

NI CGI Skills Survey 2014 Report v02.03

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Application training

Course design and consultancy

TERMS OF REFERENCE These are the terms of reference established for all our work with Creative Skillset and here in the reporting for the NI CGI survey 2014:

- CGI or Computer Graphics is the sector
- Visual Effects (VFX), Animation (3D) and (Multi Platform) Computer Games are CGI's sub sectors. Motion Graphics Compositing/Animation (GFX), On Set Data Wrangling and 2D Cartoons have been included for the purposes of the survey analysis.
- Digital Literacy is a concept in CGI training/education that encompasses VFX, Animation (3D) and Computer Games sub sectors.

PURPOSE OF THE NI CGI SURVEY The primary purpose of the Northern Ireland CGI Skills Survey 2014 is to determine what skills base currently exists in the computer graphics (CGI) sector in Northern Ireland (NI) and how it might be up-skilled to attract VFX, Computer Games and Animation work to the region.

The data collected has been analysed to determine how existing skills can be best utilised, what types of work they are best equipped to deliver, what training might be required to develop the industry sector and industry reach, and how we can use the current and future potential workforce to attract Foreign Direct Investment (FDI).

The secondary objective is to ascertain the appetite of senior artists, animators, coders and producers originating from Northern Ireland, now working abroad, to return to the region should relevant work opportunities exist, on either a long term or project basis. This in turn could enable an up-skilling of junior artists, animators, coders and producers operating in Northern Ireland (NI).

We devised a survey as a questionnaire that was to provide us with an accurate picture of what computer graphics capacity and skillset exists in Northern Ireland. This was mostly check box based with some text fields to find out about regional talent, skills, software, training/education, professional development, pay, regional recruitment needs/expectations and the NI diaspora.

We widened the definition of diaspora, from professionals who originated from the NI region and may consider returning, to anyone worldwide working in VFX, Animation and Computer Games who would consider working in the region on either a project or longer term basis. These people were located in mainland UK (predominantly London), the Netherlands, the US, New Zealand, Canada, India, France and the Republic of Ireland.

The survey was hosted on-line by Creative Skillset. Two invitations were issued in July 2013, one directly to diaspora and the other to regional artists, animators, coders and producers, either directly or through the Toody Threeedy regional networking Facebook group.

These approaches yielded 70 responses by October 2013. The survey was further advertised and finally closed with over 90 people having completed it in November 2013. This was some way short of our initial ambition of obtaining 250 respondents.

SURVEY REACH *92 people completed the survey including 26 diaspora currently working outside NI.*

The survey respondents represented a wide variety of roles and companies operating within the region. The following companies were represented:

Inlifesize	Jam Media
Black Market Games	Big Gun
Troll Inc	Billy Goat Entertainment
Digital Circle	Flickerpix Animation
3dcolab	Italic Pig
Toyka TV	BBC Northern Ireland
Can Do 3d	Straandlooper Animation
Sixteen South	Six Echo Solutions
360 Productions	The Design Zoo
Factory Pictures	Can Do Interactive
Black North	South West College
University of Ulster	

Other appendices detailing statistical breakdowns of the survey responses are to be found as follows:

- **Appendix 1:** Equal opportunities statistics (Gender, Age, Ethnicity, Disability).
- **Appendix 2:** Education and training statistics.
- **Appendix 3:** Pay and recruitment need statistics.

The Pay and Recruitment section details responses obtained at the request of Invest NI.

INDUSTRY DEVELOPMENT Of the 26 diaspora respondents, 7 say they would consider returning or working in the region to mentor and share knowledge should the right work opportunities become available, either on a long term or project basis.

As well as the potential returning diaspora, the survey also identified several other individuals willing to mentor and give masterclasses. Their details are provided in **Appendix 5**.

SURVEY METHODOLOGY AND ASSUMPTIONS The data collected in the survey has not been taken at face value. We wanted to gain a realistic understanding of where the industry is at in the region and how it might be developed.

In addition to responses, we have also tested skills levels and software literacy by viewing showreels and cross-referencing these against job titles and earning brackets for artists, animators, coders and producers.

The scrutiny of showreels, to gauge skills as opposed to relying on qualifications or trusting the job title, often generic (e.g. Digital Artist) and self-awarded, is standard practice in the CGI industry internationally. This would also be the first action of any foreign investor showing an interest in the region. Therefore, this analysis will help facilitate any FDI recruitment planning.

The software literacy results can be found in **Appendix 2**. The extent of the capabilities for, and use of, each software application has been further broken down here too.

In addition, we have tested coders and producers capabilities and credentials against LinkedIn profiles, company websites and details held on the Digital Circle website.

All of these checks have enabled us to draw more accurate insights about the level at which people are operating.

INDUSTRY COMPARISONS WITH THE REST OF THE UK **Appendix 4** includes the Animation, VFX and Games 'Skills Flashes' from Creative Skillset's website. Skills Flashes are snippets of information including skills gaps and shortages, identified through Creative Skillset research. Below are the links to this information online as well:

Animation:

http://www.creativeskillset.org/funding/SIF/skillsflashes/article_9362_1.asp

VFX:

http://www.creativeskillset.org/funding/SIF/skillsflashes/article_9375_1.asp

Games:

http://www.creativeskillset.org/funding/SIF/skillsflashes/article_9361_1.asp

In depth statistical comparison between this survey and the relevant parts of Creative Skillset's Employment Census 2012 are not possible because the professional groupings used are different. The UK wide survey defines Artist, Animator and Technical Director (TD) roles within 'Animator'. Our survey is more granular in terms of the range of CGI roles.

However, some comparison between NI and the rest of the UK is possible using the Creative Skillset 'Skills Flashes' (see above). With regards to skills gaps and shortages it's interesting to note that many of the same gaps and shortages are evident in the rest of the UK as in NI. This pertains to the skills situation in the nations and regions more so than in London. We have reported on this in the Training Recommendations section.

NI CGI SKILLS The main focus for this survey is to report on NI skills levels. To illustrate the range of skills demonstrated in the survey, and one that is recognised in the rest of the UK, we have modified an industry roles skills map recently developed for Creative Skillset.

This '**Northern Ireland CGI skills map 2014**' shown on the next page illustrates how many respondents can robustly (see three pages on, for how skills were analysed) demonstrate skills in the following roles:

- 2D Compositing (VFX)
- 2D Roto and Paint (VFX)
- On Set Data Wrangling (VFX)
- Digital Matte Painting (DMP) (VFX)
- Match Moving (Camera and Object Tracking) (VFX)
- Flash, CelAction and Toon Boom (Cartoon)
- Motion Graphics Animation/Compositing (GFX)
- 3D Generalism (VFX, Animation, Games)
- Rigging and Creature Specialism (VFX, Animation, Games)
- Animation Specialism (VFX, Animation, Games)
- FX and Sims Specialism (VFX, Animation, Games)
- Lighting and Look Development Specialism (VFX, Animation, Games)
- Production Coordinator (Trainee Producer) (VFX, Animation, Games)
- Producer (VFX, Animation, Games)
- Pipeline and R&D (VFX, Animation, Games)
- Environments (VFX, Animation, Games)
- Shader Development (VFX, Animation, Games)
- Games Code (Games)
- Games Art (Games)

I have applied a key to the map, using a blue dot to denote a junior, mid level or senior position on the relevant card for every skill firmly evidenced. The blue dots have been plotted at the base of the cards to denote junior level, middle of the card to denote mid level and top of the card to denote senior level.

The same skills ratios that you'll see represented by blue dots on the skills map have also been put into a pie chart - to help visualise proportion. You'll find this on the page following the map.

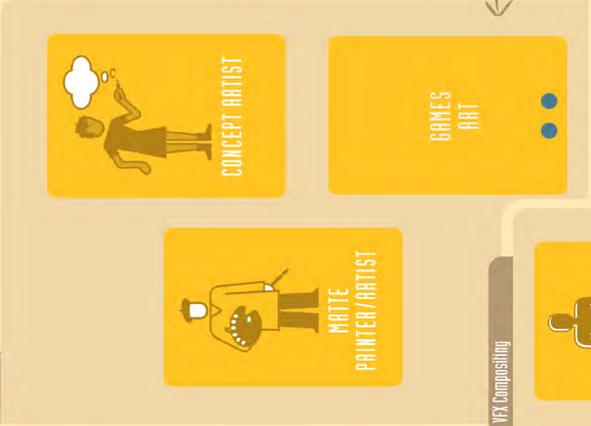
Blue dots denote every skill firmly evidenced in the survey. These have been plotted at the base of the cards to denote junior level, middle of the card to denote mid level and top of the card to denote senior level.

Entry points which could be provided through training.

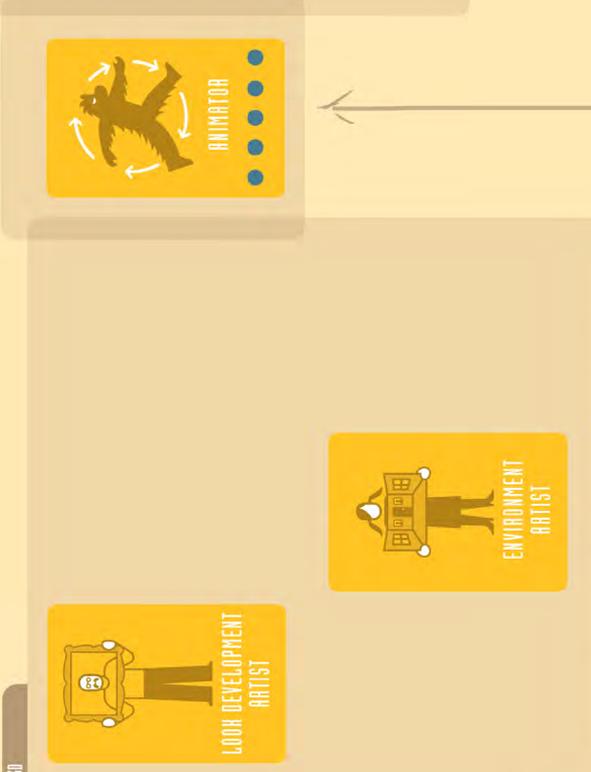
Represents a linear skills progression route.

Where no dotted line appears, the skills represented could interchange.

Art

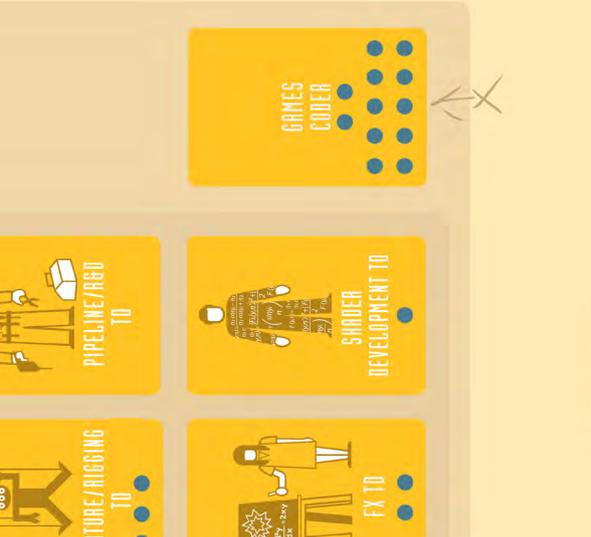


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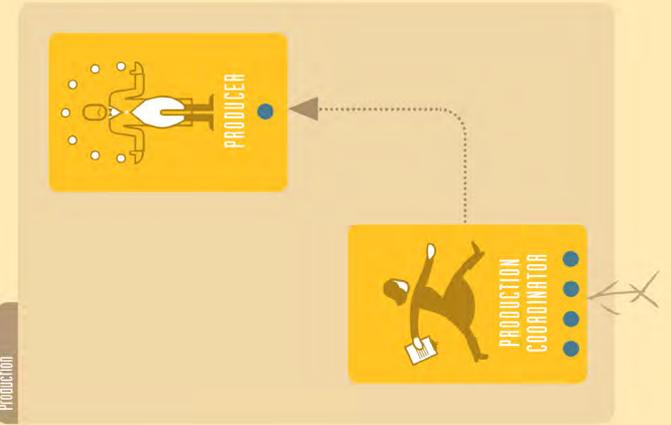


In Northern Ireland, Modelling, Texturing, with basic Lighting and some Animation make up the 30 Generalists role

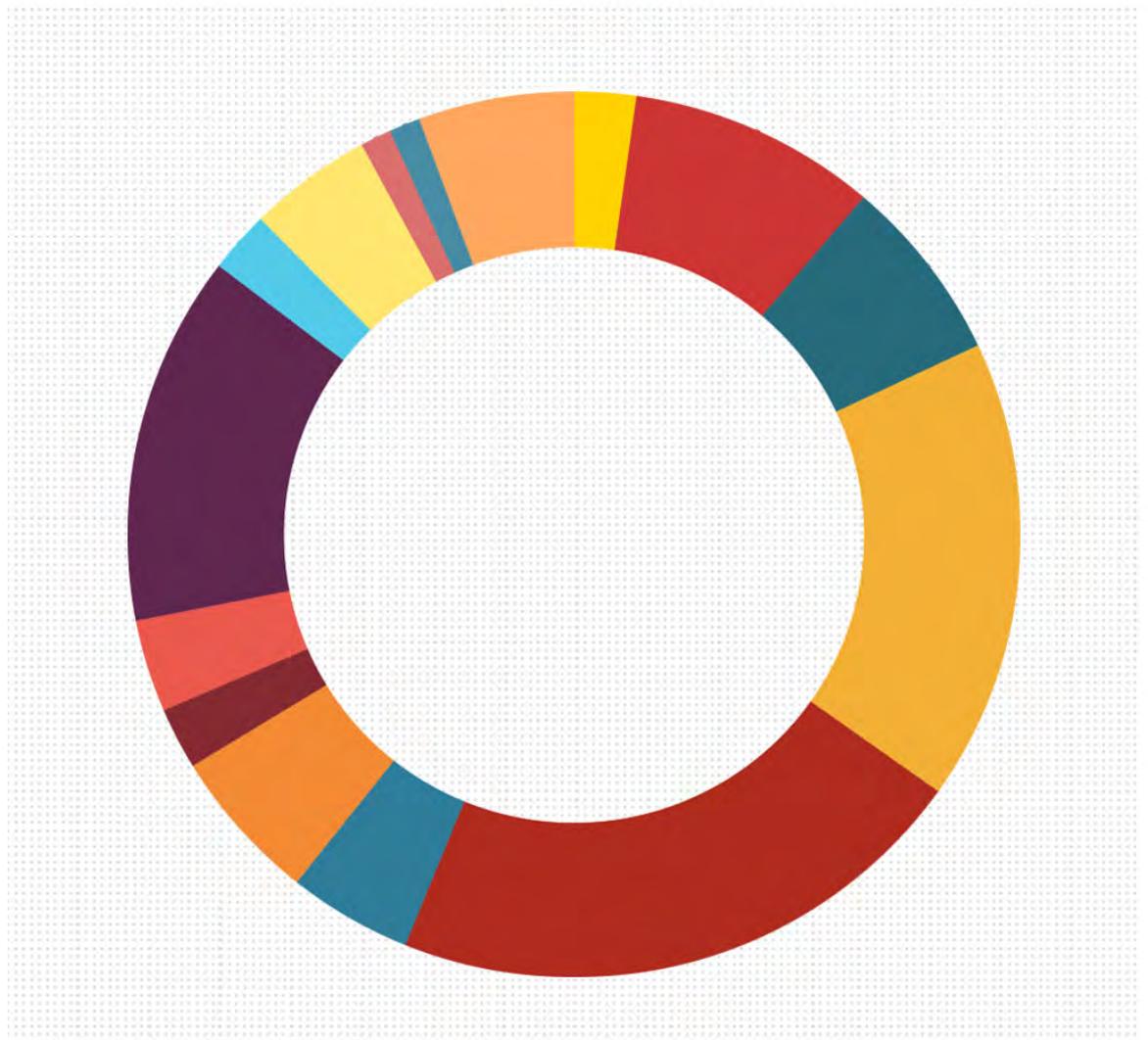
Technical



Production



NI CGI: Skills Map in Chart Form



2D Compositing

2D Roto and paint

Cartoon

GFX

3D Generalism

Rigging and Creature Specialism

Animation Specialism

FX and Sims Specialism

On Set Data Wrangling

Games Code

Games Art

Production Co-ordinator (Trainee Producer)

Producer

Shader Development

Match Moving (Camera and Object Tracking)

THE NI CGI SKILLS MAP METHODOLOGY The map represents recognised CGI job roles in groupings of Compositing, 3D, Art, Technical and Production as well as GFX, Cartoons and On Set Data Wrangling.

For training purposes and course design, We have integrated Games and Data Wrangling into an Art, Technical, 3D and Compositing in this scheme. This is in recognition of their common skills bases, however in developing courses for sub sectors, we will need to recognise that there are also important differences.

On the map, Cartoons (CelAction, Toon Boom and Flash) and Motion Graphics Animation/Compositing (GFX) are depicted outside of the original 'Digital Literacy' remit of the map, but their inclusion is necessary for three important reasons:

- 1) There is clearly an appetite for CelAction (respondents requested training in this, more than other 2D cartoon animation software such as Toon Boom and Flash - Adobe are considering discontinuing Flash in any case).
- 2) It is evident from the survey responses that many Artists and Animators in the region successfully and competently interchange roles across these sub sectors, operating almost as super-generalists. In our experience, this happens less in other UK production centres and across the world. There appears to be less linear role orthodoxy in the region and more of a 'needs must' mentality. It will be important to sell the 'super-generalist'* to any FDI in the right way.

** The term 'generalist' is used in the CGI industry to mean '3D generalism' as in CGI asset creation which involves modelling, texturing, lighting as well as perhaps some basic animation. You wouldn't expect it to include character design skills, on-set experience, motion graphics, work in games and 2D cartoon animation. There are a number of people who completed the survey who do work across these sub sectors on the map. They do so fairly competently as well.*

- 3) The task of identifying how skills can be clustered and career progression enabled through CPD training along recognised routes needs to be clearly understood by stakeholders, funders and individuals contemplating or undertaking training. This is to warn against the dilution of training by failing to understand the conventions and associations within sub sectors. Skills between some sub sectors (even those containing similar words in the job title – for example, 'compositing', '2D', 'animation') are in practice not very transferable at all.

- KEY SURVEY FINDINGS**
- As depicted on the **skills map**, the survey reports disproportionately high numbers of (GFX) Motion Graphics Animators/Compositors as apposed to VFX Compositors. GFX Animators/Compositors use After Effects software and often interchange with operating in CelAction and Flash as well as with some basic 3D work in Cinema 4D or 3DS Max. This fluidity and generalism reflects the dominance of low-end CGI/graphics, (collage animation using stills sourced from the internet, stylised compositing and motion graphic design work). This has met much of the needs of small studios and freelancers', indigenous (often advertising/television based) work in the region.
 - The number of Match Movers is far fewer than the number of 3D generalists. This indicates that there isn't sufficient understanding of camera tracking which is essential to make CGI assets sit properly within VFX shots/sequences. Camera tracking skills are the cornerstone for learning and producing good CGI for VFX. However, for pure 3D animation and computer games projects, camera tracking skills aren't necessary.
 - There's an appetite for people to understand and train in On-Set Surveying (and capturing lighting and texture reference on set). If this area was better serviced by skilled people it would enable the eventual self sufficiency in the production of high end VFX. It has a natural skills/role development to Match Moving which encompasses camera tracking and object tracking for VFX (could also cover image based lighting).
 - There is an absence of Lighting/Look Development skills, demonstrated by very low numbers in Shader Development and the non-existence of Look Developers or Lighting Artists/TDs. This may restrict any opportunity to do high end VFX or Games work in the future.
 - Most 3D generalists in NI have some understanding of rigging and animation. This degree of generalism is not as prevalent elsewhere in the UK or the world. A number of NI 3D generalists showreel animation work is reasonable but not at a high enough level to be able to take on creature work. NI animators evidence skills in basic character movement for games and mechanics/rigid body animation for VFX and 3D animated productions on their showreels.
 - In Games, the survey found high numbers of people working in Games Code/ Games Development. The survey shows that these people are largely computer science graduates from the University of Ulster and Queens University. This is a different picture to that of the rest of the UK where there are skills shortages in coding and network programming. In Games, it is only in Production Management that skills gaps equal those of the rest of the UK. Creative Skillset's findings were that the games industry in the whole of the UK had skills gaps in:

- Production / Project Management;
- Quality Assurance Certification;
- Leadership and people management;
- Discoverability and monetisation;
- Brand and marketing;
- Financial and legal;
- Translating / localisation.

See **Appendix 4** or the link below:

http://www.creativeskillset.org/funding/SIF/skillsflashes/article_9361_1.asp

Respondents with Game Art skills (which sits with Concept Art and Matte Painting on the Skills Map) were low in the survey, although it was evidenced that the Weta Workshop in concept design that took place at the University of Ulster in 2013 had some impact.

- No one describes themselves as an FX Artist or FX TD. Only three respondents demonstrate basic rigid body deconstruction and fluid simulation. Without exception, these artists are using commercially available tools and are not custom building simulation solvers using computer coding. Training to be on a par with FX TD's globally would need to involve an understanding of Houdini software as well as physics/mechanics and computer programming. To be able to do FX for VFX specifically, they would need a much more thorough understanding of body tracking/rotomation and object tracking - skills not evidenced to a high enough standard by anyone at the moment, in the NI survey.
- There is an evident naivety about what being a Producer involves. Respondents largely understand the production know-how (bidding, scheduling, recruitment, managing people, financial control and sales) in terms of negotiating freelance work contracts for themselves. Real (and viewed in the wrong way as implicitly understood/easy) production management/business skills aren't evidenced enough through the survey or anecdotally, through the work performed in the region. There are four/five respondents who show some fledgling production management skills and only one who has the experience and a track record as a working Producer (specifically in animation). More Production Management skills are needed in order to bid for and manage the type of larger scale project foreign investment could bring.
- The NI showreels evidence poor professional presentation and practice. This again perhaps reflects the nature of the work conducted in the region. However, the quality of showreels when supplied by NI respondents as compared to those of the diaspora, is glaring. The diaspora's showreels were concise and at the level expected in relation to their job title. Only 14 of the 66 NI respondent's supplied links to showreels. Only half of those were of professional quality. This compares to 17 of the 26 diaspora respondents who supplied showreels, all of which met the expected quality.
- We have been made aware from individuals working with NI CGI businesses that the rate at which CGI production work is turned around isn't yet reaching the same rate of CGI work being produced in other parts of the UK and/or globally. This problem appears to be seeded in junior artists and animators not being trained/mentored in how long tasks should take coupled with a lack of awareness of the quality thresholds and work culture present in the global industry.

**IMPLICATIONS FOR
SECTOR TRAINING**

The issue with VFX training across the whole of the UK is it is playing catch up with industry, rather than leading it.

Training solutions needn't be dictated by how the sector develops in the region. For example, questions about whether anchor tenant(s)/FDI idea might foster and promote several industry sub sectors or just one? We have to develop the NI skills base to equip the industry to meet the needs of future projects.

In terms of skills and understanding, there are job roles in this sector which have the same skills depth as other senior professions. Because of this, breadth isn't always desirable or possible as the competencies increase in number and complexity. If 3D generalism is seen on a skills level above camera /object tracking (which it normally is), then FX and sims, lighting and look development as well as creature FX and rigging would be considered specialist (as opposed to generalist) and higher level. All of these specialisms are harder to learn and notoriously hard to recruit to in the UK but these second tier roles must be represented if NI is to become self sufficient in the future. See Creative Skillset Skills Flashes in **Appendix 4**.

All the roles above need a blend of good art and maths/science/coding (often referred to as STEAM) training to really be able to cut the mustard on bigger projects (and much more specialist experience on the part of trainers/mentors). As a point of reference, the skills shortages for VFX and Animation companies in London exist predominantly in these areas. This lack of industry specialists was highlighted in Nesta's 'Next Gen' report which has prompted the emphasis for recruitment in Rigging, FX, Shader Development, Lighting, Software Development, Pipeline and Concept Art/Design as well as in other areas, from French and German (and other non EU) Universities and by working to attract better STEAM graduates from UK universities and training courses.

**THINK ABOUT
SKILLS BEFORE SOFTWARE**

It is crucial that CGI training has skills at its' heart, rather than software. The most successful training schemes we've been associated with in this sector are always designed with techniques/skills in mind first and the learning of software second. It's often the software vendors' high profile marketing that has influence here, but we've also found that funders and their training providers often deliver training that is based on a 'needs must' or scatter gun approach in training software. It could also be that the trainers don't understand the sector well enough or they aren't briefed on how their training needs to fit into an overall scheme. This often results in there being insufficient time or focus to the training, in order for trainees to really master techniques - instead an overview of the software is provided and the course sits in isolation, providing no realistic skills learning progression through the CGI sector or its sub-sectors.

TRAINING RECOMMENDATIONS

NI survey respondents have identified the software they would like training in (**Appendix 2**) with Mari, Houdini, Python, and Unity 3D topping the ask list. Some analysis and guidance is given on the next pages as to what would provide a naturally cohesive design for CGI training to help build sector skills in NI. This may not meet all the training requests that people made in the survey.

VFX COMPOSITING As well as 2D Cartoon (Flash and CelAction) roles not transferring well into 3D Animation/generalism, compositing roles are also much harder to transfer from GFX to VFX than might be thought. For example, although in both sub sectors layering, masking, animation and colour editing tasks are undertaken, the photorealistic (and very precise) nature of most VFX compositing work means the standard of finish and attention to detail required increases 20 or so times, more than most GFX artists/animators will be used to. Reaching the level of precision expected by the global VFX industry requires the intensive mentoring of new VFX compositors (as well as roto and rig removal artists) and the quality certification (QC) of all their work on a regular basis.

There is some 2D VFX mentoring/QC happening in the region. This has the aim of promoting those working as roto/prep artists and junior VFX compositors to mid-level VFX compositors within a year. We would recommend bolstering this effort in two ways:

- Provide conversion training from After Effects to Nuke to help mitigate the over supply of GFX Compositors/Animators in the region and convert them into junior VFX compositors. We recommend a course in Nuke, running over a minimum of 30 days to allow for this. To begin with at least, the coverall option may be to ensure that NI 2D Artists are dual skilled in GFX and VFX Compositing. This means being comfortable using After Effects and Nuke software interchangeably.
- Ensure a supply of new entrants into the skills shortage area of VFX compositing by providing training in roto and prep for school leavers and FE students (this is the industry recognised route into a career in 2D VFX). This training would need to be in Nuke, as a bare minimum, with an option to learn roto and paint specific skills in Silhouette.

There are several VFX Junior Compositors working in the region who have been mentored themselves to industry standard. They would be able to teach and mentor roto, rig removal and basic paint to 16 – 19 year olds.

TRAINING IN CELACTION 2D SOFTWARE Although six respondents said they were interested in learning CelAction and training previously organised by Dog Ears in Derry (funded by NI Screen) was referred to a number of times in the survey, in terms of digital literacy and an overall NI industry development plan, 2D Cartoon Animation offers limited opportunity for career progression and for equipping the industry skills base though. Although providers of CelAction 2D training are virtually non existent (even online), cartoon based animation skills are almost stand alone and not very marketable in terms progressing to VFX, 3D Animation or Games work.

As an existing CelAction/Flash Animator commented in the survey:
"If I want to survive in this industry I will need to learn either compositing, VFX or 3D."

ON SET DATA WRANGLING AND MATCHMOVING Four people specified wanting to train in On-Set Data Wrangling and Camera/Object Tracking. There has been little training on this in the region and its implementation, in order to develop VFX foundation skills, is highly recommended. In terms of pedagogy, the on-set aspect and the Camera/Object Tracking using 3D Equalizer and PFTrack, work well together and establish a good learning progression path.

On-set Data Wrangling is identified as a significant skills gap in the NI survey (See **Skills Map**) as are 'VFX crew with on-set experience' in the rest of the UK (reported by Creative Skillset: see **Appendix 4**). No one is addressing this at the moment. NI, with the appetite (and resources) created by HBO and Game of Thrones, is well placed to fund and deliver a properly taught on-set surveying and HDR lighting and texture capture course. Expensive resources such as Lidar scanners or Total stations would be great, but the basic theories and practices a Data Wrangler needs to know, can be taught now using more cost effective means. These being smart phone apps for taking down dimensions, laser measurement devices from the DIY shop and DSLR stills cameras.

There is a particular expert available as part of the potentially returning diaspora contingent who, having come from a background in construction surveying, has already proven his worth as a trainer in on set and camera tracking (**Appendix 5**). This person could design the course even if he was unable to deliver it. Alternatively, Paddy Eason, On Set Supervisor with NVisible in London, has delivered training in basic on set VFX practice, including for 'Screen Training Ireland' in Dublin.

"I aim to do more work on set and also aim to learn python."

Survey respondent

LIGHTING AND LOOK DEVELOPMENT (OR FX OR CREATURE DESIGN) A higher level of training should be developed to sit above 3D generalism. This would build a strong 3D skills ecosystem to serve VFX, Games and Animation. The skills pipeline would need to include Match Moving (for VFX) and 3D generalism (model, texture, basic light and some animation) as a base. A second tier of training could be based around FX, Look Development, to include shader development for VFX and/or Games This is recommended using the Arnold renderer with Maya for VFX and the Unity 3D engine for Games. Coding and art/photography input would also need to be included.

Animation Mentor, an online training provider in the US, has designed an excellent lighting course which we are currently holding up as an example of best practice for filling one of VFX/Animation education/training gaps in the UK:

<http://www.animationmentor.com/vfx-program/lighting-basics/>

Character/Creature Design for Games/VFX/Animation would also be a good option for Second tier training. This could involve: design/concept, digital sculpture with Z-Brush or Mudbox, rigging, animation, production savvy Python and FACS training.

GAMES AND UNITY 3D 11 respondents expressed an interest in Learning the Unity 3D Games Engine. This software engine is a good core to learning Games Development. There are other software applications used in the process of in particular, multi platform games development, that are worth investigating. More curriculum development work needs to be done in finding the optimum and relevant mix of software and coding languages that will build on the strength of coding and tech skills in the region. Games Art and Concept Design skills need further development.

Creative Skillset's research identifying UK wide skills shortages and gaps in Games. See **Appendix 4** or the link below:

http://www.creativeskillset.org/funding/SIF/skillsflashes/article_9361_1.asp

"I would like our 3D guys to have more of an understanding of the Unity 3D engine, particularly for shader development."

CEO, Billy Goat Entertainment

PRODUCTION MANAGEMENT Production management skills in London are often taught through informal mentoring practices but because there are so few in NI who can do this there needs to be formal training. The industry, however proficient the skills become in art, animation and coding, cannot flourish without a strong production management contingent. It is also worth noting that in our experience, people with production management skills from live action or other industries, (without training) will lack the sector specific knowledge to successfully production manage/produce VFX, Animation or Games projects.

NI skills shortages in production management mirror those identified by Creative Skillset in all UK regions for Animation, VFX and Games. See **Appendix 4** or links below:

Animation:

http://www.creativeskillset.org/funding/SIF/skillsflashes/article_9362_1.asp

VFX:

http://www.creativeskillset.org/funding/SIF/skillsflashes/article_9375_1.asp

Games:

http://www.creativeskillset.org/funding/SIF/skillsflashes/article_9361_1.asp

Escape Studios in London offer a short evening course in VFX producing that runs over eight evenings:

<http://www.escapestudios.com/producing-for-visual-effects-evening-course/>

The classic line in production appears to be that it can't be taught formally and Production Coordinator's should be mentored by Producers. No one has yet written the industry reference standard producers/production management course for VFX, Animation and Games but one wouldn't be difficult to design and is very much needed.

"I'm very interested in production management (VFX Producer) in VFX but there are currently no courses run for the type of role and it is very essential to making a vfx company work and I have found that if trying to deal with large productions they are looking to see that there is quality production management as well as high quality skills and work available. We need people who have been in the industry a long time and know how it ticks to be able to pass on and mentor any juniors otherwise people will be brought in for the job and the skill base locally will never build up and have a strong enough infrastructure."

Survey respondent

PROFESSIONAL PRACTICE Junior Artists and Animators in the region need to keep doing what they are doing but with additional training for work that is achievable for NI, fits with the idea of industry orthodoxy elsewhere in the world, and is supported by some funded exchange and/or mentoring programme with the mainland UK or Europe. Potential mentors have been identified in **Appendix 5: Details of Returning Diaspora**.

Taking the long view, and having had engagement first hand with some companies in the region, people's expectations professionally in terms of job title and fast promotion are really at odds with the craft/time served nature of the business elsewhere. NI Artists and Animators really need to understand and experience the realities and possibilities of established professional practice. Individual showreel presentation needs to be taken seriously and understood as the calling card for your next project or job in the industry.

The survey does highlight one reason why the work culture in CGI perhaps has had limited common orthodoxy in NI: 15.4% of the workforce describe themselves as 'Self taught'. This is a higher percentage than we expected, coming after 23% of respondents having studied an undergraduate degree and 19.2% having studied a postgraduate degree to get them into the CGI industry in NI. See **Appendix 2: Training For Industry Entry**, for more details.

GOOD PRACTICE The survey evidences the impact of good training provided by online resources such as iAnimate, Animation Mentor, and FXphd. CPD short courses in Maya and Nuke/Silhouette run at the University of Ulster and led by Greg Maguire, Professor of Animation, are also having an impact on the industry skills base in the region, substantiated through respondents who know Maya together with some understanding of rigging and animation as well as modelling and texturing (these skills could also be applied to other 3D software). The Weta concept/design workshop which ran in 2013 was flagged as enjoyable and valuable by seven respondents and one, Gerald Dunleavy, was awarded International CGI Student of the Year in 2012. Gerald did his MA in Multidisciplinary Design in Greg's department at the University of Ulster. We recognise that the department is one of the few University departments in the UK currently pursuing good hands on and practice led teaching with depth and specialism, as opposed to the sign posting that most institutions do with their CGI teaching offer.

Keeping up the supply of new talent is also important to the industry's growth in NI. The need to create awareness of careers in the larger cgi sector as a whole and ignite that inventive spark in the 10 – 18 age group has been slow to be recognised in other parts of the UK. NI is leading here as well:

<http://www.digitalcircle.org/articles/3d-dojos-launches-at-university-of-ulster>

IN SUMMARY This a good time for NI to pioneer and lead on Production Management, Unity 3D, On-set and Match Move training courses and decide between look development/lighting, Creature Design or FX as higher level training.

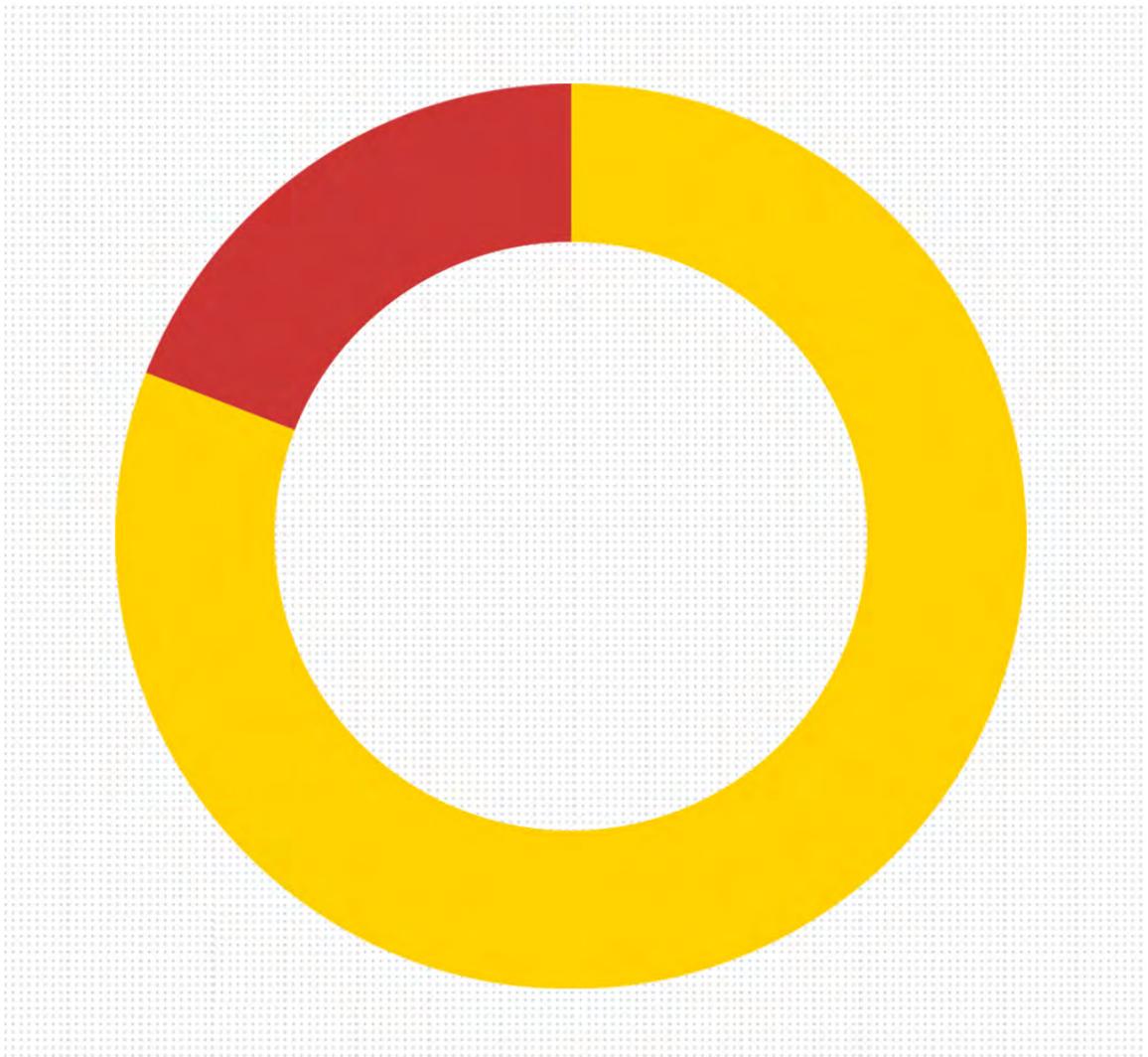
Creative Skillset's highlighted skills shortage of too much specialism and not enough generalism in junior CGI has already been dealt a blow in NI with most 3D generalists being able to multi task in modelling and texturing as well as in animation. This digitally literate core talent can be tasked to serve any FDI in the making of digital weapons, furniture, vehicles, terrain, buildings and costume; serving all Games, animation and VFX asset requirements equally and interchangeably.

We worked in NI for a year and found the cooperation, vitality and enthusiasm of people unparalleled anywhere in the UK. The main challenge for individual artists, animators, coders and producers in the region is understanding and working within the orthodoxy of a now global industry. This means careful and considered mentoring or an exchange programme with London or Europe that will help get showreels and work production rate up to the professionally recognised level of focus, speed and finish.

Strong on Games Coding and CGI generalism, the region needs to capitalise on these strengths, give established juniors already working in the industry in NI the opportunity to move up a tier, and keep drawing in/attracting new entrants with conversion or entry level training as addressed in the Training Recommendations. With investment, this could provide the ecosystem of skills for a globally recognised CGI industry in Northern Ireland.

Appendix 1 Equal Opportunities Statistics

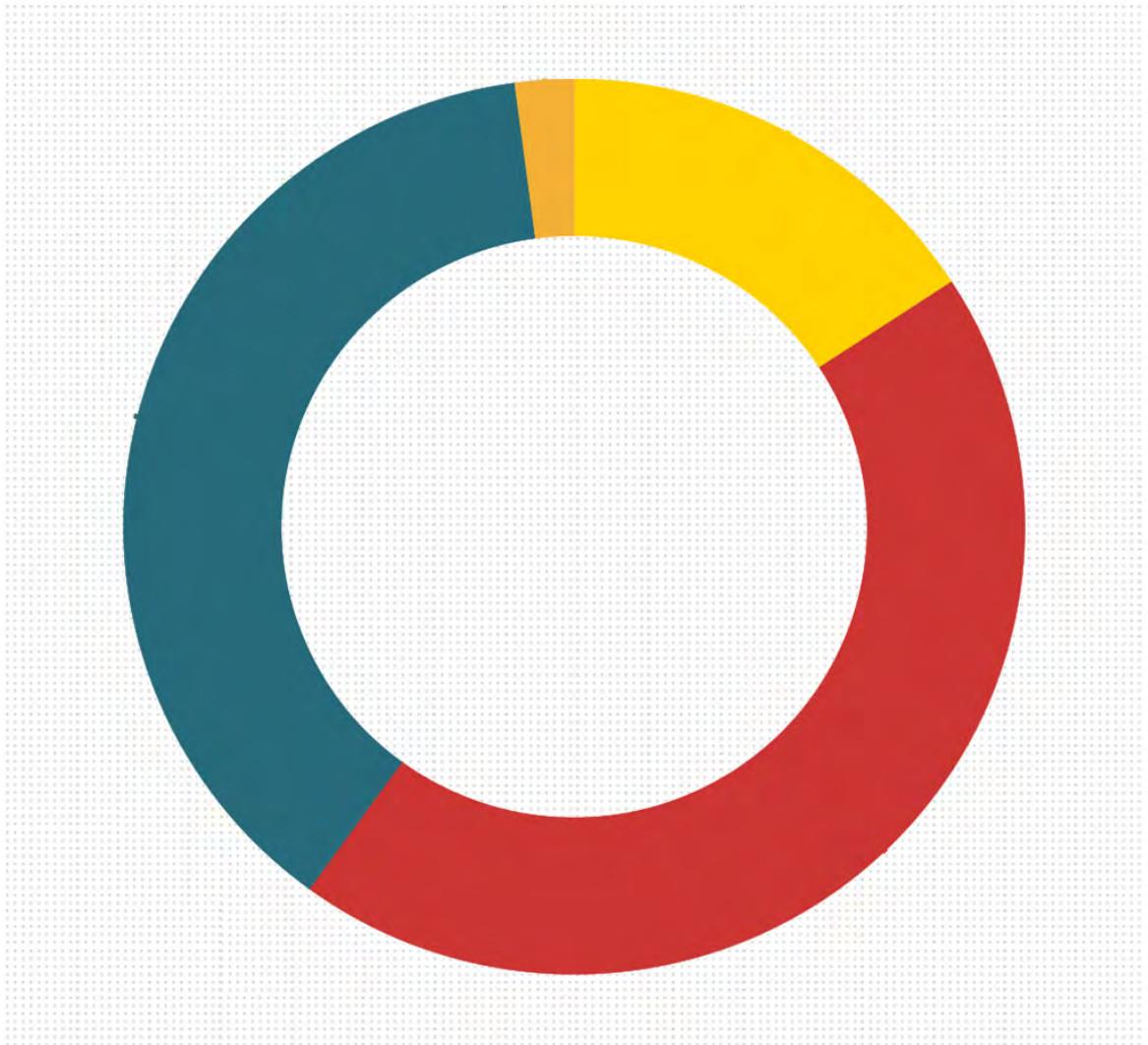
NI CGI: Gender



Male Female

66 people reliably responded to this question on the NI CGI survey 2014, in order to achieve this analysis.

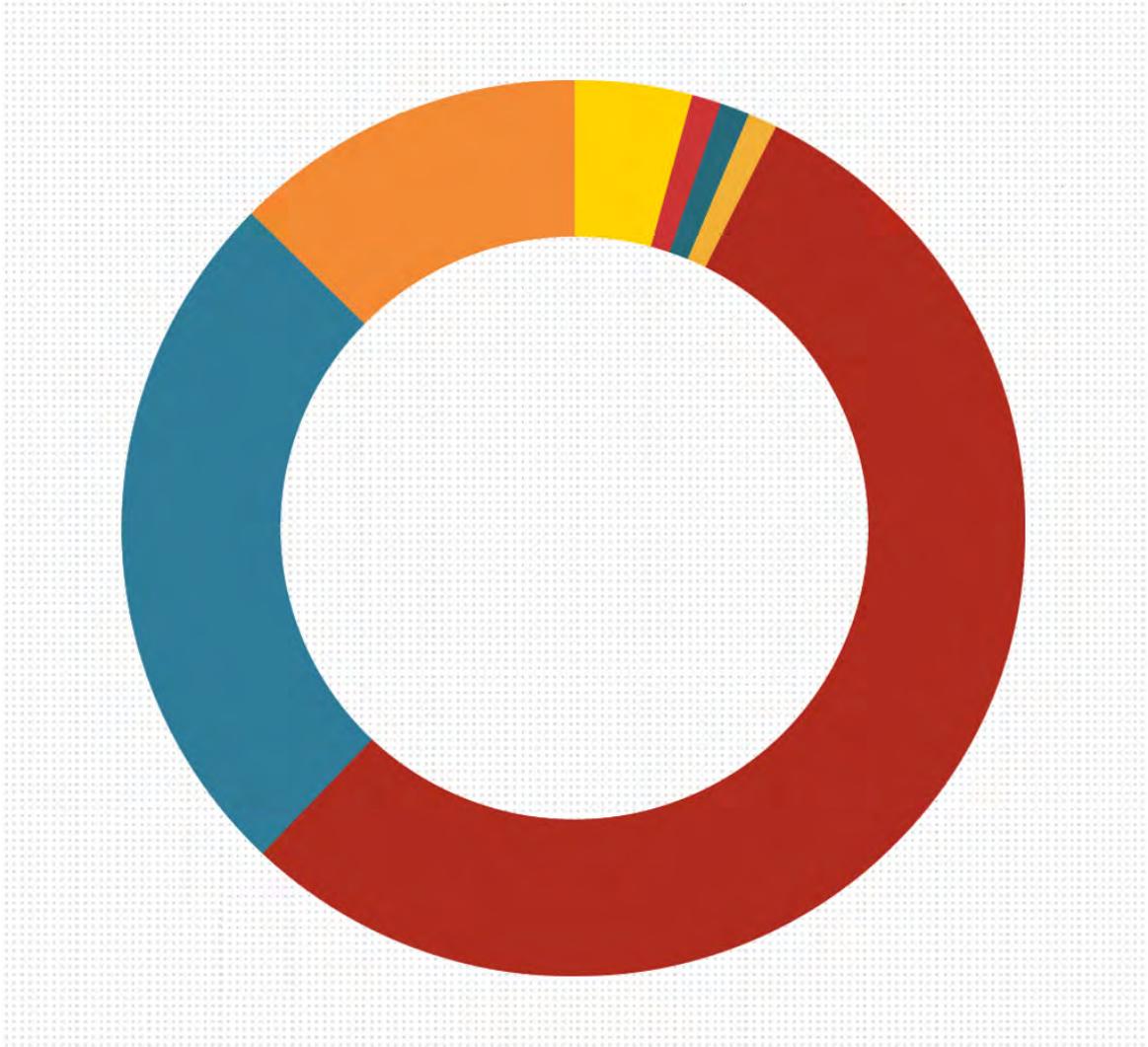
NI CGI: Age



16 to 24 25 to 34 35 to 49 50+

66 people reliably responded to this question on the NI CGI survey 2014, in order to achieve this analysis.

NI CGI: Ethnicity



Asian or Asian British - Indian

Asian or Asian British - Pakistani

Asian or Asian British - Caribbean

Chinese

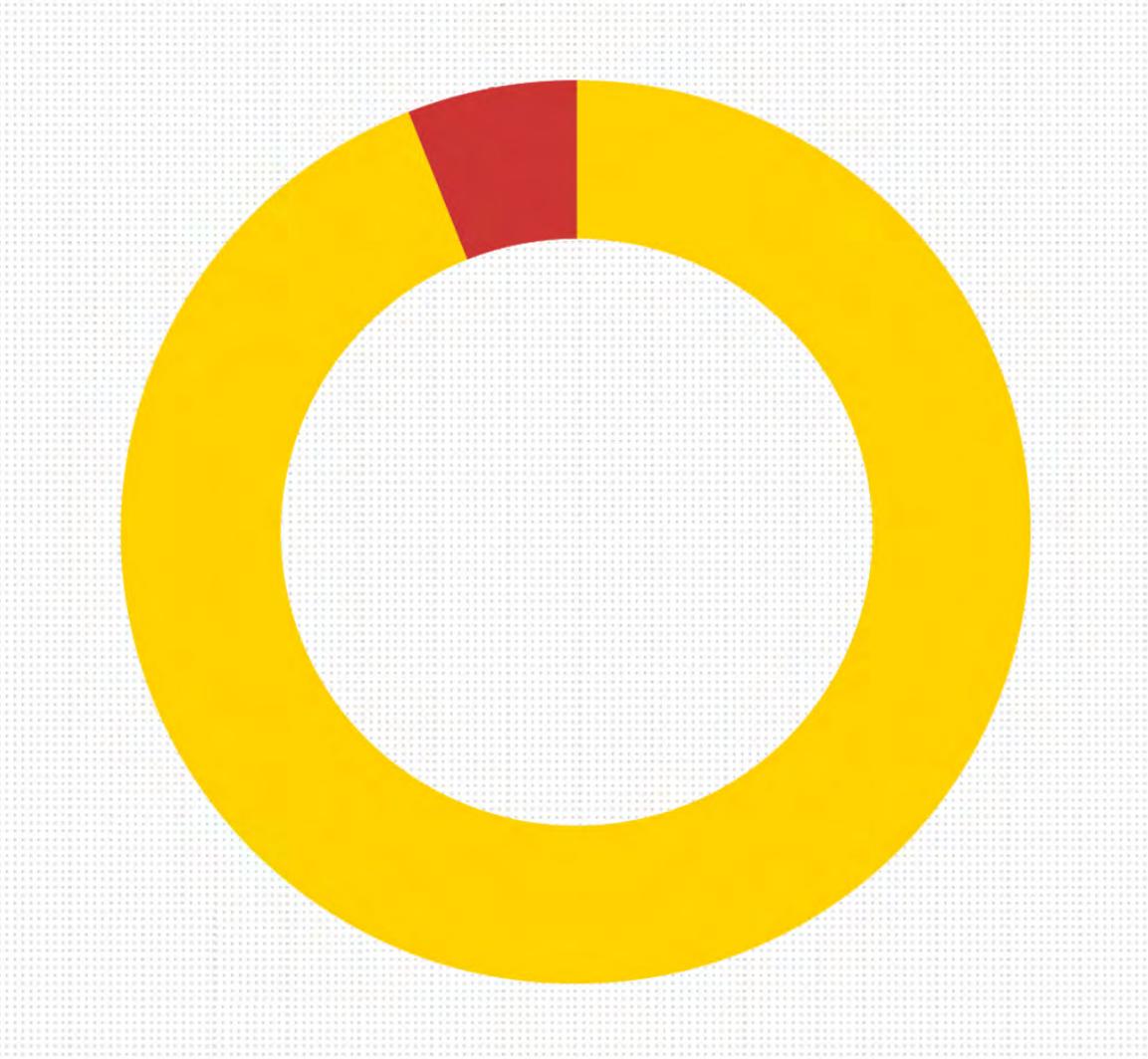
English/Welsh/Scottish/Northern Irish/British

White - Irish

White - Other

66 people reliably responded to this question on the NI CGI survey 2014, in order to achieve this analysis.

NI CGI: Disability

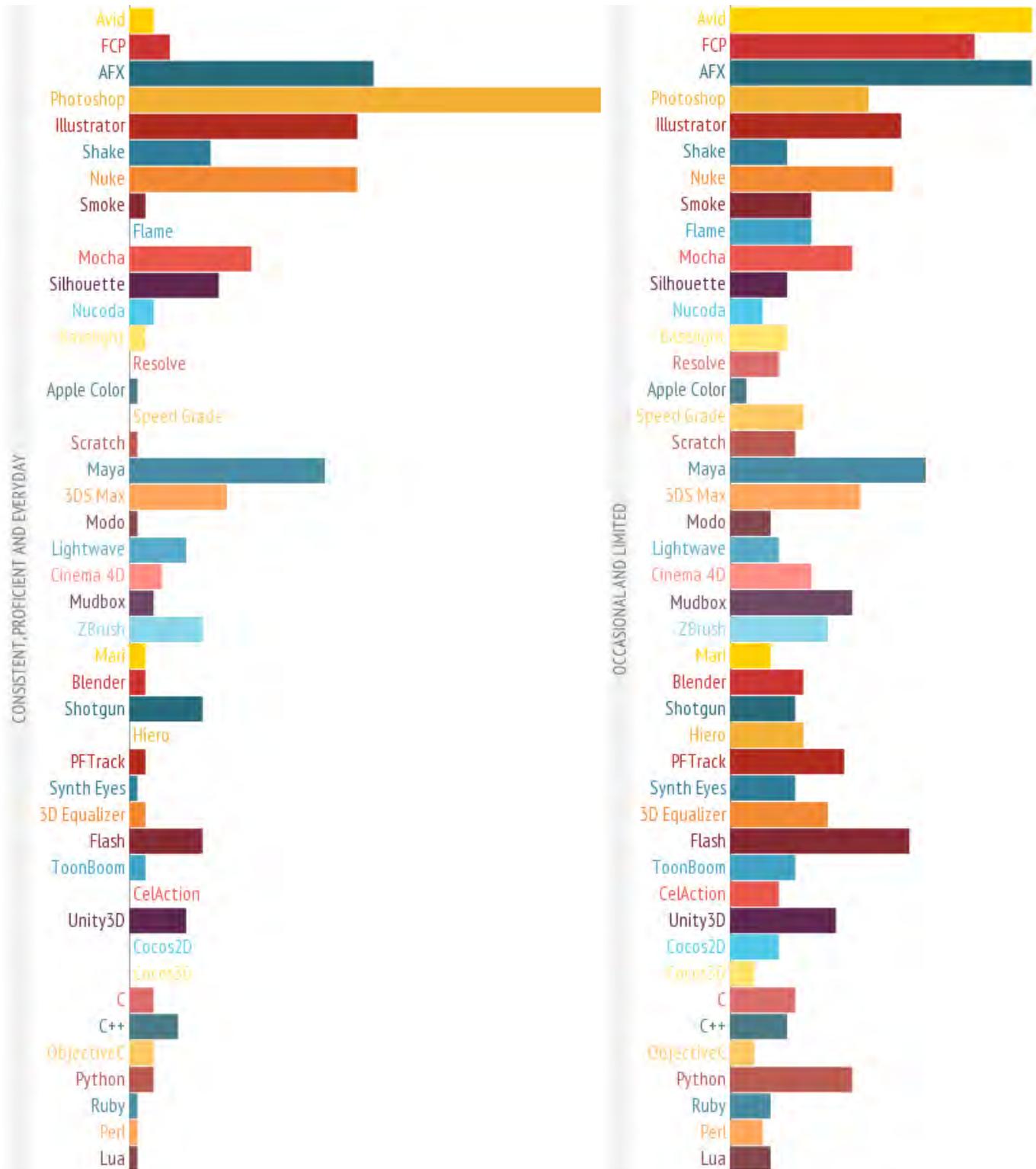


No Yes

66 people reliably responded to this question on the NI CGI survey 2014, in order to achieve this analysis.

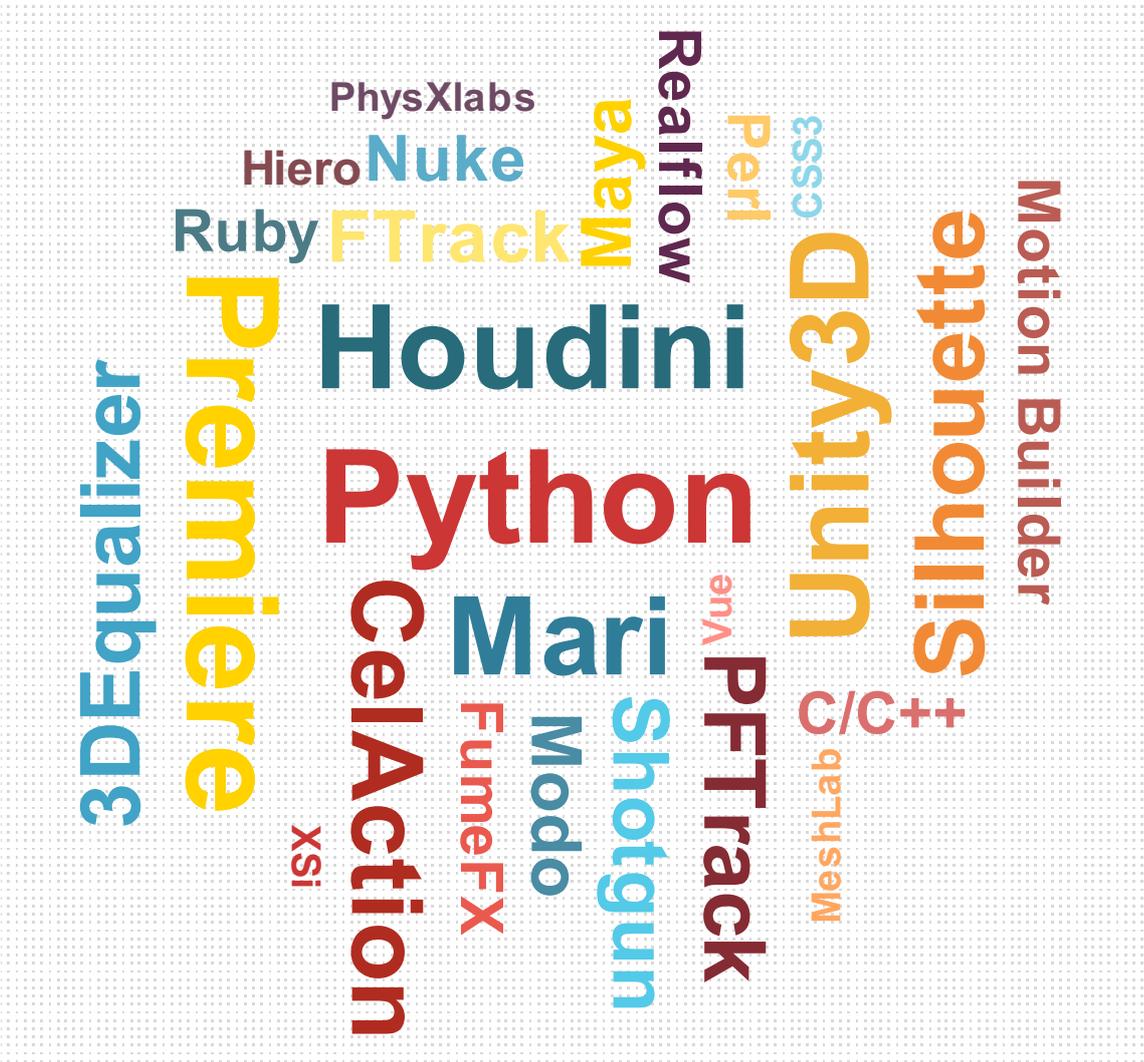
Appendix 2 Training and Education Statistics

NI CGI: Software Literacy



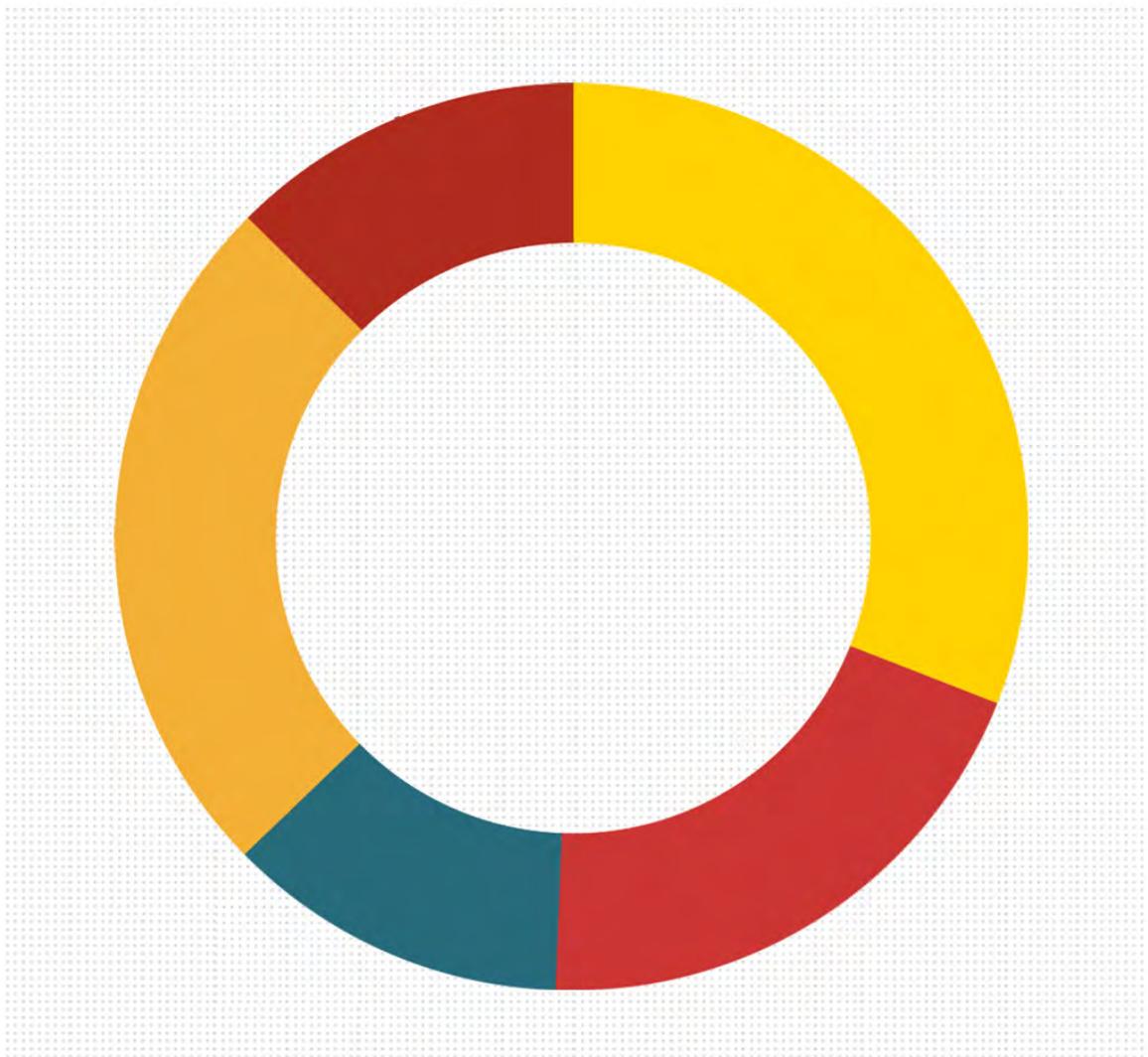
66 people reliably responded to this question on the NI CGI survey 2014, in order to achieve this analysis.

NI CGI: Would Like To Learn



66 people reliably responded to this question on the NI CGI survey 2014, in order to achieve this analysis.

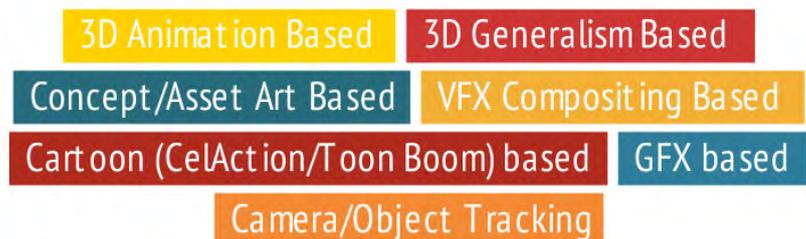
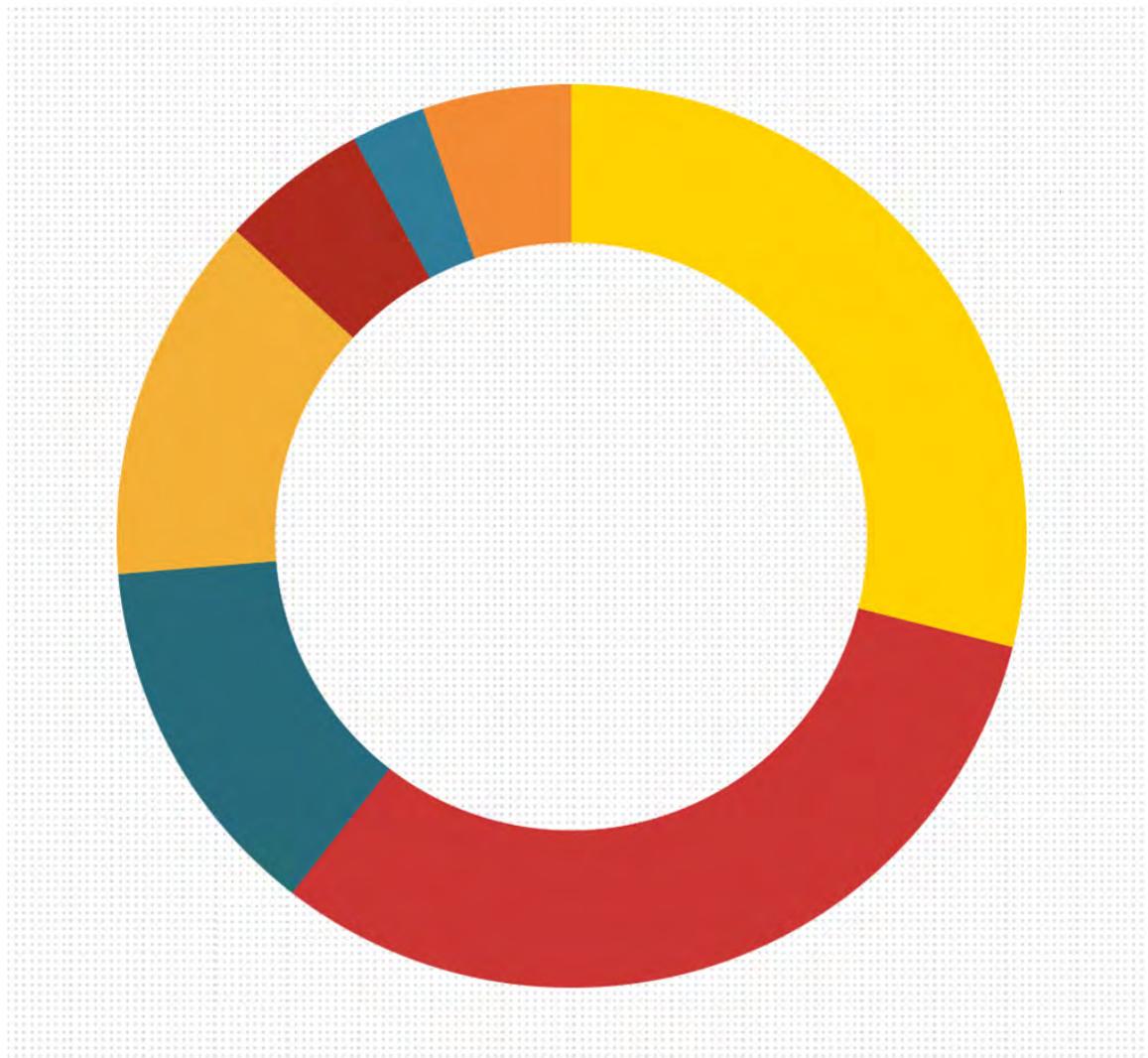
NI CGI: Keeping Skills Up To Date



Online Tutorials Read Web Forums Magazines
Question peers CPD

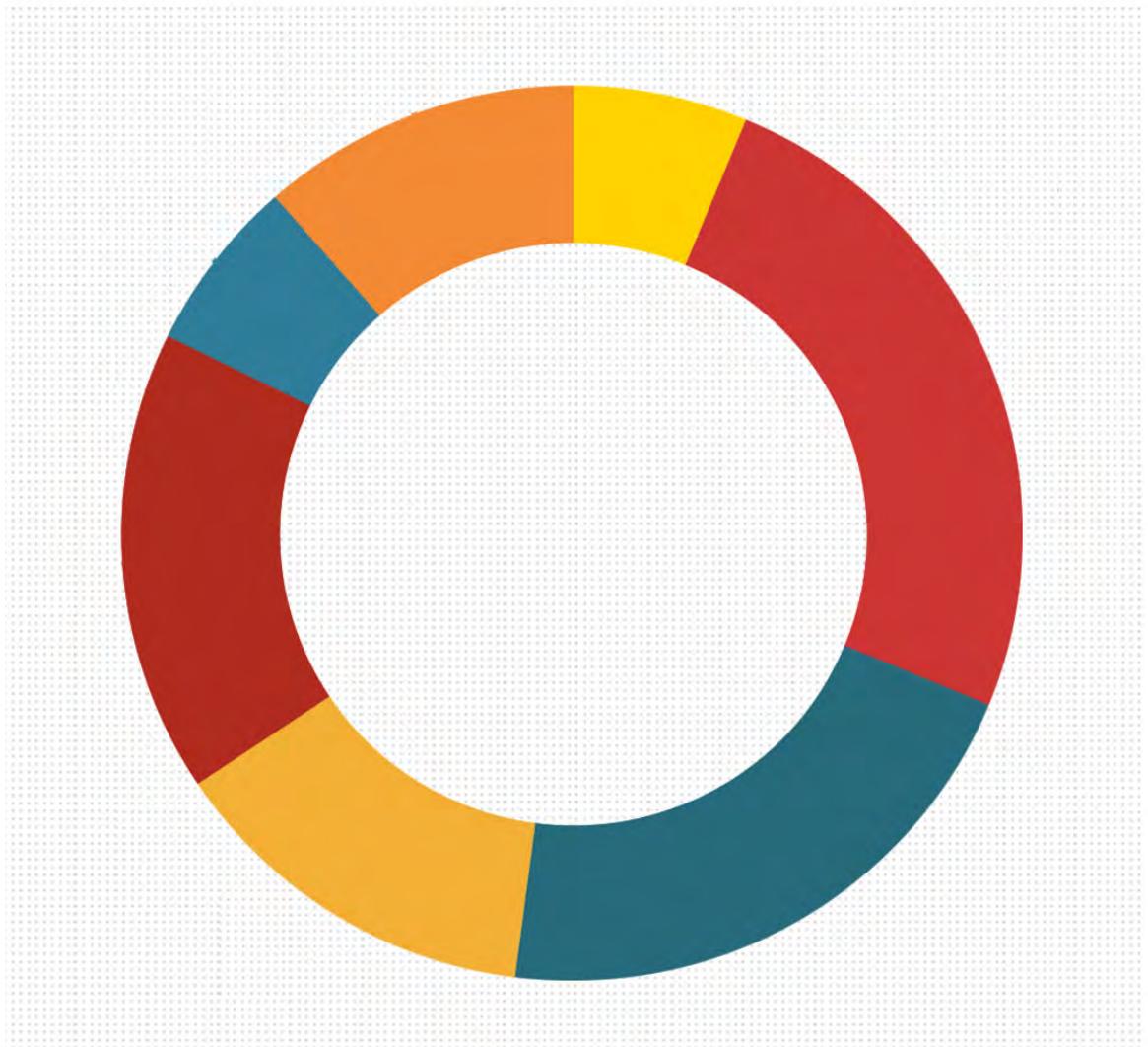
66 people reliably responded to this question on the NI CGI survey 2014, in order to achieve this analysis.

NI CGI: Continued Professional Development



66 people reliably responded to this question on the NI CGI survey 2014, in order to achieve this analysis.

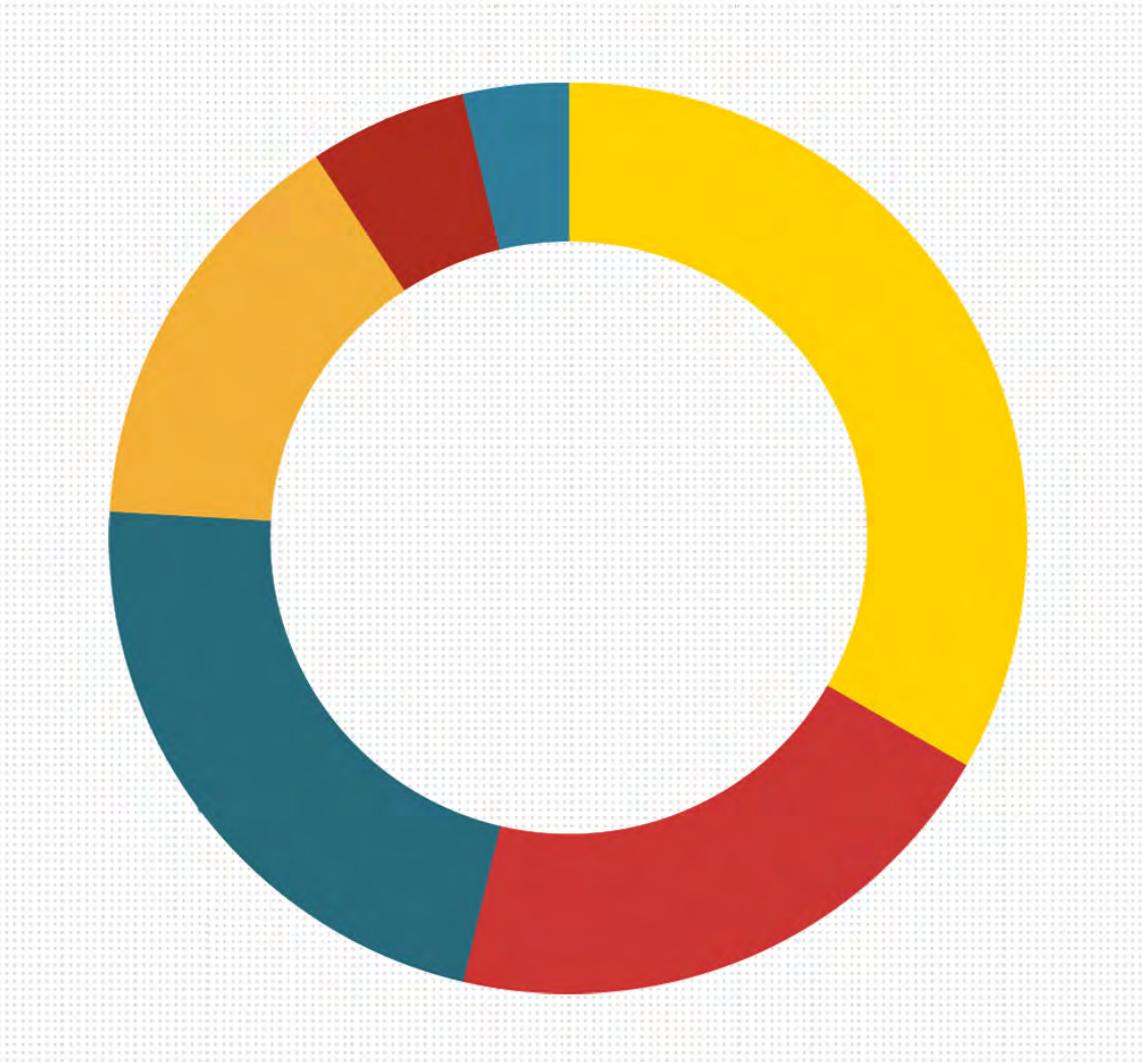
NI CGI: Training for Industry Entry



66 people reliably responded to this question on the NI CGI survey 2014, in order to achieve this analysis.

Appendix 3 Pay and Recruitment Need Statistics

NI CGI: Pay



£10,000 - £17,000	£17,001 - £24,000	£24,001 - £30,000
£30,001 - £40,000	£40,001 - £60,000	£60,001 - £100,000

66 people reliably responded to this question on the NI CGI survey 2014, in order to achieve this analysis.

NI CGI: Future Recruitment Needs



Companies in the region, expect to recruit into these roles in the next six months.

66 people reliably responded to this question on the NI CGI survey 2014, in order to achieve this analysis.

Appendix 4 UK Wide Skills Flashes



Animation skills flash

The total animation workforce has increased by 15% since 2004. Although the total suffered a 9% dip in 2009 it has since recovered at 4,600 employed.

More than half of the animation workforce is based in London (56%), followed by the South West (18%) and Wales (11%).

One in three of those working in animation are freelancers.

21% of companies have vacancies - **51%** of

these vacancies are proving hard to fill.

30% of companies report a skills gap within their workforce.

Key skills issues:

- High level Visual Storyboarding;
- Training in industry standard software;
- Animation Production: Producers, Line-Producers, Managers, Co-ordinators.

Key skill shortages:

- Visual storyboarding;
- Production Management;
- Trainee/assistant roles;
- Compositing artist;
- CGI Animators;
- Rigging.

Key skills gaps:

- CelAction;
- Maya;
- Nuke;
- Storyboard Pro;
- Stop Motion Pro;
- Lightwave.

The proportion of women in the computer games workforce, those from a Black, Asian and Minority Ethnic (BAME) background and the proportion of the workforce based outside London is outlined below:

% of workforce	2004	2006	2009	2012
• Women	• 43%	• 34%	• 18%	• 40%
• BAME	• 6.6%	• 2.1%	• 2.3%	• 3.0%
• Outside London	• 53%	• 69%	• 80%	• 44%

Total workforce in animation



In addition, Creative Skillset is developing a new online workforce planning tool to be launched in 2014 that will allow companies to manage their own workforce and skills portfolio ensuring real time data and intelligence is available for all industries Creative Skillset covers including the animation industry.



Elysium thanks to TriStar pictures.

VFX skills flash

The total VFX workforce employs 5,300 people down from 6,500 in 2009.

Three fifths of people are based in animator roles followed by 12% working in art and design and 9% in business management

Freelancers make up 9% of the VFX workforce.

Key skills issues:

- Multiskilling: artists find themselves pigeon holed in one specific discipline
- Formal, standardised training is not readily available for the new tools artists require;
- Leads, digital supervisors and crew more generally lack 'on-set' experience;
- Graduates lack core skills in Maths, Physics, Art and Design as well as the necessary production experience to be placed into artist roles;
- Entry level roles of roto / track / paint are increasingly being offshored reducing opportunities;
- Management training:
 - Decision making,
 - strategic planning,
 - succession planning;
- Leadership training:
 - Soft skills;
 - motivation, etc.;
- Production methodology:
 - planning;
 - workflow design;
- Software development methodologies;
- Document writing / presentation skills: business proposals / recommendations

Key skill shortages:

- Compositors;
- FX;
- Supervisors;
- Sales / pitch / procurement;
- Trainers and tutors.

Key skills gaps:

- Multiskilling;
- Client handling;
- On set experience;
- Sales / pitch / procurement.

The proportion of women in the VFX workforce, those from a Black, Asian and Minority Ethnic (BAME) background and the proportion of the workforce based outside London is outlined in the table below:

% of workforce	2009	2012
• Women	• 19%	• 19%
• BAME	• 7.9%	• 1.0%
• Outside London	• 7%	• 1%



Games skills flash

A third of people are based in art and design occupations followed by 26% working in technical development.

Freelancers make up 14% of the computer games workforce.

31% of companies have vacancies - 53% of these vacancies are proving hard to fill

30% of companies report a skills gap within their workforce.

Key skills issues for games:

- Digital publishing skills - online distribution has now exceeded physical.
- Advanced management expertise from business and people to project methodologies
- Up-skilling production teams to more specialised roles

Key skill shortages:

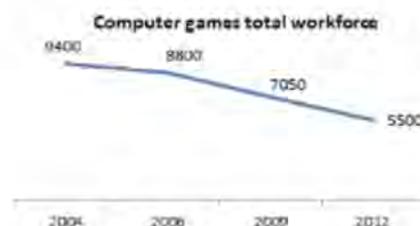
- Coders, including Network Programmers;
- Artists, including Cinematic and Technical;
- Designers, including Technical Designers;
- VFX.

Key skills gaps:

- Production / project management;
- Quality assurance certification;
- Leadership and people Management;
- Discoverability and monetisation;
- Brand and marketing;
- Financial and legal;
- Translating / localisation.

The proportion of women in the games workforce, those from a Black, Asian and Minority Ethnic (BAME) background and the proportion of the workforce based outside London is:

% of workforce	2004	2006	2009	2012
• Women	• 8%	• 11%	• 6%	• 14%
• BAME	• 3.2%	• 3.4%	• 2.8%	• 4.5%
• Outside London	• 85%	• 88%	• 81%	• 86%



In addition, Creative Skillset is developing a new online workforce planning tool to be launched in 2014 that will allow companies to manage their own workforce and skills portfolio ensuring real time data and intelligence is available for all industries Creative Skillset covers including the computer games industry.

Appendix 5 Details of Returning Diaspora

These details have been sent separately to Ian Kennedy at Creative Skillset.

The NI CGI survey 2014 was commissioned by Ian Kennedy
at Creative Skillset in Northern Ireland.

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Louise Franklin and the Research team at Creative Skillset in London
