

## **XR Stories and Screen Industries Growth Network, University of York—written evidence (CRF0023)**

### **House of Lords Communications and Digital Committee inquiry “A creative future”**

Keywords: film – television – videogames – immersive experiences – VR/AR – virtual production

#### **About us**

XR Stories and the Screen Industries Growth Network are research programmes with the aim to foster the growth and development of the screen industries in Yorkshire and the Humber. At XR Stories we draw together the University of York’s research excellence in digital creativity and creative industries research with a strong business focus to support research and development for companies working in cutting-edge digital technologies in the Yorkshire and Humber region. XR Stories is a £15M investment by AHRC, ERDF, the University of York, the British Film Institute and Screen Yorkshire.

The Screen Industries Growth Network (SIGN) is a unique, business-facing initiative supporting the TV, film and games industries in Yorkshire and the Humber. We connect companies, support agencies and universities through a programme of training, business development, research and evaluation. SIGN is a £6.4M project, starting in Summer 2020, and funded by Research England, the University of York, and its partners. The University of York leads the initiative, working with Screen Yorkshire and eight other Yorkshire universities. An extensive network of collaboration with industry partners ensures that SIGN is equipped to deliver maximum impact across the region and beyond.

For more information, see [xrstories.co.uk](http://xrstories.co.uk) and [screen-network.org.uk](http://screen-network.org.uk)

Through these programmes we have supported over 70 research projects involving more than 90 researchers at more than 35 universities and industry partners. Our expertise is in R&D, skills and training, and working conditions for the film and TV industries, extended reality technologies (XR, VR, AR) and AI.

#### **Summary**

##### **1. Which areas of the creative industries face the greatest potential for disruption and change in the next 5–10 years, and what impact could this have?**

Virtual and Augmented reality technologies will disrupt film and television; theatre; live events; social media; heritage/tourism; home working.

*To ensure that the opportunities presented by new creative, immersive technologies and environments are available and useable by everyone, research and funding is needed to understand how these technologies align with existing accessibility knowledge with existing technologies.*

*The lines between marketing and children's content will become increasingly blurred and research is needed to understand if regulation needs to be extended as these spaces evolve.*

*In all these new spaces, the challenge is for children's safety. There are real opportunities to update the Online Harms Bill to accommodate these new technologies like VR.*

*VR and AR offer new business model opportunities, but the extent to which creators will be paid for their work greatly depends on their used distribution platform, potentially requiring government intervention to ensure fair pay and equal access.*

*Within the screen industries, the way film and TV content is being produced is changing dramatically because of the development of virtual production technology. If the UK wants to maintain its position as a global production hub for film and TV, virtual production facilities and skills should be a priority of Government intervention.*

## **2. What skills will be required to meet these emerging opportunities and challenges?**

*Government must ensure technical creative skills are made available in school curricula and for adult learners, in conjunction with non-technical (so-called 'soft skills') and management skills, especially for those from lower socio-economic backgrounds.*

*Poorly designed software and web platforms must be addressed using existing legislation (e.g. enforcing the Equality Act) and co-creation of tools that enable developers to make software and hardware more accessible.*

*An interdisciplinary research effort is required to fully support a future of AI development which is mindful of everyone, not just the few.*

## **3. What actions are needed from the Government and local authorities to ensure there is an appropriate talent pipeline equipped with these skills?**

*The creative talent pipeline begins long before people enter the industry. Careers advice and guidance in schools is therefore an important to ensure there are enough new entrants joining the industry with an appropriate level of skills.*

*Attacks on arts and humanities courses in Higher Education damages the talent pipeline for the creative industries. Government must ensure that there is enough arts and humanities talent working in the sector, in addition to those with the technical skills.*

*There is a need for closer engagement between industry and education/training providers. Government should revisit the apprenticeship frameworks and establish an apprenticeship fit for the screen industries.*

*Government should take action to ensure that older workers are able to update their skills and work flexibly, and the wider working culture of long working hours, short term contracts and precarity must be addressed.*

*A regional, rather than national, approach to a sector skills strategy which takes into account local labour market, training provision and skills gaps would offer more flexibility and allow regions to adapt more quickly.*

#### **4. What actions are needed from industry to support the talent pipeline development?**

*Better access to work experience in the form of work placements, trainee schemes or apprenticeship programmes is needed.*

*Industry organisations should work with research to provide clarity around job roles, progression opportunities and training routes.*

*DCMS must step in and resolve the dispute between PACT and BECTU on this issue.*

*Predictable long-term funding is required to sustain training schemes that target diverse cohorts at all stages of their career development.*

*Developing such regional 'communities of practice' will support worker's ongoing skills training, generate employment opportunities, and 'level up' regional creative organisations. Targeted, long-term funding is needed to support such activities.*

*Introducing diversity quotas for production companies will ensure more diversity in the workplace.*

#### **5. What role do innovation and research & development play in addressing the future challenges facing the creative industries?**

1. The R&D funding architecture in the UK does not sufficiently recognise, nor does it appreciate the value of R&D in the creative industries.
2. Different disciplinary approaches, languages and workflows mean translation across artistic and technological divides can be difficult. Therefore R&D intermediation is required to facilitate effective, efficient, and productive investment of time and money.
3. The size of creative industries businesses limits capacity to undertake R&D (89% of enterprises in the creative industries have fewer than 5 people).

To address this:

*Additional funding through bodies such as UKRI, Innovate UK, Immerse UK is required.*

*Established venture capital and other funding organisations should be encouraged to invest in creative industries R&D.*

*Universities should act as intermediaries to help provide development capacity for SMEs, support R&D using academic expertise, mediate for SMEs when dealing with larger companies, offer advice and guidance on market developments and IP issues, and provide matchmaking services for collaborations.*

If the UK wants to be competitive on the world stage for building apps and hardware that power the AR side of the 'metaverse' *creative technology and XR-focused companies need continued investment for R&D through agencies like Innovate UK and the Creative Industries Council.*

*Artists and developers need funding to test out potential applications of AR for entertainment, such as live gigs, gaming, heritage/museums and other uses within the creative industries.*

## **1 Which areas of the creative industries face the greatest potential for disruption and change in the next 5–10 years, and what impact could this have?**

What changes are expected in the way:

- creative/cultural content is produced;
- the way audiences are engaged (for example through digital or immersive experiences);
- the way business models operate?

### **Virtual Reality and Augmented Reality Technologies**

Sales of virtual reality (VR) headsets grew 92% from 2020 to 2021<sup>1</sup> and with more companies entering the market, the consumer base is expected to more than double again by 2024.<sup>2</sup> By 2026 the VR market is projected to be worth US\$16bn.<sup>3</sup> Augmented reality (AR) apps are widely available on smart phones and AR devices (e.g. AR glasses) are becoming more popular. These technologies have the potential to disrupt a wide range of creative sectors:

**Film and television** – cinematic VR enables audiences to experience 360 degree visual content paired with spatialised audio and offers a new way to consume film and television.

**Theatre** - VR can transport audiences and actors in the same virtual space at the same time, unbound by geography or other limitations of physical venues. Because everything the audience sees and hears is computer generated, creators are liberated from the constraints of the physical world. Audiences can also become more active participants, interacting with the characters or the storyworld in ways that allow for a deeper connection to the story. AR can facilitate similar experiences, disrupting the core offer of theatre performances,

---

<sup>1</sup> <https://www.idc.com/getdoc.jsp?containerId=prUS48969722>

<sup>2</sup> <https://www.statista.com/statistics/677096/vr-headsets-worldwide/>

<sup>3</sup> <https://www.gamedeveloper.com/blogs/omdia-research-reveals-12-5-million-consumer-vr-headsets-sold-in-2021-with-content-spend-exceeding-2bn>

with the inclusion of virtual sets and major roles taken by virtual characters or AR representations of human actors.

**Live events** - Devices such as AR glasses present an opportunity to enhance existing experiences at music concerts, sporting events and public celebrations.

**Social Media** - the most popular applications of AR are in face and environment filters (e.g. TikTok, Snap and Zoom) or games (Pokémon Go). Young users of platforms like TikTok are often both viewers and producers of video content that engage with AR filters. Over the next 5-10 years, a major challenge for creative technologists and producers building AR tools is in crossing over from novelty uses in social media to everyday utility and entertainment uses. Creative technologists will increasingly need to design AR apps (or redesign existing apps with AR capability) with virtual objects that map onto physical objects through the screen of a mobile device.

**Heritage/Tourism** – AR applications are already enhancing visitor experiences by providing additional layers of information for consumers, integrating virtual characters into historic venues and landscapes or allowing interaction with digitised assets. VR devices allow people to visit destinations remotely with similar additionality to AR applications. AR glasses can provide entertainment and utilitarian functions, like way-finding and real-time spoken language translation of use for the heritage and tourism sectors.

**Home working** – the impact of COVID-19 and associated restrictions have had a lasting impact on where people work. Originally facilitated by online meeting platforms such as Zoom, Skype and Teams, we can expect immersive technology to play a larger part in the future of remote working as creative teams seek options for collaborating in more intuitive and engaging ways, including augmented reality (AR) and mixed reality (MR) meetings.

### 1.1.1 VR and AR Content Production

Due to medium's inherent interactivity leading to some transfer of control from the creator to the user<sup>4</sup> content production has been greatly affected, requiring new methodologies across storytelling, audio and content design<sup>5</sup> Depending on the level of user interactivity required, these methodologies are built using either specialised tools, such as VR meeting room software, hard- and software for cinematic VR, or game engines. This range of tools requires artists to be not only proficient in and adaptive to evolving technological platforms, but also require the writing of code. This has major implications for **skills and training** provision before entering the industry and for those already with creative careers.

Digital content offers more opportunity to engage and create rather than sit and watch. **User generated content** is increasingly created and shared by young people (Ofcom report over half of 3-17-year-olds are using TikTok).<sup>6</sup> Adults are also moving into kids' platforms like Roblox, which were originally user

---

<sup>4</sup> <https://link.springer.com/article/10.1007/s10055-003-0114-9>

<sup>5</sup> <https://ccrma.stanford.edu/~ge/publish/files/2020-jnmr-dvb.pdf>

<sup>6</sup> [https://www.ofcom.org.uk/\\_data/assets/pdf\\_file/0024/234609/childrens-media-use-and-attitudes-report-2022.pdf](https://www.ofcom.org.uk/_data/assets/pdf_file/0024/234609/childrens-media-use-and-attitudes-report-2022.pdf)

generated content spaces used predominantly by young audiences. Roblox is already being increasingly used for sponsored events - Women's Euros, live concerts like Lil Nas and more sponsored content for brands like LOL Dolls or Nickelodeon. **The lines between marketing and children's content will become increasingly blurred and research is needed to understand if regulation needs to be extended as these spaces evolve.**<sup>7</sup>

### 1.1.2 Audience Engagement with/through VR and AR

Any company developing tools for AR will need to consider multiple potential **ethical implications** of these digital technologies for consumers. Apps with AR functionality often capture large amounts of personal data in exchange for free or subsidised access to services without users' awareness. These apps harvest information not only on the user's interests (as social media algorithms do) but a variety of spatial and bodily data. Just as the data harvesting of social media companies has come under UK government scrutiny, so too do we guidelines and regulations for informing consumers on consent and privacy when they engage with AR apps. Following the guidance of the X Reality Safety Initiative<sup>8</sup> would be a strong start for establishing guidelines for data privacy and safety in the UK.

As we move into new immersive environments, where an understanding of **accessibility** within those environments is still at an emergent stage, there is significant risk that disabled people will be unable to access this content both as audiences and creators. **To ensure that the opportunities presented by new creative, immersive technologies and environments are available and useable by everyone, research and funding is needed to understand how these technologies align with existing accessibility knowledge with existing technologies.** It is vital that creators of these technologies and experiences are trained in issues of accessibility and understand the importance of building accessibility into the creation pipeline, rather than trying to retrofit access as an afterthought.

The age guidance of 13+ limits the **children's** market for content production. However, this doesn't mean they are not being used by young people and their families, and this will continue as the technology becomes more accessible. **In all these new spaces, the challenge is for children's safety. There are real opportunities to update the Online Harms Bill to accommodate these new technologies like VR.**<sup>9</sup>

### 1.1.3 VR and AR Business Models

While there are similarities to existing technology transactions – for example, the sale of apps via mobile phones – new business models need to be identified and developed to exploit the commercial possibilities of the distribution and sale of VR- and AR-driven immersive experiences. That so many immersive experiences rely on grant funding or are offered as supplementary offers alongside established business offerings (e.g. a film, heritage visit, gallery

---

<sup>7</sup> <https://futureofmarketinginstitute.com/marketing-in-the-metaverse-a-fundamental-shift/>

<sup>8</sup> <https://xrsi.org>

<sup>9</sup> <https://www.theiet.org/media/9836/safeguarding-the-metaverse.pdf>

experience) highlights the need for the market to mature to a point business models become more sustainable.

Monetization strategies common in 2D screens, such as in-app purchases, are being adopted for VR. These strategies will become easier for the creator to implement as games companies build synergies with advertising and app discovery platforms.<sup>10</sup> Companies are currently investigating VR for advertising purposes to improve engagement with their brands through interactive experiences,<sup>11</sup> translating their brand presence from 2D screens to VR.<sup>12</sup> This effort offers a new market for creators to build such presences. However, **the extent to which creators will be paid for their work greatly depends on their used distribution platform,<sup>13</sup> potentially requiring government intervention to ensure fair pay and equal access.** Further challenges arise to protect underage creators from exploitation for corporate gain.

Whilst new technology has enabled music venues and artists to respond to the challenges posed by the pandemic, the lifting of restrictions has seen a drop off of new tech. At the grassroots level, production and equipment costs still hamper the introduction of AR. Online performance production costs double the cost of an event and with the relatively limited reach of most grassroots artists, it is difficult to realise an increased revenue stream. A lack of clarity over online royalty licensing and mechanical and reproduction rights also discourages artists and venues from developing their offerings and outdated compensation models still prove burdensome to improving access to new methods of gig enjoyment. Venues have become specialised in the promotion and production of in-person events, so a new mindset is needed to take advantage of what AI and AR tech can offer.

## **Virtual Production for Film and Television**

Within the screen industries, the way film and TV content is being produced is changing dramatically as a result of the development of virtual production technology. Previous disruptions within the film and TV industry - such as the advent of streaming services - have impacted on how film and TV gets distributed, but crucially, not how content gets made. In broad terms, virtual production is a way of making film and television which harnesses computer generated content that allows real-time visualisation and control of the digital environment in which you are shooting. Importantly within virtual production, virtual environments are captured 'in camera', rather than added in post-production. Virtual production is achieving widespread recognition and awareness because of hits such as Disney's 'The Mandalorian' and the BBC's Olympic coverage.

---

<sup>10</sup> <https://investors.unity.com/news/news-details/2022/Unity-Announces-Merger-Agreement-with-ironSource/default.aspx>

<sup>11</sup> <https://www.facebook.com/business/news/experience-new-meta-horizon-worlds-with-mini-and-fender>

<sup>12</sup> [https://en.wikipedia.org/wiki/Businesses\\_and\\_organizations\\_in\\_Second\\_Life](https://en.wikipedia.org/wiki/Businesses_and_organizations_in_Second_Life)

<sup>13</sup> <https://www.cnbc.com/2022/04/13/meta-plans-to-take-a-nearly-50percent-cut-on-nft-sales-in-its-metaverse.html>



It is predicted that from 2022 to 2030, the virtual production industry will have an annual growth rate of 17.8 % globally and was valued as being worth \$1.6 billion in 2021.

Virtual production is disrupting the established production pipelines of how TV and film content is made, and the use of virtual environments can reduce, or even remove, the need for travel associated with location scouting and shooting on location.

The greater demands for virtual production are also changing the way film and TV production departments are organised. This often sees the integration of VFX teams used to working in post-production, with crew involved in pre- and onset-production.

Virtual production may also impact upon established business models in film and TV production with major players already beginning to acquire companies which complement or extend their production offering into the virtual sphere. **If the UK wants to maintain its position as a global production hub for film and TV, virtual production facilities and skills should be a priority of Government intervention.**

## **Artificial Intelligence**

AI significantly impacts the creative industries across a range of domains, notably music, film, theatre and television. This push inevitably creates niches into which AI can be proposed as a solution. Whilst the search for Artificial General Intelligence might be on many people's holy grail wish list, the realities of the current state of the technology are somewhat removed. Instead, whilst AI is generating art (see Dall-e)<sup>14</sup> a neural network creating images from text captions - this AI does not know if a piece of artwork is beautiful. In fact these tools, proliferated on social media platforms have become somewhat of a novelty source of humour because they have not been seen to be very good. Whilst humour might be one outcome - this space of AI generated art is pretty overcrowded and, in many instances, dangerous. Take for instance the role of photorealistic models and imagery and their use on platforms like TikTok where users of all ages may access them - but which prove to be very challenging for the company's safety for instance anti-porn or bullying, harassment or violence policy.

In an ideal world, the creative sector will embrace AI as one component of creative practice, where human and machine will collaborate to fulfil creative potential, rather than replace one another.

AI continues to impact children's safety. Conversational AI agents (e.g. home assistants like Siri and Alexa) are ubiquitous in the lives of adults and children across the developed world. For younger users this is often without necessarily being aware of the associated risks. Children can easily access inappropriate content or be manipulated online through communication technologies.

---

<sup>14</sup> <https://openai.com/blog/dall-e/>



Finally, narratives about the creative industry and AI use are seen to be woefully inadequate.<sup>15</sup> Stories tending toward the binary positions of fear or utopian solutionism and hope. Media and science fiction play a part in this science communication and there is work to be done in avoiding the inevitable hype received by AI in the public space.

Crucially, AI can transform this industry but requires careful implementation and reflection - for in the past few years alone there has been a proliferation of ethics principles, standards and guidance issued by companies, which are problematic. AI ethics is situational - it is about power, purpose and politics. Please see section on equality and diversity.

## **2 What skills will be required to meet these emerging opportunities and challenges?**

### **Digital and Technical Skills**

Two main areas of skills and capabilities will be required to meet these emerging opportunities and challenges for the screen industries: technological and interpersonal.

An understanding of digital technology, its context, use and potential, will be required by those working in many varied roles within the creative industries. High level technical skills, such as programming/coding, will continue to become increasingly important, especially where workers can combine creativity with technical skills and expertise (see our report on XR Futures).<sup>16</sup> **Government must ensure such skills are made available in school curricula and for adult learners.**

### **Non-Technical Work Skills**

Although digital and technical skills are increasingly required and valued, non-technical work skills are still in demand. In a 2021 ScreenSkills assessment,<sup>17</sup> skill gaps were reported as follows:

- organisational skills (53%)
- interpersonal skills (53%)
- teamwork (50%)
- resilience (47%)
- COVID-19 safety measures (45%)

These are problematically referred to as 'soft skills', suggesting they are easier to learn than 'hard skills' and less important. Such framing discriminates against people who may have mental or physical health issues that make such skills more difficult to learn, develop and apply. Moreover, these skills are repeatedly highlighted as gaps which indicates they are hard to find. Leadership,

---

<sup>15</sup> <https://link.springer.com/article/10.1007/s00146-022-01548-2>

<sup>16</sup> <https://xrstories.co.uk/publication/xr-futures-report-international-perspectives-on-the-trajectory-of-immersive-and-interactive-media-and-technologies/>

<sup>17</sup> <https://www.screenskills.com/media/4587/2021-06-08-screenskills-assessment-2021.pdf>

management, and communication skills are also consistently identified as a key and persistent skills gap in the film and TV sector.<sup>18</sup>

**Training needs to be made available for non-technical and management skills, especially for those from lower socio-economic backgrounds.**

## **Accessibility and Inclusion**

Across the creative industries there is a crucial need for better awareness of accessibility to content. This is particularly an issue for **design, IT and software development**. In 2022, an automated accessibility test of 1,000,000 of the most visited webpages<sup>19</sup> found that 96.8% of homepages did not conform to the Web Content Accessibility Guidelines. This issue is largely the result of web developers and companies who are unable or unwilling to consider accessibility within their development pipeline and build accessibility into their working models.

The transition to using game engines in content creation opens up the possibilities for end users to have increasingly personalised (and potentially more accessible) experiences. Not only is this potential not presently capitalised on, even the most basic accessibility features like screen readers have not been implemented in these engines. Unity, one of the two main engines used for augmented reality content, has no in-built screen reader functionality in its output content without requiring the creator to use either third party tools or additional bespoke coding. They are equally inaccessible to the content creator, for whom neither of the two major game engines development environments usefully interface with screen readers.

A study in 2021 of the most popular augmented reality games on iOS and Android showed that 36% had no support at all for screen readers. Two thirds of the remaining apps interfaced with inbuilt screen reader, though many only allowed description of the UI elements not the game elements. The final third had implemented bespoke screen reading solutions which have the additional challenge of the user needing to switch off the inbuilt screen reader in the settings to use the app.

**These problems must be addressed using existing legislation (e.g. enforcing the Equality Act) and co-creation of tools that enable developers to make software and hardware more accessible.**

There are ways AI can support diversity, equity and inclusion - including justice-oriented approaches to AI design and development - where AI is equitable in its approach to empower and give voice to communities and benefit society. To do this, AI design and development must include a range of voices, and so too must the stories about the technology. This can replicate bias. When we ask what we want from a future with AI, we must really ask, who is included in that 'we'?

---

<sup>18</sup> <https://www.bfi.org.uk/industry-data-insights/reports/bfi-skills-review-2022>;  
<https://www.screenskills.com/media/5232/2022-02-08-unscripted-tv-research.pdf>;  
<https://www.screenskills.com/news/high-end-tv-investment-to-meet-skills-demand/>

<sup>19</sup> <https://webaim.org/projects/million/>

**An interdisciplinary research effort is required to fully support a future of AI development which is mindful of everyone, not just the few.**

### **3 What actions are needed from the Government and local authorities to ensure there is an appropriate talent pipeline equipped with these skills?**

The creative talent pipeline begins long before people enter the industry. **Careers advice and guidance in schools is therefore an important to ensure there are enough new entrants joining the industry with an appropriate level of skills.** A knowledge gap about work in the screen industries currently exists among careers advice professionals which, if addressed, could improve awareness and understanding of relevant career options and pathways.<sup>20</sup>

In addition, changes to the school curriculum which avoid a sharp distinction between engineering and the sciences, and the arts and humanities would also introduce students to the range of subjects, skills and knowledge required in the screen industries. The narrow range of subjects studied by most 16-18 year olds leads to a particularly unhelpful divide between 'science' and 'arts' subjects<sup>21</sup> and results in many youngsters ruling out careers in roles which increasingly require a combination of creative and technical skills.

Attacks on arts and humanities courses in Higher Education, with fundings cuts and anti-arts rhetoric leading to a reduction in the number of courses being offered, also damages the talent pipeline for the creative industries. Immersive technologies cannot rely on technological knowledge and skills alone: writers, artists and musicians are also required to create the content for these immersive worlds and **Government must ensure that there is enough arts and humanities talent working in the sector, in addition to those with the technical skills.**

There is a need for closer engagement between industry and education/training providers. Changes in technology, production and workflow - particularly around XR and virtual production - are creating larger skills gaps and industry should work more closely with providers to map out the skills needs, training provision and work experience. **Government should revisit the apprenticeship frameworks and establish an apprenticeship fit for the screen industries.**<sup>22</sup>

Finally, it is important to recognise cultural issues within the creative industries have led to many people, particularly women,<sup>23</sup> leaving the industry early. Retaining this workforce and enabling older workers to remain in the sector is thus a clear imperative, and the **Government should take action to ensure that older workers are able to update their skills and work flexibly, and**

---

<sup>20</sup> <https://www.bfi.org.uk/industry-data-insights/reports/bfi-eric-screen-careers-research>

<sup>21</sup> [https://raeng.org.uk/media/hn4hdep3/perkins\\_report\\_jan19\\_final-web.pdf](https://raeng.org.uk/media/hn4hdep3/perkins_report_jan19_final-web.pdf)

<sup>22</sup> Such as the [Criw apprenticeship programme](#) delivered by Sgil Cymru and supported by the Welsh Government.

<sup>23</sup> <https://filmtvcharity.org.uk/wp-content/uploads/2022/06/Film-and-TV-Charity-Retention-Report.pdf>

**the wider working culture of long working hours, short term contracts and precarity must be addressed.**

**How can this be sufficiently flexible to take account of the pace of change in the sector?**

The creative industries are not a monolith. Although London and the southeast has the highest amount of employment, other cities and regions are home to a growing number of businesses and workers. **A regional, rather than national, approach to a sector skills strategy which takes into account local labour market, training provision and skills gaps would offer more flexibility and allow regions to adapt more quickly.**

A more flexible approach is also required for workers in the industry. Jobsharing<sup>24</sup> would address some of the exclusions generated by long hours culture in film and TV, which disproportionately impact those with caring responsibilities, and allow businesses to retain skilled workers.

Clarifying and formalising career pathways would enable people to use skills developed in other areas to move into the sector and fill skills gaps (accountants, painters/decorators, joiners, etc.).

Finally, regular and up-to-date information on skills gaps and shortages across the sector and regions would enable providers to adapt to training requirements at a faster pace, with horizon scanning also an important factor in considering possible future skills gaps.

#### **4 What actions are needed from industry to support the talent pipeline development?**

What actions are needed from organisations in the creative industries to prepare for and accommodate the requirements of the future workforce?

#### **Industry-Education Partnerships**

It is important that changes in the creative industries are co-development with organisations within the sector as they play an important part in preparing for the future workforce.<sup>25</sup>

Information about the industry should be provided at an earlier age with a commitment from industry to work with schools, colleges and universities including **better access to work experience in the form of work placements, trainee schemes or apprenticeship programmes.** These would also facilitate a closer relationship between industry and education, raising awareness of the career opportunities and enabling industry to highlight what they feel are the important skills, knowledge or capabilities.

---

<sup>24</sup> <https://www.alphavillejournal.com/Issue20/HTML/ArticleAust.html>

<sup>25</sup> <https://www.screendaily.com/uk-in-focus/four-innovative-approaches-to-up-skilling-the-uk-film-and-tv-workforce/5173022.article>

The lack of clear career pathways has been identified as a barrier<sup>26</sup> to those hoping to progress in the industry. **Industry organisations should work with research to provide clarity around job roles, progression opportunities and training routes** to enable entrants to map out a career and undertake the training necessary to develop the appropriate skills.

Finally, production companies and broadcasters need to address the endemic issues surrounding long hours culture that sees screen professionals working an additional two days a week compared the national average<sup>27</sup> and its impact on mental health.<sup>28</sup> **DCMS must step in and resolve the dispute between PACT and BECTU on this issue.**

## Funding

The prominence of freelance work makes skills development for roles in the screen industries difficult. This is because of the need to self-fund courses (if an individual can afford the time and financial commitments) and a lack of opportunities to formally learn on the job.

Training interventions and diversity schemes, like those run or funded by SIGN,<sup>29</sup> have provided opportunities for people to acquire skills needed by industry.<sup>30</sup> However, a lack of long-term funding impacts their success, often seeing schemes ending just as they are implementing second iterations of their work. To address this problem, **predictable long-term funding is required to sustain training schemes that target diverse cohorts at all stages of their career development**, benefitting workers, production companies and the industry as a whole. Furthermore, schemes should be available in the region where workers live – to reduce time and travel costs – and productions take place – to meet local needs. Funding could be sought from those that profit from a skilled workforce e.g. production companies, broadcasters and streaming platforms.

## Regional Capacity Building

Regional networks like XR Stories and SIGN have helped to develop cohorts of creative workers through training programmes, bursaries, internships and R&D collaborations. These networks help address issues of atomisation and competition that freelancers face and facilitate collaboration between local creative organisations on training and network building. This supports regional capacity building and retention of creative workers in the area who further benefit from reduced cost of living and local support. **Developing such regional 'communities of practice' will support worker's ongoing skills training, generate employment opportunities, and 'level up' regional creative organisations. Targeted, long-term funding is needed to support such activities.**

---

<sup>26</sup> <https://www.bfi.org.uk/industry-data-insights/reports/bfi-skills-review-2022>

<sup>27</sup> <https://screen-network.org.uk/publication/the-time-project-understanding-working-time-in-the-uk-television-industry/>

<sup>28</sup> <https://filmtvcharity.org.uk/looking-glass-survey-2022/>

<sup>29</sup> <https://screen-network.org.uk/training-launched-to-help-screen-industries-businesses-be-more-inclusive/>

<sup>30</sup> <https://screen-network.org.uk/sign-bursaries-scheme-returns-after-success-of-first-round/>

## Supporting Diversity of Talent and Flexible Working

Diversity interventions are designed to deliver good outcomes for workers including upskilling, confidence building, industry knowledge, and networking. They are less successful, however, at tackling wider structural barriers to entry and to support ongoing career progression. Incentivising diversity, or (if failed) **introducing diversity quotas for production companies to ensure more diversity in the workplace** and a more diverse talent pool (along the lines of channel 4's 'Black to Front' programme), can help address skills gaps and works towards a more equitable sector with a broader reach.<sup>31</sup>

### 5 What role do innovation and research & development play in addressing the future challenges facing the creative industries?

What actions are needed from the Government, funding bodies and sector organisations to support innovation, and research & development?

#### Funding Structures

Interventions such as the AHRC's creative industries clusters programme have demonstrated the value of R&D for the creative industries. At XR Stories we have supported 72 R&D projects by providing funding (£1.8m in cash support and £1.3m in leverage), market insights, cutting edge research, and business development support. Through this work we've come to understand that R&D in the creative industries is complex as it involves the intersection of artistic practice, creative development, performance craft and technological innovation. In so doing, creative practice has been recognised as a form of R&D. Understanding this context reveals three issues:

1. The R&D funding architecture in the UK is does not sufficiently recognise, nor does it appreciate the value of R&D in the creative industries. Artistic creation is a process of continuous research and development – the whole point is to create something new. Artists are experts in experimenting with the tools of a medium and discovering creative new ways to apply them. And their work is designed specifically to engage the public and contribute to the cultural conversation. As such, investments in R&D in the creative industries don't just benefit those industries – they can help drive technological innovation and public acceptance of new technologies across the board.
2. Different disciplinary approaches, languages and workflows mean translation across artistic and technological divides can be difficult. Therefore R&D intermediation is required to facilitate effective, efficient, and productive investment of time and money.
3. The size of creative industries businesses limits capacity to undertake R&D (89% of enterprises in the creative industries have fewer than 5 people).

---

<sup>31</sup> <https://bcuassets.blob.core.windows.net/docs/beyond-black-to-front-report-133003778635110536.pdf>

To address this:

**Additional funding through bodies such as UKRI, Innovate UK, Immerse UK is required.**

**Established venture capital and other funding organisations should be encouraged to invest in creative industries R&D.**

**Universities should act as intermediaries to help provide development capacity for SMEs, support R&D using academic expertise, mediate for SMEs when dealing with larger companies, offer advice and guidance on market developments and IP issues, and provide matchmaking services for collaborations.**

### **Maturing and Evolving Markets**

Over the next 5-10 years, a major challenge for creative technologists and producers building AR tools is in crossing over from novelty uses in social media to everyday utility and entertainment uses. Creative technologists will increasingly need to design AR apps (or redesign existing apps with AR capability) with virtual objects that map onto physical objects through the screen of a mobile device.

If the UK wants to be competitive on the world stage for building apps and hardware that power the AR side of the 'metaverse' **creative technology and XR-focused companies need continued investment for R&D through agencies like Innovate UK and the Creative Industries Council.**

**Artists and developers need funding to test out potential applications of AR for entertainment, such as live gigs, gaming, heritage/museums and other uses within the creative industries.**

### **CreaTech**

However, it is worth noting that CreaTech companies, as reported in An analysis of CreaTech R&D business activity in the UK<sup>32</sup> using data from 2010 to 2021, tend to be over-represented in early stage investment types, such as seed and angel investment. This over-representation supports the idea that CreaTech businesses continue to face barriers when it comes to financing and scale. Even when adjusting for factors such as age of the company and whether they are based within or outside of London, the report's findings were that investment events involving CreaTech companies tended to raise between 22% to 34% less. So while CreaTech companies have seen consistent growth of investment, having also raised £981.8m in venture capital investment during 2020 (an increase of 96% since 2017) and, according to The CreaTech Report (Technation, 2021), exceeded a forecast of £1.12bn to reach £1.14bn in 2021 a question could be raised about how long this growth is able to continue without access to later stage investment.

---

<sup>32</sup> <https://cdn2.assets-servd.host/creative-pec/production/assets/publications/PEC-An-analysis-of-Creattech-RD-business-activity-in-the-UK-v3.pdf>



## **6 How effective are the Government's existing strategies at supporting the creative industries to meet the challenges and opportunities ahead?**

### **Ideologically Driven Policies**

There has been a marked shift in the Government's approach to the creative industries in the last 12 years. While Labour supported the sector – first by defining it as distinct from the rest of the economy, and then by empowering it to growth – the Conservative party have left the economic focus to one side and promoted ideologically driven policy. This is perhaps clearest when examining the response to the COVID-19 pandemic.

While film and TV workers were some of the first people allowed to return to work, and certain screen professionals were included on the travel exemption list, pleas for additional support from other areas of the creative industries were ignored. The Government was slow to respond to calls from the music and events sector to provide support for live events which suffered massive economic losses. Theatres were one of the last parts of the creative industries to re-open and was also subject to delays in receiving an insurance scheme to support performances. Moreover, despite prolonged campaigns to include them, huge numbers of creative freelancers were excluded from furlough and job support schemes. It was estimated millions of self-employed workers were unable to access government support available to people in other forms of employment and this disproportionately impacted the creative industries.

The pandemic hid the regressive effects of Brexit which are now revealed to have major problems for touring musicians and theatre companies. There is also a skills crisis across the sector fuelled by the difficulties in recruiting and retaining staff from overseas, particularly EU countries.

Most recently, the so-called culture wars are also taking their toll on the creative industries. The creative industries are successful because of skilled graduates from further and higher education, both from industry-related degrees and other cultural and creative disciplines. The programmes from which the screen industries' labour market is supplied predominantly sit within the arts and humanities. But cuts to funding for these degrees, attacks from politicians and sections of the media, and a lack of support from Government means these programmes are under threat across the education sector.

Attempts to diminish the role of the BBC, plans to privatise Channel 4 and threats to the Arts Council and Historic England (in the guise of 'reviews'), all after a decade of austerity, demonstrate a lack of understanding for the value of such organisations and/or a contempt for the creative industries which do not fit the ideology of the Government.

### **Pockets of Support**

The efforts of creative industries organisations, significant companies, and key individuals to persuade Government to provide support for the creative industries must be celebrated.

The Industrial Strategy Challenge Funding<sup>33</sup> for the Creative Industries Clusters Programme<sup>34</sup> (CICP) and The Audience of the Future Challenge<sup>35</sup> (AoTF) provided significant R&D capacity for the creative sector.

Tax breaks for high-end television and film production through the BFI is giving the UK screen industries a big advantage.

Planned infrastructure funding for the CIs through UKRI's CoSTAR<sup>36</sup> programme will provide a much needed state of the art facility fitted with real-time digital technologies such as motion and volumetric capture, alongside other XR technologies. It is imagined it will act as a central hub and will be supported by a network of regional labs across the UK.

**These types of activities with significant investment from Government must become the norm if the UK's success in the creative industries is to be maintained.**

*September 2022*

---

<sup>33</sup> <https://www.ukri.org/what-we-offer/our-main-funds/industrial-strategy-challenge-fund/>

<sup>34</sup> <https://creativeindustriesclusters.com/>

<sup>35</sup> <https://www.ukri.org/what-we-offer/our-main-funds/industrial-strategy-challenge-fund/artificial-intelligence-and-data-economy/audience-of-the-future-challenge/>

<sup>36</sup> <https://www.ukri.org/news/shaping-cultural-and-creative-research-through-infrastructure/>