUB-SECTOR, LCR 2013

SIC	Description	Business units	Employment
58	Publishing activities	110	7,122
59	Motion picture, video and television production	120	7,123
60	Programming and broadcasting activities	15	105
61	Telecommunications	180	3,228
62	Computer programming, consultancy and related activities	1,355	5,451
63	Information service activities	95	1,419
73	Advertising and market research	235	811
74	Other professional and technical activities	875	3,002
90	Creative, arts and entertainment activities	290	1,480
91	Libraries, archives and museums	105	1,657
95	Repair of computers and household goods	140	730
<b>Total</b>		<b>3,520</b>	<b>32,128</b>

Source: ONS BRES and UK Business Counts - Local Units

<sup>7</sup> [www.cbi.org.uk/about-the-cbi/business-voice/february-march-2014/creative-industries-gaming/](http://www.cbi.org.uk/about-the-cbi/business-voice/february-march-2014/creative-industries-gaming/)

<sup>8</sup> Liverpool LEP (2009)

<sup>9</sup> Northern Way (2009)

<sup>10</sup> See for example Chapain et al (2010)

## Digital and creative employment

National data indicates that there are 26,000 people employed in Digital and Creative sectors in the Liverpool City Region. The largest share of sector employment (57%) is found in Liverpool, followed by Halton which has 14% of employment. When broken down by sub sector for each of the City Region local authority areas, a differential pattern emerges that shows concentrations of activity. Caution is needed in using this data as some of the sub sectors of business activity have relatively small numbers of people employed. The data does, however, illustrate the different structures of sector employment within local authority areas and concentrations of City Region employment.



The largest share of Digital and Creative employment is in Liverpool (57%).

FIGURE 3 DISTRIBUTION OF DIGITAL AND CREATIVE EMPLOYMENT BY SUB SECTOR AND LOCAL AUTHORITY AREA, LCR 2013

	Halton %	Knowsley %	Liverpool %	Sefton %	St Helens %	Wirral %	LCR %	GB %
Publishing Activities	2.0	9.9	39.2	6.2	28.4	17.8	27.3	8.3
Motion Picture, and TV Production	1.4	0.2	5.9	4.2	2.6	2.1	4.3	5.4
Programming and Broadcasting	0.0	0.0	0.7	0.0	0.0	0.1	0.4	2.4
Telecoms	35.3	31.6	9.2	5.4	3.4	2.8	12.4	12.5
Computer Programming and Consultancy	38.7	17.6	13.3	28.0	24.9	31.4	20.9	33.4
Information Services	1.2	7.2	6.8	8.6	1.2	3.5	5.4	3.7
Advertising and Market Research	1.9	4.1	2.2	7.0	6.9	3.9	3.1	10.5
Other Technical activities	6.8	9.7	8.8	22.4	13.5	23.9	11.5	10.1
Creative, Arts and Entertainment	0.8	2.8	7.3	8.3	2.7	4.3	5.7	5.5
Libraries, Archives and Museums	3.4	13.2	6.1	4.9	8.7	8.8	6.3	5.4
Repair of Computers	8.5	3.5	0.6	5.0	7.7	1.5	2.8	2.9
<b>Total</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>

Source: ONS BRES (2013)

The employment base is complex in this sector, with both traditional forms of employment where individuals are working within multi-person businesses; sole traders / self-employed workers operating as freelancers; and single person businesses employed through agents or as an associate group to minimise operating costs. Creative Skillset, at a national level indicates high level skills constituting around 25% of the creative media workforce.<sup>11</sup> Analysis of data for Liverpool City Region suggests that the highest proportions of self-employment / freelancing are in motion picture, video and music production; creative arts and entertainment; and repair of computers.

### Open Labs

[www.ljmu.ac.uk/about-us/facilities/faculty-of-arts-professional-and-social-studies/open-labs](http://www.ljmu.ac.uk/about-us/facilities/faculty-of-arts-professional-and-social-studies/open-labs)

Focusing on next generation technologies, Open Labs work with a number of companies on a range of projects with investment from the European Regional Development Fund (ERDF). One company helped through Open Labs is **Scrapewiki**, a company based at Liverpool Science Park with a web-based platform where data scientists can collaboratively discover, get, clean and visualise data sets. Founder and marketing director of Scrapewiki, Aine McGuire said:

"We have been working with Open Labs since 2011 and this relationship is proving invaluable in helping us to grow our business and in helping us move into new sectors.

"More recently we have been working with the academics in LJMU's Centre for Public Health and as a result of this collaboration, we are getting opportunities to work on projects that have the potential to help us scale for global audiences and opportunities."

Lindsay Sharples, Director of Open Labs, said:

"It's great to be based right at the heart of Liverpool's thriving knowledge quarter.

"Our mission is to link the vibrant community of Merseyside businesses with leading academics at the University and the Science Park offers the perfect location to base ourselves."

<sup>11</sup> Creative Skillset (2011)

## Digital and creative business units

National data indicates that there are 3,520 business units in the Digital and Creative sector located within the Liverpool City Region. The largest concentration of businesses is in Liverpool, which accounts for over one third of firms (34.4%). Key locations for Digital and Creative businesses in Liverpool are Baltic Triangle, the Knowledge Quarter, Liverpool Science Park and Ropewalks. This core of Digital and Creative activity is complemented by key clusters in Daresbury, Southport, Birkenhead and St Helens.

There are some notable differences in the distribution of business activity within the City Region as shown in figure 4. While the City of Liverpool has the greatest overall share of business units in the Digital and Creative sector, it has the lowest proportion of computer programming and consultancy firms (33.5% compared to a high of 52.5% of business units in Halton). The City of Liverpool however has the highest proportions of businesses in both the motion picture and video production sub sector and the creative arts and entertainment sub sector when compared to the other City Region local authority areas. This highlights a spatial functionality within the City Region that is important both to the performance of the sectoral cluster and with regard to skills, the targeting of training provision.

FIGURE 4 SPATIAL DISTRIBUTION AND CHANGE IN BUSINESS UNITS, DIGITAL AND CREATIVE SECTOR, LCR 2013

	Business units	%	Change 2011-13 %
Halton	305	8.7	7.0
Knowsley	200	5.7	11.1
Liverpool	1,210	34.4	15.2
Sefton	670	19.0	3.9
St Helens	325	9.2	3.2
Wirral	810	23.0	13.3
<b>LCR</b>	<b>3,520</b>	<b>100</b>	<b>10.2</b>

Source: ONS UK Business Counts - Local Units, 2013



Comparing the current spatial distribution of businesses with previous years' data shows that the number of business units in the Digital and Creative sector has grown since 2011 by 325 firms or 10.2%. The largest growth areas have been in information service activities (26.7%), repair of computers (16.7%) and other professional, scientific and technical activity (15.9%). Across the City Region, the majority of growth has taken place in Liverpool, but notably has also been significant in Wirral.

The form of business unit differs when Digital and Creative sub sectors are compared. As shown in figure 5 sole proprietors are more prevalent in creative sector activity than among businesses categorised within the digital sub sector. The highest proportion of sole proprietors is among creative, arts and entertainment businesses (29.8%) and Repair of computers and household goods (21.4%).

As can be seen in figure 6 the majority of all businesses categorised as Digital and Creative are small, with nearly 90% of firms employing fewer than 5 people. When compared with all businesses in the City Region economy Digital and Creative has a larger proportion of micro firms (0-4 employees) with almost nine out of ten of this size compared to an average of 71%. This characteristic follows throughout the sector with significant lower proportions of medium and large businesses.

The large number of micro enterprises is an important characteristic of the sector affecting both business operation and the demand for skills. A key message from businesses in the City Region, consulted as part of the production of this agreement, is that the small size means that digital and creative firms have limited capacity to deliver workplace training and therefore rely on employees with a balance of skills able to contribute to business activity.

FIGURE 5  
BUSINESS COUNT BY LEGAL STATUS - DIGITAL AND CREATIVE, LCR 2013

	Total	Company %	Sole Proprietor %	Partnership %	Non-Profit %
Digital	1,770	93.1	5.7	1.1	0.0
Creative	1,750	78.7	15.2	2.7	3.4

Source: ONS UK Business Counts - Local Units 2013

FIGURE 6  
DIGITAL AND CREATIVE SECTOR BUSINESS BY EMPLOYMENT BAND, LCR 2013

SIC	Description	Employees %			
		0-4	5-9	10-19	20-49
58	Publishing activities	73.7	21.1	5.3	0.0
59	Motion picture, video and television production	95.5	4.5	0.0	0.0
60	Programming and broadcasting activities	100.0	0.0	0.0	0.0
61	Telecommunications	87.0	8.7	4.3	0.0
62	Computer programming, consultancy and related activities	91.6	4.6	1.9	1.9
63	Information service activities	87.5	12.5	0.0	0.0
73	Advertising and market research	80.4	15.2	4.3	0.0
74	Other professional and technical activities	91.6	6.0	1.8	0.6
90	Creative, arts and entertainment activities	90.9	7.3	1.8	0.0
91	Libraries, archives and museums	100.0	0.0	0.0	0.0
95	Repair of computers and household goods	88.0	8.0	4.0	0.0
<b>Total</b>		<b>89.1</b>	<b>6.7</b>	<b>2.3</b>	<b>1.4</b>

Source: ONS UK Business Counts - Enterprises 2013

### Sci-Tech Daresbury

[www.sci-techdaresbury.com/](http://www.sci-techdaresbury.com/)

Daresbury is one of two national Science and Innovation Campuses (the other being at Harwell in Oxfordshire). The Campus sets out to be internationally-recognised for world-class science, innovation and enterprise and to support successful collaborations that will help to deliver this as well as create prosperous, knowledge-based businesses and high skills jobs.

Of the almost 100 companies on Campus, the four key sectors represented are healthcare, advanced engineering, digital/ICT, and energy and environmental technologies. There are around 40 companies from the digital sector at Daresbury, spanning software development, mobile and web-based technologies, and ranging from start-ups through to strategic business units of international companies such as IBM, Data Direct Networks and Tech-X. Digital companies are supported by the high-speed internet access on site providing 100MB per second connection.



# Digital and creative skills profile

The Digital and Creative sector has a particular demand for skilled and highly flexible workers who are able to contribute to small businesses operating in a large and fast moving, global market. Alongside competition for talented individuals, businesses in the sector value employees that can adapt their skillset to meet emerging demands and market opportunities.

Creative Skillset<sup>12</sup> describe this challenge as 'fusion', where technical computing and creative skills are being welded together in order to create new digital products and services. This demand has implications for the skills profile of the sector and learning choices of individuals seeking to combine training across disciplines; the recruitment and investment choices of businesses and the specific skills they value most; and curriculum design of providers in merging previously discrete areas of learning and shaping delivery to include real world applications.

Technical computing and creative skills are being welded together in order to create new digital products and services.

**Fab Lab**  
[www.fab-lab-ellesmereport.org/](http://www.fab-lab-ellesmereport.org/)  
 The digital fabrication laboratory provides community and business access to the technology needed to turn ideas into reality. Using 3D printers and CNC cutting machines, users gain experience in computer aided design to develop, test and manufacture new products. Fab Labs are particularly effective in engaging young people to build the skills and knowledge needed for careers in digital technologies, design and advanced manufacturing.

## Digital and creative job types

The fast changing nature of technology and markets in the Digital and Creative sector have a significant impact on work roles and the skills demanded by employers. This affects workplace practices, the products and services developed and the demand for marketing and management skills. In this context job roles and titles change in response to emerging business functions, presenting a challenge to both employers and workers alike.

The profile of occupations and job types within the Digital and Creative sector is described in figure 7. Based on a national data, this profile reports the current categorisation of job types, which may not fully reflect the underlying dynamism within the sector. It shows however, for the digital sub sector that IT Managers, Analysts, Programmers, Systems and Web design constitute nearly three quarters of jobs. Technical and user support job types make up the second largest group of one fifth of employment.

For the creative sub sector artistic, literary and media occupations are the largest group, with over 40% of employment. This is a broad group that includes artists, writers, performers and photographers. The remainder of the sector has media professionals such as Journalists (15.2%); design occupations including Graphic Designers (14.4%); and sales and marketing occupations (17.8%).

Across these sub sectors, freelancing / self-employment dominates some occupational groups more than others. Analysis by Creative Skillset<sup>13</sup> reveals that more than half of the workforce in some occupations are freelance such as design, film, performing arts, visual arts, music, television and designer fashion. This rises to 64% in literary professions and further to 87% in visual arts while cultural heritage has only 4% freelance, compared to a whole UK economy of 1.3%.

<sup>12</sup> Creative Skillset is the skills body for the creative industries. See Creative Skillset (2013)

<sup>13</sup> Creative Skillset (2011)

FIGURE 7  
 OCCUPATIONS, JOB TYPES AND SHARE WITHIN DIGITAL AND CREATIVE SUB SECTORS

Sub sector	Occupational group	Job types	Sub sector % share
Digital	IT / Telecom Professionals	IT Managers Business Analysis Systems Design Programmers and Software Development Web Design	72.5
	IT Technicians	Operations Technicians IT User Support Technicians	21.9
	Telecom and IT Engineers	Telecoms Engineers IT Engineers	5.6
Creative	Architect and Town Planners	Architects Town Planning Officers	7.8
	Librarians and Related Professionals	Librarians Archaivists and Curators	4.4
	Media Professionals	Journalists Public Relations Professionals Advertising Account Managers	15.2
	Artistic, Literary and Media Occupations	Artists Authors and Writers Actors and Entertainers Dancers Musicians Photographers and AV Operators	40.4
	Design Occupations	Graphic Designers Product and Clothing Designers	14.4
	Sales and Marketing	Marketing Associate Professionals Conference and Exhibition Managers	17.8

Note: Distribution based on national data

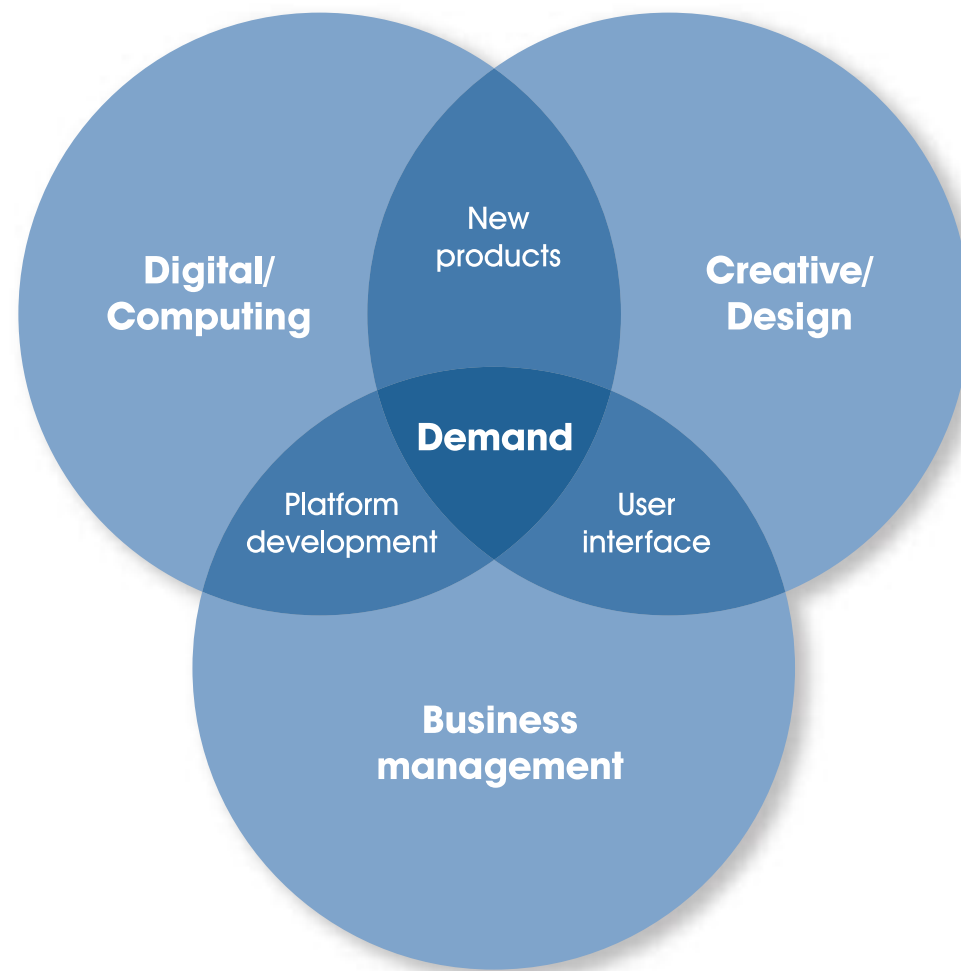
More than half of the workforce in some occupations are freelance such as design, film, performing arts, visual arts, music, television and designer fashion.

It is important to note that Creative Skillset employer surveys indicate a growing use of freelance staff as a means of filling short term skills gaps. This potentially creates a problem for the sector, in the medium and long term, if the use of freelance staff is not accompanied by more substantial investment in skill creation by employers.

As indicated above, changes in technology, markets and the operation of businesses is creating demand for configurations of skills that cross disciplinary boundaries. Particularly in small and dynamic enterprises, the ability to bring together digital computing, creative design and business management skills, as illustrated in figure 8, is very attractive.



FIGURE 8  
DEMAND REQUIRES A FUSION OF SKILLS



Creative Skillset highlight implications for individuals, business and the sector as a whole<sup>14</sup> of the 'entrepreneurial programmer' and the 'artist coder'. Changing demand is reflected in new roles that command high salaries in the sector. Some examples of vacancies of new roles in the digital media sector can be used to illustrate the changing skill demands of employers.<sup>15</sup>

- **Data Managers** - highlighting that data is a commodity and has value in advertising and the targeting digital and online products. This role combines technical knowledge in capture and data analysis and the business applications of data as a valuable resource to inform the design of new products.
- **User Experience Managers** - managing the user interface combines a knowledge of technology with creative design to ensure the functionality of digital products while also maximising the revenue potential for business.

- **Content Management** - brings together graphic / web design with editorial skills to ensure content meets the needs of customers but also, through advertising and links, ensuring that content contributes to business objectives.

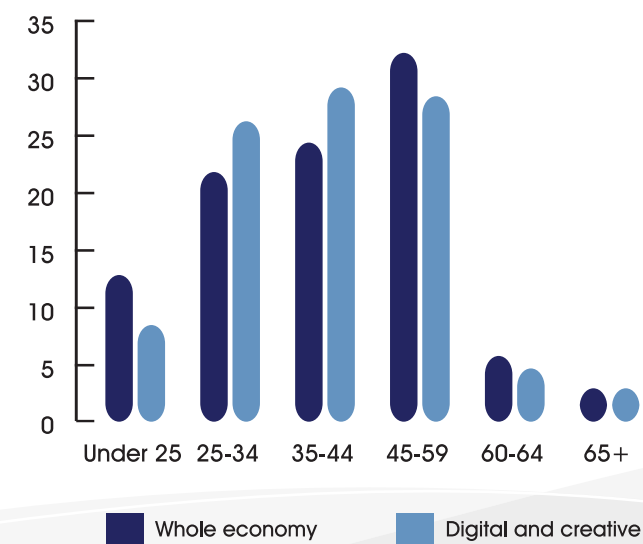
<sup>14</sup> Creative Skillset (2013)

<sup>15</sup> Roles taken from [www.themediabriefing.com/article/job-titles-changing-face-modern-media](http://www.themediabriefing.com/article/job-titles-changing-face-modern-media)

## Workforce composition - Age structure

Data for the UK workforce (figure 9) shows that the Digital and Creative sector workforce has a relatively young profile with around 64% being under the age of 45, compared 59% for the whole economy. However, there are relatively fewer workers under the age of 25. According to UKCES this profile differs at a sub-sector level. Digital has, on average, older workers than creative media sub sector. This is explained because of the higher technical content of digital roles and a preference by employers in the digital sector for recruits with previous business experience. Given the short deadlines and intensity of business activity, track record and task readiness is an important factor in the recruitment decisions of businesses.

FIGURE 9  
AGE STRUCTURE OF THE WORKFORCE



Source: ONS, Labour Force Survey 2010 (reproduced from UKCES, 2012)

Employers use their networks or word-of-mouth as a primary means of recruitment. Therefore, work experience needs to be an integral part of formal training.

<sup>16</sup> Creative Skillset (2011)

Creative Skillset<sup>16</sup> indicate that due to the demand for jobs in the sector, a high percentage of new entrants undertake voluntary (unpaid) work to gain a foothold in the industry - 45% of the UK workforce had undertaken some unpaid work. This reflects a general pattern identified in the sector, both nationally and within the Liverpool City Region, that employers use their networks or word-of-mouth as a primary means of recruitment rather than more traditional advertisements or use of agencies. This highlights the importance employer links and work experience as an integral part of formal training. It also indicates a weakness in recruitment processes that rely on sourcing skills from within 'known-networks'.

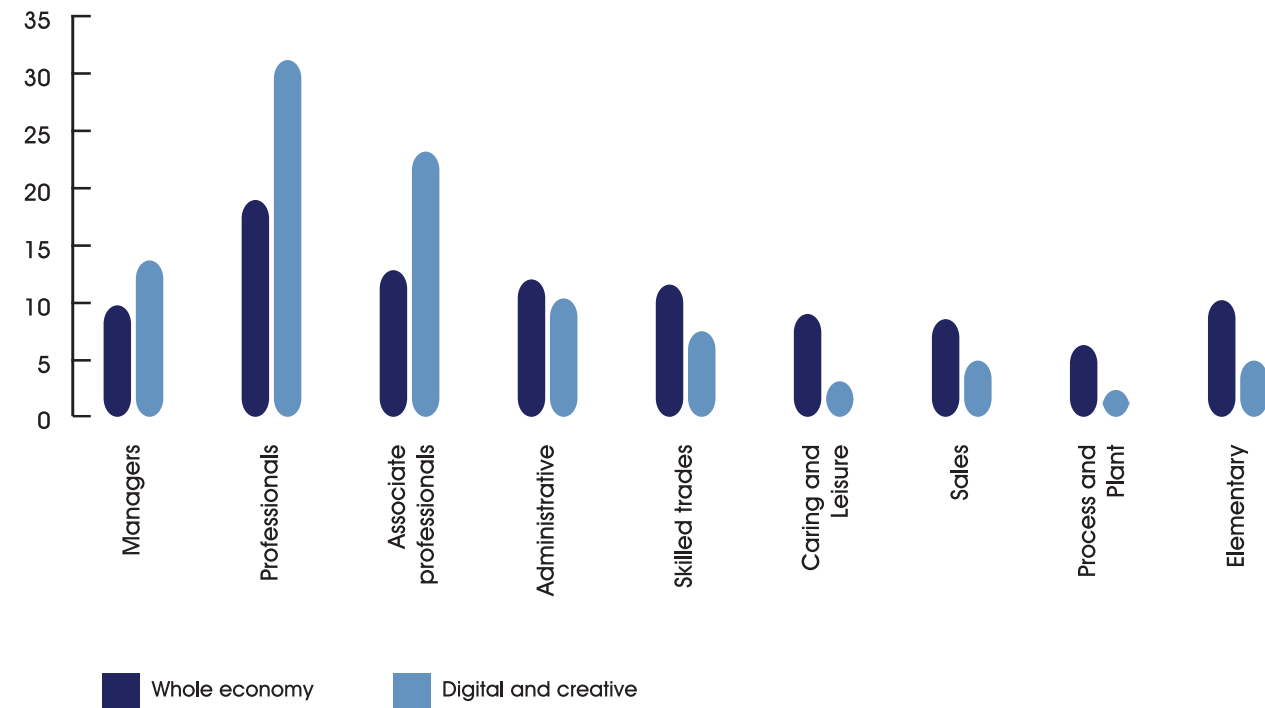
## Workforce composition - Skills profile

Individuals working in the Digital and Creative sector are concentrated in higher level occupational groups. This reflects the reliance on higher level technical and specialist craft skills, needed for both digital and creative roles, and also managerial functions in the large number of small businesses. UKCES provide an occupational profile of the sector, at a national level, shown in figure 10. This highlights that some 68.4% of employment in the sector is in managerial, professional or associate professional occupations. This contrasts with 42% of employment in these high skill occupations in the whole economy. The UKCES data indicates that there are notable differences between Digital and Creative sub-sector employment, with the digital sector having a greater proportion of professional workers.

The dominance of high skilled occupations is reflected in the qualification levels of the workforce, with UKCES data showing that over 40% of workers are qualified to at least first degree level or equivalent, compared to 24% of the workforce as a whole. There is also a higher level of workers with higher education qualifications below degree level (such as HND) reflecting the significance of higher level technical and vocational qualifications.



FIGURE 10  
EMPLOYMENT BY OCCUPATION, DIGITAL AND CREATIVE SECTOR, 2010



Source: UKCES (2012)

### Baltic Creative CIC

[www.baltic-creative.com/tenants/listing](http://www.baltic-creative.com/tenants/listing)

This was established in 2009 to provide creative space that meets the varied needs of the creative and digital sector. A Creative Campus, shop front studios, multifunctional warehouses, workshops and managed workspaces are designed to support creativity, innovation and commercial success and to be flexible to meet the ever-changing needs of the community.

The wider Baltic Triangle neighbourhood has seen rapid employment growth in the last three years; with creative and digital sector businesses playing a huge part in the area's transformation into the City Region's creative quarter. With varied, reflexive skills needs and a strong element of entrepreneurship, notable sub-sectors evident in the area include design and marketing agencies; ceramic design; textile design; music promotion; digital content; cinematography; and film production.



## Supply of skills

In common with other high value City Region sectors, Digital and Creative sector employers require workers to have a strong foundation of skills and qualifications. For the digital sub sector, science, technology, engineering and mathematics (STEM) skills are vital. For the creative sub sector, formal training in a range of disciplines from design, journalism, art and media production provides a necessary foundation for many posts. Overall, there is not a shortage of potential supply, with careers in the Creative industries being very popular with young people,<sup>17</sup> but employers report a mismatch in the core competences and work readiness of school and university leavers.<sup>18</sup> The following section provides key data on the number of learners in formal education studying subjects relevant to the Digital and Creative sector.

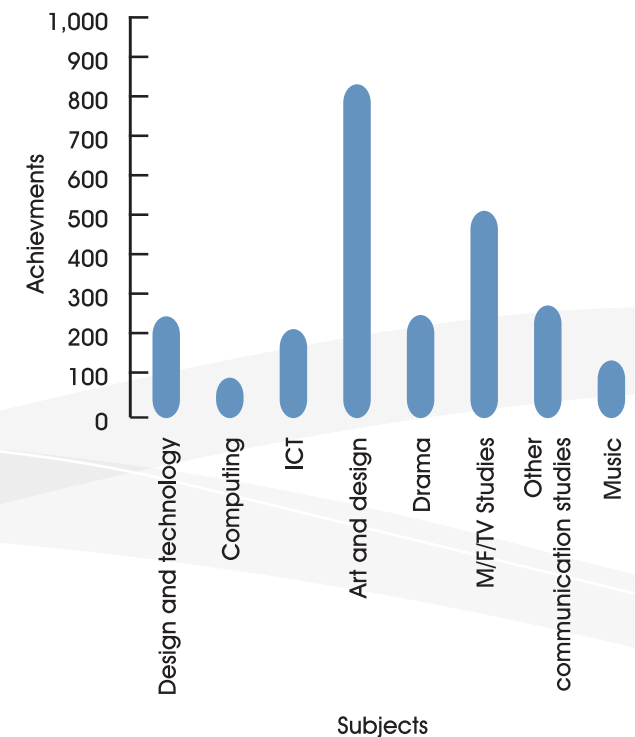
### Foundation Skills

Government statistics on attainment in LCR suggest that around 2,700 students secured an A Level in Creative sector-related qualifications (Design & Technology, Computing, ICT, Art & Design, Drama, Music, Film and TV studies, Other Communication Studies and Music) in 2013/14, as shown in figure 11. Art and Design and Music, Film and Television Studies have the largest numbers of students, with Art and Design also achieving the highest proportion of A\*/A grades at A level Digital and Creative subjects.

For the digital sub sector, science, technology, engineering and mathematics (STEM) skills are vital.

2,700 students secured an A Level in Creative sector-related qualifications in 2013/14.

FIGURE 11  
CREATIVE AND DIGITAL SECTOR-RELATED A LEVEL A-E GRADE ACHIEVEMENTS LCR, 2013/14



Source: DfE Statistical First Release Revised A Level and equivalent examination results in England: Academic year 2013 to 2014, January 2015

<sup>17</sup> Creative Skillset (2011)

<sup>18</sup> Creative Skillset (2013)

## Higher Education

According to the HESA 2011/12 Student Record, there were 5,078 first year students studying courses with digital or creative content<sup>19</sup> across the City Region's four Higher Education institutions (Edge Hill University, University of Liverpool, Liverpool John Moores and Hope University) as shown in figure 12.

The overall number of first year students has remained relatively consistent since 2008/09. There has however been an increase in the number of students studying Information Services while the other three areas (computing, architecture and music, performing and visual arts) have remained constant or seen a small fall in student numbers.

### Aberday University

[www.abertay.ac.uk/](http://www.abertay.ac.uk/)

Abertay is seen as an exemplar of building industry focused and credible training for the computer games sector. Establishing in 1997 the first specialist course for the video games industry it has become an international leader in computer games education, digital design and programming. Graduates of the university have helped to establish Dundee as a major centre for the games industry and extended the application of innovative gaming technology to other areas such as healthcare, town planning and police firearms training. The key lesson from Abertay is how learning provision and industry development have mutually developed in response to local demand and capacity.

FIGURE 12  
FIRST YEAR STUDENTS OF DIGITAL AND CREATIVE SECTOR-RELATED COURSES IN LCR HE INSTITUTIONS

	2008/09	2009/10	2010/11	2011/12
<b>Computing</b>				
Edge Hill University	194	228	230	257
Liverpool Hope University	168	140	124	109
Liverpool John Moores University	436	420	444	435
The University of Liverpool	232	223	223	228
	<b>1,030</b>	<b>1,011</b>	<b>1,021</b>	<b>1,029</b>
<b>Architecture</b>				
Edge Hill University	0	0	0	0
Liverpool Hope University	0	0	0	0
Liverpool John Moores University	211	229	234	232
The University of Liverpool	270	255	271	268
	<b>481</b>	<b>484</b>	<b>505</b>	<b>500</b>
<b>Information services</b>				
Edge Hill University	301	311	309	308
Liverpool Hope University	202	155	155	153
Liverpool John Moores University	565	558	525	508
The University of Liverpool	241	222	226	210
	<b>1,309</b>	<b>1,246</b>	<b>1,215</b>	<b>1,179</b>
<b>Music, performing and visual arts</b>				
Edge Hill University	417	502	522	625
Liverpool Hope University	596	571	570	592
Liverpool John Moores University	1,104	1005	972	913
The University of Liverpool	211	235	246	240
	<b>2,328</b>	<b>2,313</b>	<b>2,310</b>	<b>2,370</b>
<b>Total</b>	<b>5,148</b>	<b>5,054</b>	<b>5,051</b>	<b>5,078</b>

Source: HESA Student Record 2008/09-2011/12

<sup>19</sup> These are taken to comprise: Computing (computer science; information systems; software engineering, artificial intelligence); Architecture & landscape design; Information Services (publicity studies, media studies, publishing, journalism, others in mass communication); and Music, performing and visual arts (fine art, design studies, music, dance, drama, cinematics & photography, crafts, imaginative writing and others in creative arts and design)

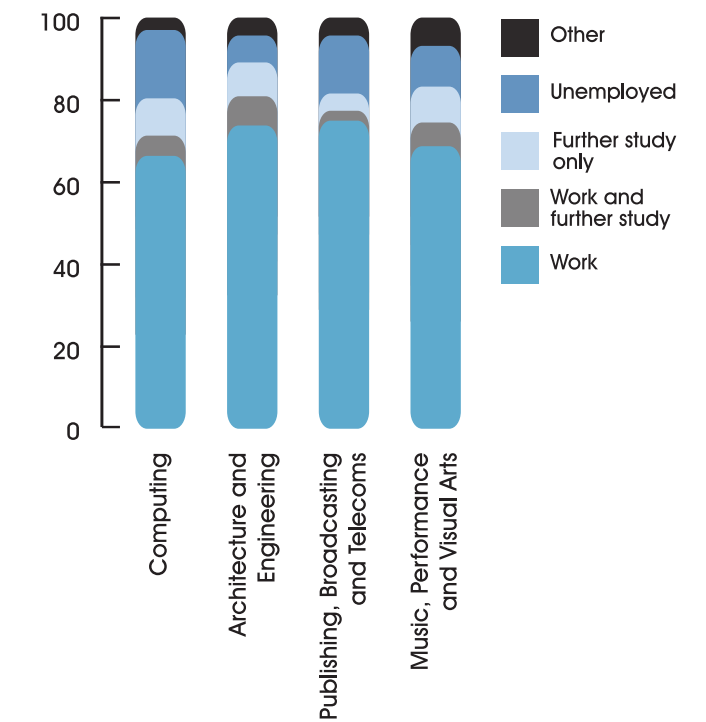
Over 75% of graduates from City Region HE institutions studying for digital and creative degrees leave to employment.

UK Data from HESA shows an 11% growth in the number of City Region residents studying STEM subjects between 2008 and 2012.<sup>20</sup> During 2011/12 7,039 learners undertook higher level learning across STEM disciplines. Just under one third of students (27%) were enrolled in computer sciences, with slightly higher proportions in engineering technology and physical sciences (31% respectively).

As shown in figure 13, over 75% of graduates from City Region HE institutions studying for digital and creative degrees leave to employment and a further 8% continue to further study. Around 12% of graduates reported that they were unemployed, demonstrating a reasonable strength of demand for these subject areas from among employers. Graduates from computing courses were the most likely to be unemployed with 17% reporting this status compared to 14% of Information Services graduates, 10% of music, performing and visual arts graduates and 8% of architecture graduates.

Just 13% of digital and creative graduates from these institutions were currently employed in the sectors for which they qualified at the time of the survey. This low number reflects the versatility of many of the qualifications as well as the difficulty mapping many of the qualifications across to a particular sector. This should be tempered by a finding from Creative Skillset<sup>21</sup> research that indicates that those training in digital and creative skills may have delayed entry into the sector, but are more likely to ultimately find employment than those without digital and creative qualifications.

FIGURE 13  
DESTINATIONS OF HE LEAVERS 2011/12, LCR HE INSTITUTIONS



Source: HESA Destination of Leavers Survey 2011/12

The City Region has significant educational and research strength in the Digital and Creative sector. This includes specialist training centres in creative and performance arts, internationally-rated computer science training and highly regarded courses in digital effects and animation.



<sup>20</sup> HESA (2012) Destination of Leavers Survey 2011/12

<sup>21</sup> Creative Skillset (2011)



### University of Liverpool

[www.liv.ac.uk/computer-science](http://www.liv.ac.uk/computer-science)

The computer science department offers a range of undergraduate and post graduate courses within a research environment of international standing. Courses are available in Computer Science, Artificial Intelligence, Internet Computing, Software Development and recently Big Data - High Performance Computing relevant to web management.

### Liverpool John Moores University

[www.ljmu.ac.uk/cmp](http://www.ljmu.ac.uk/cmp)

The School of Computing and Mathematical Science has more than 70 PhD research students investigating computer security, networking, games technology and health related technology. The School is also home to the Research Centre for Critical Infrastructure Computer Technology and Protection - PROTECT. The research output was rated as 'world leading or internationally excellent' in RAE 2008.

### Liverpool School of Art and Design

[www.ljmu.ac.uk/about-us/faculties/faculty-of-arts-professional-and-social-studies/liverpool-school-of-art-and-design](http://www.ljmu.ac.uk/about-us/faculties/faculty-of-arts-professional-and-social-studies/liverpool-school-of-art-and-design)

The oldest school of art and design in England outside London, dating back to 1825. Undergraduate and postgraduate courses include Architecture, Fashion, Fine Art, Graphic Design and Illustration, the History of Art, Exhibition Studies and Urban Design.

### The Liverpool Screen School

[www.ljmu.ac.uk/about-us/faculties/faculty-of-arts-professional-and-social-studies/liverpool-screen-school](http://www.ljmu.ac.uk/about-us/faculties/faculty-of-arts-professional-and-social-studies/liverpool-screen-school)

Undergraduate courses in Creative Writing, Drama, Film Studies, Journalism and Media Production and postgraduate courses in International Journalism, Writing and Screenwriting are available. The School has strong links with local, national and international media companies and institutions including the BBC, Trinity Mirror, and Lime Pictures.

### Liverpool Hope University - Creative Campus

[www.hope.ac.uk/lifeathope/campuses/creativecampus](http://www.hope.ac.uk/lifeathope/campuses/creativecampus)

This is home to two theatres, three dance studios, a music technology laboratory, a recording studio, and studios for painting, sculpture, wood, ceramics, metal and textiles.

### Edge Hill University

[www.edgehill.ac.uk/undergraduate/subjects/animation/](http://www.edgehill.ac.uk/undergraduate/subjects/animation/)

Edge Hill offers specialist degree courses in Animation, Digital SFX Animation, Motion Graphics and Stop-Motion Animation. Courses have a high level of practical content geared towards developing a digital portfolio alongside providing academic depth. Learning is shaped to reflect digital and creative media sector demand, including projects and assignments that model industry-related briefs. The University has entry requirements that give preference to creative arts subjects and previous experience in the digital and creative sector.

### The Liverpool Studio School

[www.thestudioliverpool.uk/](http://www.thestudioliverpool.uk/)

Studio Schools are a new type of state school for 14 to 19 year olds of all abilities. Its vision is to be a thriving learning hub for creative media and digital technology by providing innovative, partner-led, applied learning opportunities that enable young people to achieve excellence and gain progression to university, employment, or entrepreneurship in the sector. Drawing from specialist pathways: creative, coding and entrepreneurship students gain experience of the operation of small, dynamic businesses in the digital media sector through cross-disciplinary projects, placements and portfolio exercises.

We need to prepare young people to be active learners co-producing skills through formal training, work experience and informal practice.

## Digital and creative sector - A changing landscape for training

A key challenge for providers of training and skills is to maintain relevance of courses in the context of rapidly changing technology and business practice. This applies as much to programming software as to the knowledge of tutors on the specific and current demands of Digital and Creative businesses. Businesses report that building job readiness is a key issue of particular importance to the Digital and Creative sector. It is important to consider how this challenge is met - providers moving beyond chasing current practice to concentrate on preparing young people to be active learners co-producing skills through formal training, work experience and informal practice.

Change in the pattern of learning can be seen in the growing overlap between consumption and the

creation of digital and creative products. This, for the Digital sub-sector, includes how gamers are involved in testing and improving the design of new products through to the availability of on-line training packages and wizards that support the development of applications by novice users. Packages such as the MIT App Inventor<sup>22</sup> guide users through the process of developing and releasing new applications for mobile devices. Similarly, individuals can learn programming for Apple iOS by accessing free lectures by Stanford University,<sup>23</sup> freeware for 3D design,<sup>24</sup> and YouTube guides to CAD fashion design.<sup>25</sup> The availability of these materials is not necessarily competition for formal training, but feeds into provision that is able to provide depth and accreditation for learning.

The changing landscape is reflected in the attitudes of employers towards vocational qualifications. The UKCES employer survey<sup>26</sup> identified that employers in this sector were more likely than other sectors to state that vocational qualifications did not meet their business needs (60% compared to 51% for all employers). These views are thought to reflect the relatively small size of firms where training has a disproportionate financial and organisational cost; a lack of experience and therefore credibility among existing staff of vocational training; and relative lack of formality in the operation and management of digital and creative firms, who take a 'if you can do it, you can do it approach'.

Feedback from local employers and further analysis suggests that technological advances will continue to complement traditional learning routes. The introduction and increasing availability of Massive Open Online Courses (MOOCs) offers learners the opportunity to study a wide range of subjects from a variety of institutions across the internet. Although these courses (often provided free of charge) do not, generally, lead to formal qualifications currently, they have been the subject of much media attention with speculation suggesting that they could massively impact the future of distance learning and other types of study. Although MOOCs make learning materials available for an ever-expanding number of topics and subjects; those related to the Digital and Creative sector are, perhaps unsurprisingly, thought to be amongst the most popular for online learners.

Notable providers such as FutureLearn and Coursera provide Digital and Creative study programmes relating to industry-identified skills such as computer game programming, creative coding, filmmaking and music production and have the potential reach of a global audience.

<sup>22</sup> See <http://appinventor.mit.edu/explore/>

<sup>23</sup> See <http://web.stanford.edu/class/cs193p/cgi-bin/drupal/>

<sup>24</sup> For example see [www.sketchup.com/](http://www.sketchup.com/)

<sup>25</sup> See [www.youtube.com/watch?v=xhY19ZuVuLE](http://www.youtube.com/watch?v=xhY19ZuVuLE)

<sup>26</sup> UKCES (2012)



## Further Education Learning Technology Group

Ensuring that learners can make the most of new technologies in a learning environment is an increasing priority for the Further Education sector. In January 2013, the Further Education Learning Technology Group (FELTAG) was established by Government to make practical recommendations to Further Education colleges and providers regarding the effective use of digital technology in their teaching. In March 2014, the group recommended that, in order to fully capitalise on educational technology, the Further Education and Skills sector should consider more extensive usage of virtual, blended or online learning for both academic and vocational provision. The group also highlighted the importance of ensuring the sectors' own staff were literate in digital skills and that provision should reflect the realistic uses of technology in local labour markets – as advised by employers.

### Online Delivery

FELTAG recommended that there should be targets set for online delivery of Further Education provision and, in order to better understand the impact of this type of learning, the Skills Funding Agency is running four pilot programmes to assess how online delivery works in practice and to undertake a “temperature check” regarding online delivery. The findings from this exercise will inform future online delivery policy for Further Education colleges and providers.

### Workforce Capability

In response to FELTAG's recommendations and further consultation with the education and training sector, the Education and Training Foundation has commissioned a one-year programme to develop the capacity of FE leaders, managers and wider workforces to effectively use learning technologies. In addition to work already underway (i.e. the production of strategies to help practitioners embed technology in learning), further projects are being developed to ensure FE leaders work better with employers and Local Enterprise Partnerships so that vocational learners have timely and relevant access to industry-standard technologies as part of their study. The Education and Training Foundation are also exploring how MOOCs could be used to support learning delivery.

In February 2015, the Department for Business, Innovation and Skills (BIS) published a progress report regarding the implementation of FELTAG's recommendations; recognising that the work has raised awareness about the potential of educational technology. While BIS acknowledge that many colleges and providers are already realigning their teaching strategies in line with these recommendations, they state that leadership with FE sector should continue to respond accordingly to ensure educational technologies are used effectively and efficiently.

## Vocational training - Apprenticeships

Apprenticeships are an important route into work-focused training and a primary national programme for young people. Despite the identified skills shortages, nationally, Creative Skillset<sup>27</sup> indicate that there is a relatively low take up among employers, with just 9% offering apprenticeships. This varies considerably within the sector, with employers most frequently offering apprenticeships being located in art and design, camera / photography, technical development and in distribution, sales and marketing sub sectors.

The attitude towards apprenticeships reflects many of the issues identified previously about the structure and the operation of the sector, where people with experience who are able to make an immediate contribution to business activity are preferred to new entrants. Creative Skillset survey highlights that graduate internships were twice as likely to be offered by creative media employers and work placements and work experience posts are much preferred (73% of employers) to apprenticeships.

<sup>27</sup> Creative Skillset (2011)

FIGURE 14  
APPRENTICESHIP STARTS BY FRAMEWORK LCR

Area	Starts (%) 2013/14
Community Arts	3.7%
Creative and Digital Media	10.2%
IT, Software, Web and Telecoms Professionals	77.6%
Live Events & Promotion	7.1%
Technical Theatre	1.4%

Source: ONS UK Business Counts - Local Units, 2013

Within the Liverpool City Region in 2013/14 Skills Funding Agency (SFA) data indicates that there were over 500 Apprenticeship starts across all levels, with IT and Telecoms training providing more than three out of four of starts, as shown in figure 14. Other frameworks linked to the Digital and Creative sector are comparatively small scale, with just Live Events and Promotion and Creative and Digital Media having 15 or more starts during 2013/14. Within the IT and Telecoms framework, IT Application Specialist is the largest area of training at both intermediate and advanced level.

### The Juice Academy

[www.juiceacademy.co.uk](http://www.juiceacademy.co.uk)

The Juice Academy is the UK's first workplace based social media apprenticeship operating in Greater Manchester. The programme was initiated by Tangerine PR a Manchester based PR agency to attract young people into training and employment that utilises their knowledge of social media. The course, which offers training to level 3, has been developed jointly by the National Apprenticeship Service with leading corporate marketing teams and creative agencies.

Over the period 2008/09 to 2012/13 there has been a significant increase in the number of IT and Telecoms apprenticeships, which had a large scale expansion in 2011/12 with a five fold increase in the number of starts. The number of starts on other frameworks has remained relatively constant over this period. Further analysis shows that there has been a shift since 2008/09 in level of apprenticeship starts with a move towards intermediate level learning.

<sup>28</sup> Data is recorded as starts on modules rather than individuals and therefore may include some double counting

## IT Application Specialist Apprenticeship

This apprenticeship is the largest area of training within Digital and Creative sector in the City Region. The training enables learners to work effectively with IT systems and computer applications. This includes maintaining simple websites and using business applications such as customer relations databases, payroll and stock management systems. At an advanced level this includes planning and contributing to the design of websites and multi media content. At an intermediate level this apprenticeship can lead to job roles such as data administrator, web technician and digital assistant. At an advanced level roles include IT application helpdesk support, IT supervisor and website manager.

Source: [www.apprenticeships.org.uk/types-of-apprenticeships/information-and-communication-technology/it-application-specialist.aspx](http://www.apprenticeships.org.uk/types-of-apprenticeships/information-and-communication-technology/it-application-specialist.aspx)

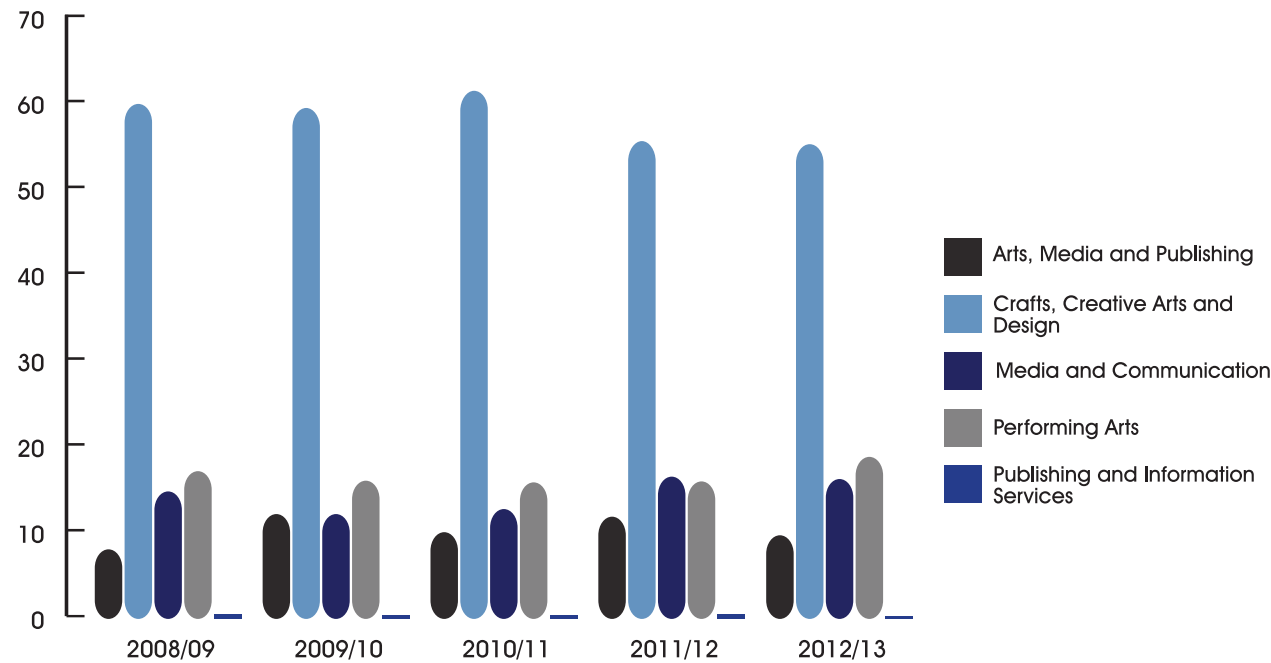
## Vocational training - Further education

Digital and Creative sector FE training is a significant area of provision within the Liverpool City Region. In 2012/13 there some 12,647 module starts<sup>28</sup> across the courses listed in figure 15. Within Digital and Creative sector linked FE provision in 2012/13 Craft, Creative Arts and Design had the highest proportion of module starts (55.1%) followed by Performing Arts (18.9%) and Media and Communication (16.2%) and Arts, Media and Publishing (9.7%). Publishing and Information Services has less than 0.5% of FE module starts in 2012/13.

Around half of FE module starts in 2012/13 were among learners aged under 19 years (49%), with a further 43.1% of module starts were among people of working age (19 to 64 years). Over the period since 2008/09 there has been a relatively consistent number of module starts, with a small dip in 2012/13. The ratio of learners by age has seen a small change with the proportion of learners older than 31 decreasing over the period.

There is a diverse range of provision offered within the City Region, but the majority are A Level and BTEC courses. Within media and communication some 52% of module starts are AS and A2 courses in media studies, film studies and communications and culture. A number of specialist courses are available such as photo image capture, radio

FIGURE 15  
MODULE STARTS, DIGITAL AND CREATIVE FE COURSES - ALL LEVELS, LCR 2008/09 TO 2012/13



Source: BIS Datacube (2014)

production, journalism, web design, moving image production and computer games design but these are very small in comparison.

Data reveals that module starts by age differs significantly. As shown in figure 16, 81.2% of the module starts under the age of 19 were at level three compared to just 15.1% for learners aged 15 to 64. This reflects the patterns of entry into the sector and the forms of training made available to employees, which tend to be meet statutory requirements in areas such as health and safety and specialist software and job related training.<sup>29</sup>

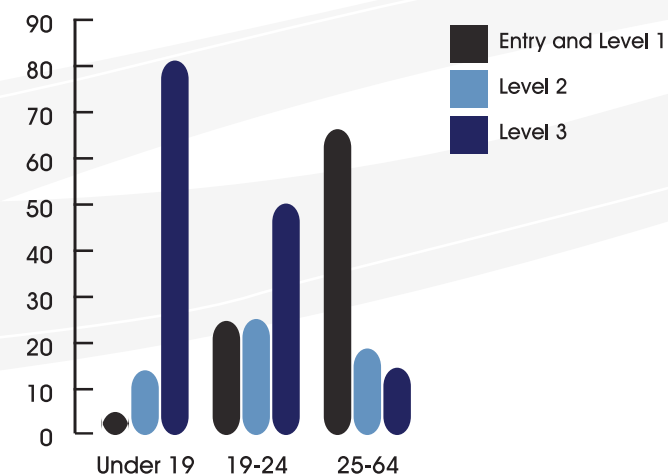
## Routes into digital and creative careers

Providing careers information on the Digital and Creative sector is central to raising awareness of wide ranging job opportunities and the global character of employment in the sector. Careers information is available from a number of sources, as illustrated in figure 17. Online information on different jobs and roles is provided by the sector skills councils e-skills and Creative Skillset. More localised information, including short films that discuss what it's like to work in the sector, is provided through Jobs for Tomorrow.<sup>30</sup> Information is also available linked to the on-line

course guides colleges - see for example the City of Liverpool College Career Coach.<sup>31</sup>

Employers within the sector underline the importance of information made available to schools and young people about digital and creative careers that emphasises the real demands of working in digital and creative businesses. The Next Gen<sup>32</sup> report recommends the creation of an online repository and community site for teachers providing access to careers and educational resources.

FIGURE 16  
DIGITAL AND CREATIVE FE MODULE STARTS BY AGE AND LEVEL



<sup>29</sup> Creative Skillset (2011)

<sup>30</sup> See [www.lcrskillsforgrowth.org.uk](http://www.lcrskillsforgrowth.org.uk)

<sup>31</sup> See <https://liv-coll.emsicareercoach.co.uk/#action=loadHomePage&OccID=3421>

<sup>32</sup> NESTA (2011)

FIGURE 17  
SOURCES OF INFORMATION ON DIGITAL AND CREATIVE CAREERS

Organisation	Description	Web Address
e-skills	On-line information and resource in careers in IT	<a href="http://www.e-skills.com/careers/">www.e-skills.com/careers/</a>
	Dedicated website for young people interested in IT / digital careers. Provides case studies, information on career options and prospective employers	<a href="http://www.bigambition.co.uk/">www.bigambition.co.uk/</a>
Creative Skillset	Creative Navigator - information on jobs, careers and training in the Creative and Digital Media sector	<a href="http://creativeskillset.org/who_we_help/young_creative_talent/career_navigator">http://creativeskillset.org/who_we_help/young_creative_talent/career_navigator</a>
Creative and Cultural Skills	Creative Choices Website - provides information and case studies on careers in the creative industries	<a href="http://ccskills.org.uk/careers">http://ccskills.org.uk/careers</a>
Jobs for Tomorrow	Suite of careers materials including two short films which showcase local digital and creative workers talking about their jobs	<a href="http://www.lcrskillsforgrowth.org.uk">www.lcrskillsforgrowth.org.uk</a>
National Careers Service	The NCS website provides careers advice on a wide range of jobs, including Digital and Creative careers	<a href="http://nationalcareersservice.direct.gov.uk">http://nationalcareersservice.direct.gov.uk</a>

Additionally, employers also recognise the need to build a workforce that reflect the ethnic and gender mix of the wider population. Major employers across the digital and creative sector have established Creative Access<sup>33</sup> to attract young graduates from Black, Asian and under represented communities into employment. E-Skills UK are leading efforts to support more women into careers in computing. This includes the national TechFutureGirls<sup>34</sup> initiative which supports school clubs for girls interested in computing, creative digital careers.

The report's headline recommendations urges the next Government to secure the UK's place as a global digital leader by:

- Making digital literacy a core subject at school, alongside English and Maths
- Viewing the internet as important as a utility, accessible to all; and
- Putting a single 'Digital Agenda' at the heart of Government.

Further to this, and as shown in Figure 18, the Committee highlight a number of specific challenges facing the UK's skills system and make a series of recommendations designed to address them.

## House of Lords' Digital Skills Committee

In February 2015, the House of Lords' Digital Skills Committee published Make or Break: The UK's Digital Future<sup>35</sup>. The Committee argues that the country is not addressing the significant short, medium and long-term digital skills shortage and that doing so should be an urgent priority for Government.

<sup>33</sup> See <http://creativeaccess.org.uk/about-us>

<sup>34</sup> See [www.techfuturegirls.com/](http://www.techfuturegirls.com/)

<sup>35</sup> See [www.publications.parliament.uk/pa/ld201415/ldselect/lddigital/111/111102.pdf](http://www.publications.parliament.uk/pa/ld201415/ldselect/lddigital/111/111102.pdf)



FIGURE 18  
HOUSE OF LORDS' DIGITAL SKILLS COMMITTEE "MAKE OR BREAK" RECOMMENDATIONS

THEME	CHALLENGE	RECOMMENDATION
School curriculum	Addressing long-standing systemic weakness in numeracy and literacy to enable digital literacy	Digital and technology skills should be considered complementary to essential numeracy and literacy skills
	Ensuring pupils being prepared for the future digital workforce are not let down by inconsistencies in teacher training	Leadership and coordination from Government in teacher training
	Improving teachers' confidence and capability of delivering a computing curriculum	Teachers need significant contact with industry to see latest technologies in action and pass on such knowledge
Further Education	Addressing urgent requirement for comprehensive industry input into the further education system	FE colleges need to provide industry-designed and endorsed short courses that are going to lead to a job
	Ensuring skills funding improves the capacity of the UK's workforce	Government to overhaul Further Education funding system
	Improving the general digital skills of all learners	Introduction of a digital element in all further education courses, as well as more specific courses for digital and technology occupations
Apprenticeships	Effectively using Apprenticeships to address the short and medium-term skills gap	Employers, teachers and career guidance professionals to target 16-19 year-olds, enabling them to choose and take up good Apprenticeships
Apprenticeships	Improving the general digital skills of all learners	Introduction of a digital element in all Apprenticeship schemes, as well as offering more digital apprenticeships for specific technology occupations and sectors
	Encouraging industry to offer more Apprenticeships	Industry and the Government to set ambitions for apprenticeship numbers over the next five years, working to match apprenticeships with predicted workforce shortages
	Tackling negative perceptions of vocational education among schools, teachers, head teachers	Teachers need increased industry exposure and current careers guidance structure needs to be updated
Careers guidance	Radically rethinking and injecting imagination into a currently-outdated careers guidance structure that does not support the needs of a digitally-skilled workforce	Development of an improved 'employment guidance' offer delivered locally with increased industry involvement
Upskilling existing employees	Ensuring the UK's current workforce remains competitive	An introduction of and move towards short, sharp and relevant digital skills interventions
	Preparing learners to learn for themselves	Businesses and Government need to assist a cultural shift and provide support for the third sector to increase relevant digital provision
	Empowering SMEs to reach their full potential by addressing key digital barriers	Local Enterprise Partnerships and other local networks to support businesses in accessing the talent pool, skills provision and adequate finance

# Current and future opportunities

The Liverpool City Region has a significant opportunity to build on its business and research base to grow the size and the economic output of the Digital and Creative Sector. Forecasts<sup>36</sup> suggest that the sector can generate an additional 4,000 jobs between 2013 - 2030 and add over £800m (GVA) to the City Region. However, the realisation of these forecasts depends on continuing competitiveness in the global market and access to skills and investment.

## Current demand

Despite the recession the sector has continued to have a strong demand for labour, with UKCES (2012) identifying that the Digital and Creative sector has 40 vacancies per 1,000 employees compared to 23 vacancies per 1,000 employees for the whole economy.<sup>37</sup> This high demand is also reflected in comparatively high levels of hard-to-fill vacancies, due to a shortage of applicants with the required experiences, skills or qualifications.

The UK Employer Skills Survey highlights that reported skills shortage are highest among professional occupations for digital firms (43% of employers reporting skills shortage) and associate professional occupations for creative and media employers (37% of employers). The CBI report<sup>38</sup> the availability of higher level skills is a key concern for businesses in the Digital and Creative sector, identifying that the availability of UK programmers, coders, game designers and artists is vital to the productivity of firms who face international competition for staff.

A key characteristic of current demand is employer preferences for experienced staff. While technical skills remain highly valued, the high pressure market combined with the constraints of small business operation, gives a premium to experience. The result of this practice is high demand for experienced applicants; this however limits the number of entry level positions.

### Creative Kitchen

[www.creativekitchen.co/](http://www.creativekitchen.co/)

Creative Kitchen is an initiative of Studio Mashbo, a Liverpool based digital design agency, established to network small digital and creative businesses in the City Region. Creative Kitchen organised training in essential business skills during November 2014 targeted at digital enterprise that may have strong technical skills, but lack business management experience. Members of the Creative Kitchen network can meet, learn and collaborate via Twitter - @JoinUsAtTheCK. Further networking events are planned during 2015.

## Medium term demand

With potential to grow, the Digital and Creative sector will continue to make an important contribution to the economic development and the international footprint of the Liverpool City Region. Given the structure of the sector, the strongest demand is expected for skilled and flexible workers with a foundation in computing and creative skills but are able to employ these skills to contribute to a range of business functions. This is consistent with City Region policy<sup>39</sup> to build the cluster of small and agile Digital and Creative companies in fast growing markets such as health informatics, gaming and web services.

### Digital and Computing Skills

Forecasts highlighted by UKCES (2012) indicate rising demand for higher level skills, with the proportion of workers with first degree level or above rising to 52% by 2020. This compares to a forecast that 43% of the UK workforce will be qualified to degree level or above over the same period.

<sup>36</sup> LCR Forecasts (2013)

<sup>37</sup> UKCES (2012) citing Davies (2012) page 60

<sup>38</sup> <http://www.cbi.org.uk/about-the-cbi/business-voice/february-march-2014/creative-industries-gaming/>

<sup>39</sup> Liverpool City Region Growth Deal 2014



However, as indicated above employers in the digital sub sector are interested in experience and ability to contribute to business performance.

UKCES, drawing on research by e-skills, highlight three key trends that will affect the demand for digital and computing skills in the medium term (one to three years).

- Security and data protection - the increased use of electronic channels accessed through mobile devices expands the opportunity for theft and illegal activity. Computing professionals will need to develop and apply new security schemes to combat these new risks.
- Cloud computing - can increase the agility of businesses, lower cost and improve consumer access to data and digital products. This is expected to provide a major business opportunity in the medium term and require both technical skills in areas of digital architecture and networking and also integrated project management skills to maximise the application of cloud computing.
- Communication and IT convergence - reflecting the move from hardware to software intensive platforms, as mobile devices are integrated more into day-to-day work. This has implications for security and for the development and application of new software products.

These demands are expected to accelerate, over the medium and long term, creating a requirement for skilled workers that are able to maximise the benefits of digital and creative products. While technical skills will continue to be important, the separation of producer and consumer will blur as new interfaces create the potential for users to become digital-makers.<sup>40</sup> This will also create demand for communication and inter-personal skills to embed new technology; for project management skills to manage logistical and networking arrangements; and analytical and research skills, vital to business performance and management.

Research undertaken by UKCES<sup>41</sup> highlights four technology areas in the digital and computing sub-sector as providing the principal source of labour market pressure in the short term - as summarised in figure 19. These include demand for skills in mobile technologies including management of 'big data'; skills in cloud computing in systems design and management that include security specialists and user experience designers; Green IT that will

demand network specialists and solutions designers; and cyber technology that require information consultants and network security engineers.

### Digital applications

The production of digital assets in the form of games, film, visual effects alongside their application through web-based and broadcast media and mobile technology is a deeply creative endeavour and a key economic resource for the UK. The global market for games alone is estimated to be worth some \$87 billion and forecast to expand further. While UK businesses occupy a leading position in this market, the Next Gen.<sup>42</sup> report highlights a mismatch in skills delivery that is undermining the competitive position of the UK.

The Next Gen. report highlights key shortage areas that affect all companies, but have a disproportionate impact on larger businesses involved in the most technically ambitious projects. There are specific problems in sourcing technical personnel and people with online and mobile game development. Specifically this includes: computer programmers; artists; designers; and management personnel. Skills in online game development are highly sought after, with businesses experiencing difficulty in recruiting technical artists and artists proficient in 3D.

In the medium term specific skills are expected to be in high demand.

- Coding - is becoming recognised as a core skill for 'digital fluency'. While specialist programmers will continue to be in high demand, understanding coding and the ability to use programming skills has a wide range of applications in digital and creative media careers.
- Design - artists and graphic / computer aided design that cross over and contribute to the development of digital products. This ranges from animation and visual effects to marketing and website development.
- Business management - awareness of and contribution to business objectives including commercialisation of products, analytical skills and performance management.

FIGURE 19  
MEDIUM TERM DEMAND FOR COMPUTING JOBS

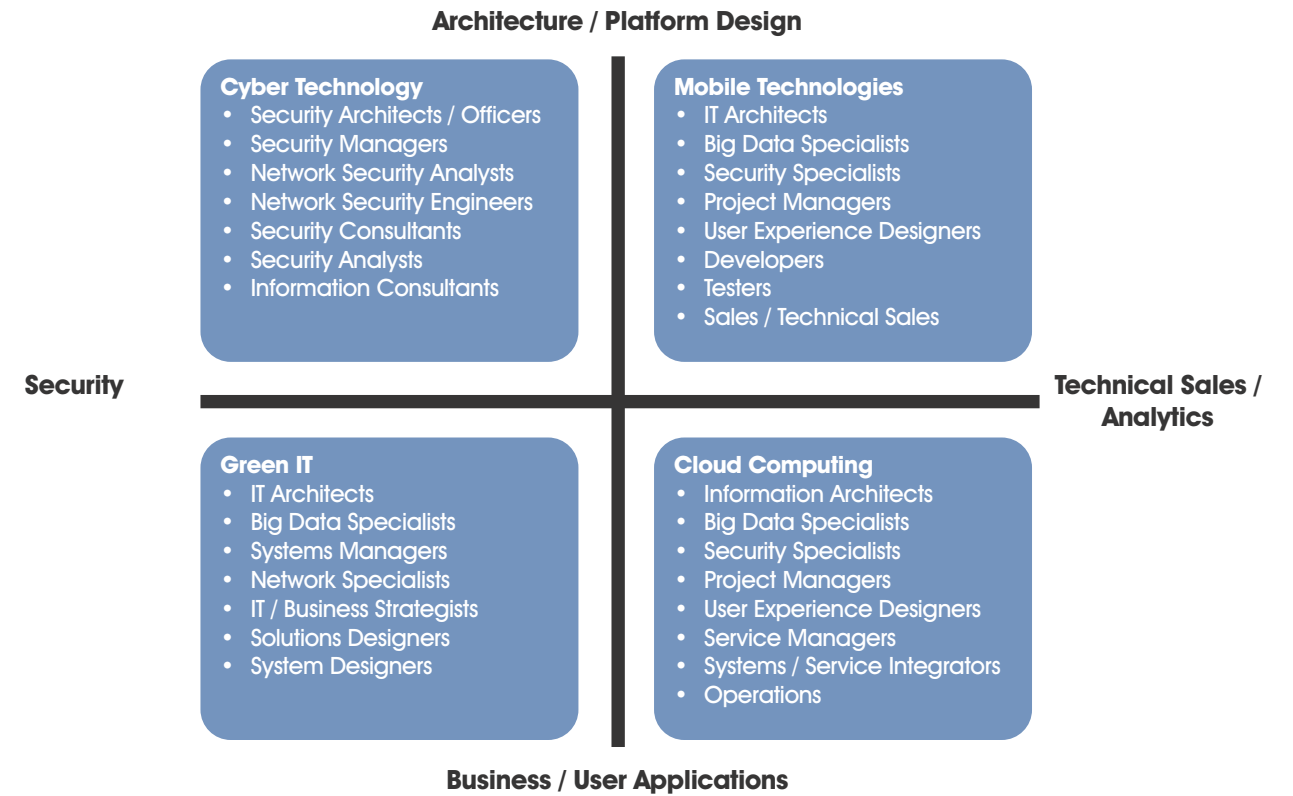
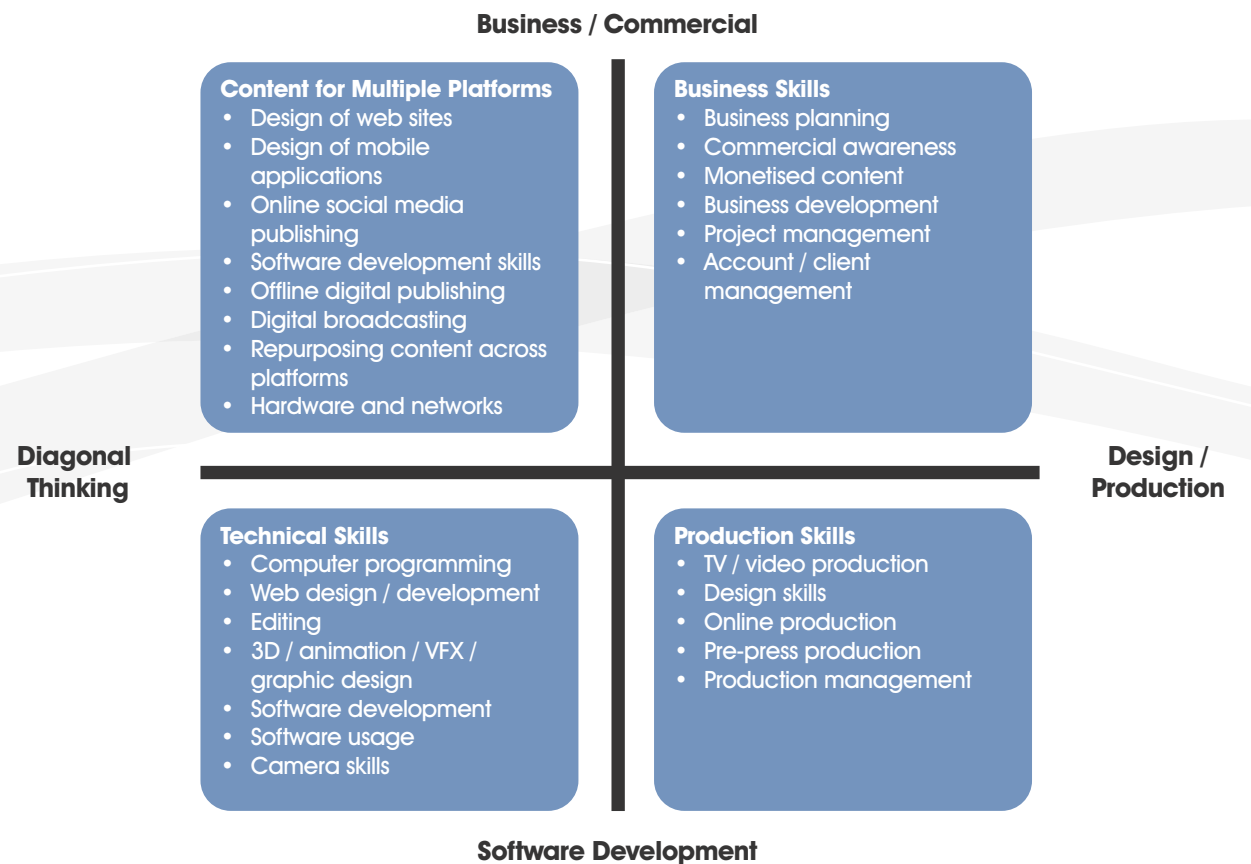


FIGURE 20  
ANTICIPATED SKILL SHORTAGE AREAS - DIGITAL AND CREATIVE SECTOR<sup>43</sup>



<sup>40</sup> See NESTA (2011)

<sup>41</sup> UKCES (2013)

<sup>42</sup> NESTA (2011)

<sup>43</sup> Information from Creative Skillset (2010)

## Creative Skills

Strong creative and technical skills are central to meeting employer demand in the medium term. However, employers are seeking rounded workers able to operate across traditional disciplinary boundaries: to be numerate artists and design aware programmers. Training in fine art, illustration, journalism, graphic design and media production remain valuable as core skillsets that employed to meet the needs of employers in the digital and creative sector.

While higher education routes remain important, training at level 3 and above, where this is workplace focused, is attractive to employers where recruits demonstrate a track record of achievement. Research for NESTA<sup>44</sup> confirms that creative businesses are investing in research and development and new software and hardware, which results in a significant and growing proportion of their staff being focused on activities that require high levels of technology rated skills.

The Creative Skillset employer survey indicates that 26% of businesses in their employer panel anticipated jobs growth. This was highest among producers of online content and interactive media (around 41% of employers) and lowest among publishers, photo imaging, archives and libraries (at around 18% of employers). Over the medium term employers identified a number of skill areas that are expected to be hard to fill, as illustrated in figure 20.

The anticipated skill shortage areas include the following.

- Diagonal thinking skills - where individuals are able to work in interdisciplinary teams and can produce content across multiple platforms. This combines the creativity to develop content with the business awareness to commercially exploit new products.
- Software development skills - including the technical ability to programme while applying skills within a business context. This reflects the importance of developing quality and competitive products that contribute revenue to the business.
- Design and production skills - providing creative and managerial input into the production of content.
- Business and commercial skills - across a range of business and creative activity contributing to the competitiveness of business activity within global markets.

### The City of Liverpool College - Creative and Digital curriculum

<http://www.liv-coll.ac.uk>

The City of Liverpool College is one of the largest providers of creative and digital provision within the Liverpool City Region with more than 2,000 students studying from level 1 through to foundation degree level. Real world content is a key feature of the curriculum and students regularly work on live briefs in collaboration with industry professionals as well as delivering specific assignments for clients from creative sector businesses.

Typical examples include Fashion Buying and Merchandising students producing range plans for sportswear and accessories for the 'British Racing Company' and Events Management students working with the Culture Liverpool to deliver their annual programme of events. Through these activities students develop their knowledge and technical skills to industry standards as well as developing the transferable soft skills prized by employers.

A further example of learners developing industry-ready skills was seen when students from the College's Games Development course won a national competition to create an educational app about recycling that would appeal to a mass audience. Their winning concept provides details of all the different location points across the country where the public can recycle unwanted personal and household items and will now be developed and marketed by a leading design app specialist in a prize worth up to £30,000. The app will be developed for the commercial environmental sector and future profits from download sales of the app will be shared between the winning team and the College's student union who provided funding for the 'Business in a Box Challenge'.

# Conclusion

## Shaping Skills Policy

The Digital and Creative Sector appears to offer a particular set of challenges for skills planning. The sector is rapidly growing, globalised and makes a significant contribution to the UK and the City Region economy. The sector relies heavily on talented and highly skilled individuals but at a company level often lacks the capacity to invest in training or the scale to absorb the costs associated with inexperienced staff not contributing directly to generating business income.

Research undertaken by Creative Skillset, e-skills, UKCES and NESTA, as referenced in this agreement, highlight the consequences of skills shortages to the international competitiveness of the UK sector. This risk is likely to be exaggerated for businesses in the City Region who are competing both globally and with London and Greater Manchester for the best talent. To fully realise the economic opportunities of the sector requires a shift in thinking about skills for Digital and Creative sector, which based in this review, focuses on four areas.

- **Re-engineer the relationship between training provision and employment** - it would appear that there is a mismatch in the expectations of learning providers and employers about the role of skills training in creating pathways into work. This cannot just be about asking providers to catch-up - the market will always be ahead of training - but about creating better pathways. The key being not to train in workplace practice but train for learning that will be achieved through experience.
- **Recognise the importance of experience** - practice and applied knowledge are highly valued in the sector and often have a greater currency with employers than formal training and qualifications alone. Providing opportunities for individuals to engage in work experience, to build a portfolio of work and to establish networks is key to a career in the Digital and Creative Sector.

- **Learners as co-producers of skills** - for this sector in particular independent learning has an important role in building skills and experience. The availability of web based learning material and tutorials that assist in building and direct marketing of software applications provide an important resource for novice practitioners. This changing landscape of learning should also stimulate providers to consider how narrow, self-initiated learning can be augmented and deepened, be accredited and lead to higher level qualifications.
- **Fusion Skills** - where formal vocation and academic training is provided it needs both to be of a world class standard and enable learners to cross disciplinary boundaries. Increasingly employers are demanding 'fusion' skills that draw together fine art, computer programming and business marketing and management. While depth of knowledge is important provision needs to enable learners to naturally broaden their skills.



<sup>44</sup> Chapain, et al (2010)



# References

CBI (2014) The Creative Nation: A Growth Strategy for the UK's Creative Industries. CBI. London  
Available: [http://www.cbi.org.uk/media/2535682/cbi\\_creative\\_industries\\_strategy\\_final\\_.pdf](http://www.cbi.org.uk/media/2535682/cbi_creative_industries_strategy_final_.pdf)

Chapain, C. et al (2010) Creative Clusters and Innovation: Putting Creativity on the Map' NESTA  
Available: <http://www.nesta.org.uk/publications/creative-clusters-and-innovation-report>

Creative Skillset (2010) Employer Survey  
Available:  
[http://creativeskillset.org/assets/0000/6002/Skillset\\_Employer\\_Survey\\_2010.pdf](http://creativeskillset.org/assets/0000/6002/Skillset_Employer_Survey_2010.pdf)

Creative Skillset (2011) Sector Skills Agreement for Creative Media Industries in England  
Available:  
[http://creativeskillset.org/assets/0000/6023/Sector\\_Skills\\_Assessment\\_for\\_the\\_Creative\\_Industries\\_-\\_Skillset\\_and\\_CCskills\\_2011.pdf](http://creativeskillset.org/assets/0000/6023/Sector_Skills_Assessment_for_the_Creative_Industries_-_Skillset_and_CCskills_2011.pdf)

Creative Skillset (2013) Fusion Skills: Perspectives and Good Practice  
Available: [http://creativeskillset.org/assets/0000/0230/Fusion\\_report.pdf](http://creativeskillset.org/assets/0000/0230/Fusion_report.pdf)

Liverpool LEP (2009) Liverpool City Region's Knowledge Economy: Delivering New Opportunities for Growth  
Available: <http://www.liverpoollep.org/docs/KnowledgeEconomyDeliveringNewOpportunitiesforGrowth.pdf>

NESTA (2011) Next Gen. Report  
Available: <http://www.nesta.org.uk/publications/next-gen>

Northern Way (2009) City Relationships: Economic Linkages in Northern City Regions - Liverpool City Region Available: <http://www.theworkfoundation.com/Assets/Docs/Liverpool%20City%20Region.pdf>

UKCES (2012) Sector Skills Insights: Digital and Creative. Evidence Report 49  
Available: [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/304885/Sector\\_Skills\\_Insights\\_Digital\\_and\\_Creative-evidence\\_report\\_49.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/304885/Sector_Skills_Insights_Digital_and_Creative-evidence_report_49.pdf)

UKCES (2013) Technology and Skills in the Digital Industries Report  
Available:  
<https://www.gov.uk/government/publications/technology-and-skills-in-the-digital-industries>

Tech City (2015) Tech Nation, Powering the Digital Economy  
Available: <http://www.techcityuk.com/wp-content/uploads/2015/02/Tech%20Nation%202015.pdf>





[www.lcrskillsforgrowth.org.uk](http://www.lcrskillsforgrowth.org.uk)

