# Canon

## THE FUTURE OF FILMMAKING

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# Foreword

What does the next decade of filmmaking look like? That's the ultimate question after two years of unprecedented turmoil, flux and uncertainty.

The once-in-a-generation disruption caused by the pandemic accelerated existing trends and brought new challenges to the industry. That is why Canon has partnered with The Future Laboratory to gain insights from the professional video industry to pull together a holistic report covering how the trajectory of the industry has changed and how we can get ahead of the game.

This report identifies and explores various topics, including the move to a digital-first approach, production distribution and consumption of content, and how a new influx of fresh talent looking for a more creative career will influence the industry.

Young people value and want to contribute to a new creative-led culture, which will have a huge impact on filmmaking as people increasingly look to find artistic outlets in their employment. We're entering a period of true democratisation as everyone becomes a content creator to some extent – each just waiting to take the next step towards creating ever bigger and better content.

It will also cover glocalisation and its effect on global, national and local content creators and how independent producers can find a space in a market dominated by streaming giants.

We'll explore the move towards creating healthier, more sustainable and honest content - how creators and consumers alike are looking for more from their entertainment and content.

Dramatic change and pressures briefly defined the industry in recent years, and there are lasting impacts on ways of working, but new nimble creative filmmakers armed with the very best in new technology are well placed to drive a more diverse and thriving industry in the next 10 years and beyond.

The report covers a broad brief, but a lot has changed in a short time and these shifts are affecting every aspect of what filmmakers are doing. Canon is a key driver of democratisation in the industry, providing technology which levels the playing field and helps us move beyond gatekeepers. We are committed to supporting filmmakers of all levels in creating professional content without the need for large teams, budgets or time.

# Experts

**: Sami Arpa**

*CEO and co-founder, Largo*

**: Jeremy Ngatho Cole**

*Filmmaker, creative director and artist*

**: Jake Hanrahan**

*Documentary filmmaker and founder of grassroots media organisation Popular Front*

**: Eno Henze**

*CEO, Hyperbowl*

**: Jonathan Jones**

*Creative director, Ember Films*

**: Mia Powell**

*New business director, Lammas Park*

**: Liz Rosenthal**

*Curator, Venice Biennale International Film Festival; executive producer, CreativeXR; CEO and founder, Power to the Pixel*

*Part one*

# Overview

The filmmaking industry sits at a crossroads of change. It is emerging from a period of stasis and survival, and the next decade will see the way we create film and media content transform, as makers come together to rebuild the system, bringing fresh attitudes and values with them

Canon EOS R5 C and Canon RF 5.2mm F2.8L DUAL FISHEYE Lens

Access to technology, collective influence and new structures are routing power away from time-honoured industry gatekeepers. These shifts are changing stories and content, how we consume them and who gets to tell and create them – for the better.

'Storytelling and filmmaking, no matter the medium, are vital social and cultural signs. They are about filtering the world through a certain lens. There's so much power in that, so it's important to make sure it is disseminated equally,' explains Liz Rosenthal, curator at the Venice Biennale International Film Festival.

In this report, strategic foresight consultancy The Future Laboratory, in partnership with Canon, explores the social, cultural and technological forces shaping the future of the filmmaking industry in the UK, France, Germany, The Netherlands and Italy, highlighting what the future of filmmaking looks like across film, tv, commercials, live broadcast and OTT content.

We identify four sets of Future Filmmakers and examine their values and priorities, as well as the tools and systems that are vital to their filmmaking needs. They are:

: **Empowered Creators** – filmmakers pioneering industry access, with inclusive tools and creative paths to education

: **New Tech Masters** – filmmakers optimising technological acceleration to enable smart efficiencies and boundary-crossing forms

: **Symbiotic Storytellers** – filmmakers utilising data and democratisation to create audience/consumer relationships built on exchange

: **Conscious Collectives** – filmmakers focusing on industry standards, sustainability and collective solutions

We explore the projected impact of each Future Filmmaker group on filmmaking and production, spotlight the global trends and value shifts which are positively reshaping the industry, and uncover fresh horizons and possibilities for filmmaking throughout the next decade.

'Storytelling and filmmaking, no matter the medium, are vital social and cultural signs. They are about filtering the world through a certain lens. There's so much power in that, so it's important to make sure it is disseminated equally'

*Liz Rosenthal, curator, Venice Biennale International Film Festival*

*Part two*

# Industry in Focus

As the filmmaking industry establishes a post-pandemic landscape, social, cultural and technological driving forces are ushering in a new dawn for how content is conceived, created and consumed

# Digital in Demand

Digital acceleration, spurred by the pandemic, has seen advanced technologies become a ubiquitous part of our day-to-day lives. It's transformed how a wide range of industries operates and has changed the creation, production and consumption of content.

More than three quarters of people now say their everyday lives and activities depend on tech, according to research from Wunderman Thompson, while businesses tell an equally digital story. In the early stages of the pandemic, McKinsey & Company noted that digital adoption among firms and consumers had vaulted forward five years in as little as eight weeks. In the EU, 46% of companies said they had taken action to accelerate digital transformation in 2021.

For the filmmaking industry, the digitisation of production processes, the smart migration of workflows and the recognition of a native digital audience make more than cultural sense: research from International Data Corporation reveals that more than half of the global economy is based on, or influenced by, digital.

The rapid growth of digital is providing new access points for audiences, with immersive virtual reality (VR) and metaverse technologies pushing the boundaries not only of how we consume content, but the type of content we consume.

# Creative Class

Creatives are emerging from a period of employment uncertainty with fresh attitudes to work. According to WeTransfer, 61.6% of people who started new jobs in 2020 say they're having more creative ideas than ever, while research from SignalFire reveals that more than 50m people around the world consider themselves content creators.

Established consortiums are recognising the need to nurture this groundswell of creativity. For example, the European Commission invested heavily in its 2022 plans for the Creative Europe Programme, with an annual budget of £322m (€385m, $392m) – nearly £84m (€100m, $103m) more compared to 2021.

Importantly, the economic and cultural power of creative individuals is also booming. In Germany, nearly 1.2m people are employed full-time in the cultural and creative industries. The total value of goods and services they produce amounts to more than £84bn (€100bn, $103bn) – more than the chemical industry (£42.5bn, €50.6bn, $51.5bn) or the financial services sector (£63.1bn, €75.2bn, $76.6bn).

Recognising such economic and cultural contributions, a new creative class is doubling down on how they are rewarded, striving for equitable payment models, fair working conditions and development initiatives that set pioneering industry standards.

# Glocal Audiences

Interconnected production methods, smart virtual tech and the streaming boom are leading to a filmmaking industry that is more global than ever.

But while teams can create and collaborate across the world for a global audience, content overload is driving audiences closer to home – allowing local crews and culturally nuanced content to solidify their seats at the table. New attitudes to translation and localisation are emerging in response, hoping to dethrone the collective influence of select filmmaking monopolists.

For streaming giants, such attitudes are prompting a shift in how tv and film are platformed across regions. In 2020, the EU's Audiovisual Media Services Directive ruled that all streaming companies must offer 30% European content to European subscribers. Figures from 2022 confirm that video-on-demand (VoD) main players were quick to answer the call – with HBO Max exceeding 25% of European content in most markets and Amazon Prime surpassing quotas in Germany, Switzerland and Italy.

Looking to the future, global media and entertainment firms will strive to invest in regional and localised content if they are to retain access to the diverse communities they rely upon.

As Oliver Berben, deputy CEO of German production house Constantin, explains: 'The only thing [Netflix] is afraid of are the local players.'

# 'The only thing [Netflix] is afraid of are the local players'

*Oliver Berben, deputy CEO, Constantin*

'Since 2020, things have exponentially blown up across every aspect of brand and business accountability. The industry must respond because of the awareness around the global issues that we're facing – and it has to be top-down change, not just bottom up'

*Mia Powell, new brand director, Lammas Park*

# Eco-collectivism

As concerns about coronavirus recede, the collective energy used to withstand the pandemic is being refocused to spark meaningful action against the climate emergency we all face.

The carbon footprint of filmmaking, online creation and consumer consumption is slowly coming into focus. In 2021, Carbon Trust revealed that the average carbon impact in Europe is 55g to 56g of $CO_2e$ for every hour of streaming video – the equivalent to driving about 300 metres in a car. While on Netflix, the 6bn hours users spent watching its top 10 shows the month they were released had the equivalent carbon impact of driving further than the distance between the Earth and Saturn.

Facing up to the scale of the problem is one battle, but the hard work of changing the industry is another and won't be achieved by one-off eco-productions or individual commitments. Consumers know that a global and universal problem demands an equally weighted solution, and are banding together to create integrated mindsets that regulate corporate resources, limit pollution and set new industry standards.

# End-to-End Inclusivity

Across every industry, individuals are pushing for a more holistic, honest and iterative approach to inclusivity. Overloaded with, and underwhelmed by, years of corporate mission statements, people are demanding action.

Established organisations are ramping up efforts to meet audience expectations. In 2022, the UK's ITV set additional diversity and inclusion targets for working class representation. This followed the BBC's three-year plan, set out in 2021, to embed and elevate diversity and inclusion within the organisation, and to increase education about these areas.

While the filmmaking and broadcast industries have made strides to correct barriers to access and lack of inclusivity, changes are modest. Uniform hierarchies remain and individuals are beginning to recognise that true change won't begin in established structures, or be sparked by senior leadership.

'Since 2020, things have exponentially blown up across every aspect of brand and business accountability,' says Mia Powell, new brand director at Lammas Park. 'The industry must respond because of the awareness around the global issues that we're facing – and it has to be top-down change, not just bottom up.'

Already outpacing traditional structures, a new generation are looking for social change defined by collaboration and decentralisation, harnessing new technologies and collective power to spotlight injustices and create networks that provide an alternative to traditional media.

## *Part three*

# Future Filmmakers

Through our research, we have identified four future types of filmmaker emerging in response to a shifting landscape. Each is building a new future for the filmmaking industry and redefining its capabilities. Through the lens of each type of filmmaker, here we explore their values and priorities, the tools and platforms they are embracing, and the movements they are inspiring as the industry builds back better

# *1* <u>Empowered Creators</u>

The industry is waking up to the cultural and commercial power of individual creators and solo shooters, setting new standards that ensure democratisation extends to access, education and beyond.

The creative revolution is giving rise to a wave of individuals who are acutely aware of the value and leverage of their outputs. The creator economy – which spans a vast horizon from YouTube documentary makers to independent videographers to TikTok creators – is currently estimated at £86bn (€102bn, $104bn), outlining a bright future for the creative class.

For younger audiences in particular, the videos found on social media platforms represent more than just alternative content, with relatability, shorter formats and personalised delivery stealing their attention. The 2022 YPulse WE Media Consumption report reveals these new entertainment norms, showing that 13–39-year-olds across Europe watch online videos more than weekly on social platforms such as Instagram (56%), TikTok (48%) and YouTube (48%), favouring these over traditional satellite tv at just 18%.

Traditional makers are increasingly being eclipsed and the boundaries between professional and amateur are blurring, allowing imaginative ideas to slowly emerge as the only precondition to successful content creation.

'The filmmaking golden rule is that it has to be interesting,' explains Jake Hanrahan, documentary filmmaker and founder of grassroots media organisation Popular Front. 'Now that the world is more connected, technology is cheaper and you can learn basically anything from a YouTube video, you can focus on the main battle – which is making sure people are interested in it.'

Rather than striving to work for the industry, Empowered Creators are demanding that the industry works for them. They need and seek professional tools and supportive ecosystems that promote efficiency and recognise their value, inviting established brands to switch from being gatekeepers to becoming supporters and facilitators.

This democratised filmmaking future is leading to two Empowered Creator trends: the development of Accessible Apparatus and the rise of New Social Networks.

## Accessible Apparatus

Intuitive hardware and software solutions are lowering creative barriers to entry, allowing creators to sidestep traditional educational routes to produce professional outputs.

Recognising the needs and values of Empowered Creators, smart hardware brands are diversifying their offerings, replacing lengthy specifications and complex features with tools that can be increasingly used by anyone, anywhere.

'The baseline expectation has shifted, and catering for these new nimble creators who want to be able to capture their content on the go is pushing us forward with every new solution,' says Ryan Kamata, product manager at Canon Europe. 'It's not enough to simply offer a solution for shooting stills and video. Creators are highly demanding, requiring professional quality with simplified workflows, to easily emulate the work of leaders in their chosen fields. Filmmakers want to know that their kit is future-proof and able to stay ahead of established streaming giants as they up their content requirements. Full Frame 8K RAW video capture with versatile recording formats and 45MP still image capabilities cater for this.'

Canon's EOS R5 C camera champions these values of usability and flexibility in form and function. A compact, lightweight design, it combines the professional features of the Cinema EOS range with the user-friendly advantages of the EOS R series – boasting a full-frame 8K sensor, precise focus tracking and an active cooling system that lends itself to long duration recording when shooting on location.

Young camera brand Insta360, meanwhile, makes its easy-to-use status its selling point. Its latest invisible drone camera, the Insta360 Sphere, boasts 5.7K 360-degree lenses that allow diving and rolling FPV shots to be achieved by simply flying in a straight line up or down. Users can then reframe camera angles in post-production to create more complex footage.

For Empowered Creators looking to work creatively and efficiently without extensive toolkits, software compatibility is also key. As the sophistication of mobile video tools grows, traditional hardware brands must prioritise cross-brand and software usability over exclusivity.

'It's important that hardware providers are creating turnkey solutions that are standardised and integrated,' says Eno Henze, CEO of Hyperbowl, a leading European virtual production studio. 'Ultimately, we want the tech and application used to work like an iPhone – super-complete, complex technology at your fingertips without giving you a big headache.'

Canon's latest EOS R5 C offering is already making strides towards this type of hardware and software consolidation. The camera offers compatibility with an extensive range of professional filmmaking, photography and VR applications for smartphones and personal computers. These include Canon's own native Browser Remote for accessing advanced settings and live-view remotely, and Content Transfer Mobile for transferring proxy files and editing metadata.

'It's important that hardware providers are creating turnkey solutions that are standardised and integrated. Ultimately, we want the tech and application used to work like an iPhone — super-complete, complex technology at your fingertips without giving you a big headache'

*Eno Henze, CEO, Hyperbowl*

## FUTURE JOB ROLE:
## META SKILLER

In the future, expect filmmaking education to embrace the metaverse, with experienced creators harnessing the immersive possibilities afforded by VR to help burgeoning filmmakers learn and develop. Meta Skillers can outpace traditional routes and embrace the flexibility of teaching in the metaverse. They can even provide students with on-set virtual training that can be applied to virtual production sets straight after their classes finish.

Canon EOS R5 and Canon RF 5.2mm F2.8L DUAL FISHEYE Lens

# New Social Networks

Progressive creative communities and social media platforms are striving to restructure hierarchies of production, offering alternative paths to the industry that facilitate access and community.

Fuelled by elitist and exclusive barriers to entry, a schooling counterculture is challenging the standards of the industry, providing all-inclusive routes to learn, to create and to showcase, and to redefine what it means to be a certified filmmaker.

Grassroots initiatives are taking a cooperative-led approach to skills and equipment exchange. In the UK, Not/nowhere supports new media practices through programming, workshops, screenings and equipment rental. The organisation's mission is to ensure that local artists are given access to both film and media equipment, and the training needed to use such tools efficiently and creatively.

Members are able to rent individual items and equipment packages that comprise everything from Bolex cameras to Manfrotto tripods and clapper boards. Not/nowhere offers a sliding scale subscription service for those seeking an alternative to formal education for any reason, including for its designated 'priority groups' of Black and Indigenous people of colour, and queer, trans, unwaged and disabled individuals.

'It's always important to recognise who is designating something as accessible,' explains filmmaker, creative director and artist  Jeremy Ngatho Cole. 'It's not really the choice of brands to designate what is or is not an accessible product – that's why I'd love to see more people given the opportunity to hire or borrow equipment without needing to have a company behind them.'

There are, however, important roles for the big hardware brands to take up when it comes to tool- and knowledge-sharing. In the future, they will look to industry access points and provide up-and-coming makers with refurbished tools, hiring schemes and brand-certified qualifications that foster 'levelling up' for individuals and for the brands themselves.

Pluc.TV is already on this track, with a model that offers practical support while enabling self-sufficient filmmaking communities to form. The platform provides workshops, guidance and tools for its vast production ecosystem, allowing users to create, market and monetise content for their short films and web series. Based in India, but with a global reach, the platform is exactly the kind of blueprint that will prove vital to the Empowered Creator economy.

For Mia Powell, new business director at Lammas Park, the established industry must become a creative partner in this kind of equitable filmmaking future. 'There's a recurring issue that I call the talent gap versus the opportunity gap,' she explains. 'That's where, even when there is an abundance of 'diverse' directing or filmmaking talent being promoted or celebrated, the opportunities just aren't there to see that talent flourish. Production companies just aren't fostering that growth – it's still a very contained ecosystem.'

Big industry players are beginning to widen the scope of their creative standings, recognising the cultural power of non-professional filmmakers. Solidifying its reach beyond short-form social content, in 2022 TikTok became an official partner of the Cannes Film Festival. The partnership allowed creators to go behind the scenes as documentary-makers and initiated a short film contest for emerging producers.

Recognising the draw of 'social-shaped' content, in 2020, Apple recruited Oscar-winning La La Land director Damien Chazelle for a nine-minute short film shot entirely on an iPhone in portrait aspect ratio.

At present, Vertical Cinema may not have looked far beyond showcasing smartphone features, but adaptable video formats are on the rise. 'Over the last few years, anything that's usually delivered to a record label, including music videos, promos and content, always needs to be delivered in landscape and portrait mode. But more and more, strictly portrait content is being commissioned,' explains filmmaker, creative director and artist Jeremy Ngatho Cole.

With emerging platforms such as Filmora – which enables video editors to select the portrait ratio for an entire project – a future where content is adaptable and industry-certified across many mediums is slowly being realised.

# *2* New Tech Masters

Streamlined digital solutions are transforming the filmmaking industry by enabling productions to function better, for less.

# A generation of New Tech Masters are pushing for standardised technologies that enhance processes and enable efficiency, expanding the possibilities of how and what we create.

New virtual and cloud-based technologies provided a pandemic-era lifeline for filmmaking production and processes. Crews quickly transformed inability into action. Supply chains were consolidated, and digital solutions created that enabled crews to work collaboratively and efficiently while physically apart.

Such solutions may have emerged as the necessary ticket for reanimating an entire industry, but the New Tech Masters are ensuring practices outlive the pandemic and its aftershocks.

'People weren't sure whether this would be a momentary situation,' says Eno Henze, CEO of Hyperbowl. 'But this technology is here to stay and it's actually superior to other traditional technologies that were already looking redundant –it's enabling the industry to put the creative freedom into the hands of the people who tell the story.'

Striving for filmmaking that is agile, efficient and enhanced, New Tech Masters are spurring the emergence of three key trends: the use of Adaptive Ecosystems, the emergence of VPOD (virtual production on demand) and Metaverse Rising.

# Adaptive Ecosystems

Artificial intelligence (AI), analytics and automation are replacing previously fragmented production supply chains with low-latency solutions able to deliver benefits to large- and small-scale productions alike.

Cloud migration and AI workflows are slowly coming of age as the industry wakes up to intuitive technology and its ability to facilitate adaptive production. Agility, responsiveness and enhancement are important factors for the New Tech Masters, and are leading to the development of tools that boost collaboration and efficiency across filmmaking.

Virtual facilitation tools are already catering for this generation's needs at every stage of production. In 2022, Canon collaborated with production company HitRecord to create an animated short film facilitated by the capabilities of its new AMLOS camera system. Built around the brand's 4K-resolution PTZ cameras, the smart software tool boasts intuitive hand gesture control and hi-res imaging streams that enable spontaneous and virtually seamless hybrid collaboration.

HitRecord relied almost entirely on the AMLOS system for its collaborative filmmaking process. This comprised 25 interactive brainstorming sessions covering theme, narrative, world-building and character development with a team of more than 200 remote participants.

Machine learning tools are becoming a standardised element of the filmmaker's toolkit, as accessible plug-ins start to make a smart filmmaking future a reality. CopyCat, developed by UK-based software company Foundry, is one example. Part of the brand's Nuke 13 creative suite, the smart tool enables VFX producers to accelerate their creative processes with ease, and can be used to facilitate complex or time-consuming effects such as creating a garbage matte. Artists can feed the plug-in with a select number of example frames. The tool then trains a neural network to replicate the transformation, which can be used to apply the effect to the rest of the entire sequence.

It's not only inherently digital productions that are reaping the benefits of automated creative workflows. A number of live broadcast productions are making use of the freedom and collaboration afforded by the cloud format too, creating complex, high-quality content for sectors and interest points that would have been previously beyond the scope of many budgets.

As Yvonne Monterroso, director of product management at broadcast connectivity specialist Dejero, explains: 'More affordable IP- and cloud-based technologies have enabled niche, lower-level or local sports [content] to reach their geographically dispersed audiences. From sailing and mountaineering to marathons and cycling, events previously considered impractical to broadcast are now being made available live online. Even local events such as school fixtures have become fair game, thanks to the acquisition, production and distribution technology that has developed rapidly over the last few years.'

The TVU Producer live production service has sync technology that enables entire production teams to work remotely yet in sync, combining live feeds from mobile cameras, overlaying shots with live graphics and adding VoD assets from the ground using just a normal home internet service.

According to Colin McDonald, product manager for cine products at Teradek, the range of possibilities for cloud-based production is still to be explored. 'Right now, content is being pushed to all levels of production without a direct form of feedback,' he explains. 'But soon, each of those departments and stakeholders will be able to push information back. This constant flow of information on a single platform will mean productions can work faster and with more accuracy.'

For Sami Arpa, CEO and co-founder of film production company Largo, these hardware tools are the necessary building blocks of true AI efficiencies: 'AI is a software solution but still works on hardware. If you don't have the hardware that is supporting these solutions it won't work – and as AI becomes part of many large broadcast set-ups, smart tools will be tasked with keeping up.'

Hardware brands are beginning to answer the call with smart and efficient tools. MRMC's Polymotion Chat is one example of this kind – a camera agnostic tracking system that allows an operator to automate up to six presenter and guest camera positions. Canon's remote PTZ cameras and controllers boast smooth pan and tilt functionality, and include complementary software that enables creators to control and adjust shots from remote locations.

## FUTURE SCENARIO:
## SET DECKS

By 2030, new virtual production concepts will accelerate change in the industry. One potential scenario is Set Libs, a greenscreen library subscription service. Forgoing the need for expensive and unsustainable location scouting, Set Libs' VR camera experts could standardise detailed location shoots created through 3D, 180° VR camera capture – from ocean underworlds to cityscapes and metaverse universes. Operating on a sliding pricing scale, the platform would be available to independent creators, small production houses and blockbuster studios.

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# VPOD
# (Virtual Production on Demand)

More than an inter-pandemic industry lifeline, virtual production platforms are emerging as a certified, often enhanced filmmaking method as smart brands increasingly create turnkey solutions and VP studios ready for use.

The pandemic had a transformative effect on virtual production's industry characterisation, shifting its standing from specialised stand-in to enhanced alternative. Now, virtual production boasts frequent use on blockbuster sets, highly specified studios and a market size expected to reach £5.6bn (€6.64bn, $6.79bn) by 2030.

The practice may have been adopted widely and freely during the pandemic, but now productions are taking a more holistic view of virtual production's benefits, pushing brands to better adapt for virtual filmmaking.

'Productions are evaluating this technology in detail now,' explains Eno Henze. 'There was a time when future-orientated projects thought: 'We need to do this in virtual production,' and they did it to a certain extent because it was the latest thing to do. But now, the actual benefits of less travel, or saving in practical set build, or being independent from weather, or being able to keep certain productions secret and to shoot them discreetly, are coming to the forefront and allowing virtual productions to prove themselves as a new holistic approach to filmmaking.'

The challenge now lies in standardising tools and processes to allow virtual productions to prioritise creativity over integration teething issues. In 2021, German camera brand ARRI made strides towards this future, opening Europe's largest mixed reality studio in London. The Dark Bay virtual production stage – available to short- and long-term productions of any kind – boasts an 'in-vision' curve, two movable side screens and a high adjustable ceiling.

Canon's RF 5.2mm F2.8L DUAL FISHEYE lens, meanwhile, is revolutionising the limitations of VR creative production by making the practice accessible. With its super-compact design able to easily capture 3D, 180° VR content, it unlocks untold possibilities for virtual location scouting and showcasing, holding huge cost-saving potential.

'It's a really simple process, with software that people are excited about,' says Barry Griffin, segment manager for broadcast and professional video solutions at Canon UK. 'And this is where a little lens can have a knock-on effect that will make a huge difference. It's not just about shrinking the cost and time of location scouting, but creating collaborative experiences across the world for geographically dispersed creative teams.'

Looking to the future, VR lenses will allow creators to build sets in multiple studios, giving directors the opportunity to explore them in VR before going anywhere near them. As a result, overall production times will shrink, budgets can be used more efficiently, and films and shows can reach audiences faster.

Taking the lead from gaming's world-building capabilities, filmmakers are increasingly using Unreal Engine, a platform which gives them complete control of the set and surrounding environments instantly. Unreal Engine was initially used to create VFX in post-production, such as those seen in HBO's Westworld and Disney's The Mandalorian, and its parent company Epic Games is now pitching the platform to creators as a more active part of the filmmaking process.

For Jonathan Jones, creative director at Ember Films, this merging of filmmaking and computer graphics (CG) technology is resulting in new roles and creative ownership. 'Technology is streamlining processes so much that we're now seeing 'generalists' – someone able to see one shot through from start to finish,' he explains. 'Colour correction is almost playing the part of the offline process of editing, and VFX is now such a massive consideration of every shoot that everything is merging.'

In autumn 2021, Foundry released the UnrealReader node – an add-on going some way to achieve the industry's new end-to-end production targets. An experimental tool for producing VFX work in NukeX and Nuke Studio, the node uses data generated from Unreal Engine – making it quick and easy for compositors to generate live renders from Unreal Engine and control the results, for example by breaking objects into layers or tweaking shot framing.

For Eno Henze, this ability to better visualise results on set is one of virtual production's biggest draws: 'The director, DOP [director of photography] and client can make creative decisions on the set again. If you compare it to green screen, if the shot works out as intended, you only know when it's gone through post. If you can recreate the lighting, if the action works together with the virtual scene, and so forth, these are all things that you can now decide on the set, on the spot, and when you know you had it right, then you had it right.'

For virtual production users, consolidation and integration remain key to ensuring the process is truly streamlined and enhanced. In the future,

opportunities abound for camera brands to provide complete data consolidation in one place. 'The next step is one unified data stream,' says Eno Henze. 'Virtual production studios need something that combines lens and camera data into an integrated set of tracking data, streamlined and ready to use for the post-production workflow.'

## Metaverse Rising

New virtual technologies are transforming once fringe productions into coveted entertainment experiences, with the metaverse creating potential for fully immersive, customisable films and broadcasts.

Future-facing innovations are not only diversifying how New Tech Masters create films, but the content §of what they create, as the filmmaking industry makes strides to strengthen its place in the £659bn (€782bn, $800bn) metaverse market.

New platforms for 3D outputs are providing solutions for immersive films and metaverse stories, transforming gaming-esque experiences into sophisticated VR content that is also ready for film.

Holographic capture company Metastage is facilitating these possibilities. It provides productions with state-of-the-art, 3D volumetric video capture and photorealistic virtual humans which, when paired with virtual production, are able to be injected into the metaverse as representations of real people.

'We are just at the beginning of the way in which production methods can interface with the metaverse,' says Hyperbowl's Eno Henze. 'We could see an LED stage act as a physical portal into the metaverse, where all those things that are happening there – be it spatial internet or real-time rendering – are placed in relation to actual people.'

Venice Biennale International Film Festival's Liz Rosenthal notes that the expansive data and scanning stages needed for volumetric capture represent the biggest, albeit not unfixable, challenge of mixed reality filmmaking. 'There are definitely extremes of high-end and low-end capture in the VR film space,' she says. 'At the moment, high-end is out of reach for even mid-size production houses because the data being captured is huge and you need a specialist CGI-scanned environment. But small stages are emerging for independents, where you have really low-end capture that's shuddery and you've got to play with it aesthetically in post-production.'

As production platforms and progressive hardware aim to become more accessible, industry programming is also beginning to recognise metaverse films. Sundance's New Frontier 2022 showcase, for example, included a digital event space where attendees could browse the catalogue of XR content available and chat with creators via proximity chat, an immersive stage environment and a dedicated social space.

'We are just at the beginning of the way in which production methods can interface with the metaverse. We could see an LED stage act as a physical portal into the metaverse, where all those things that are happening there – be it spatial internet or real-time rendering – are placed in relation with actual people'

*Eno Henze, CEO and founder, Hyperbowl*

# *3* <u>Symbiotic Storytellers</u>

Harnessing advancements in AI, data and decentralisation, filmmakers are creating new relationships of exchange between audiences and creators.

Symbiotic Storytellers are refreshing traditional paths to film creation, production and reception, seeking mutual encounters with audiences by creating a value exchange that benefits both parties. This reality is being fuelled by new attitudes to ownership and data, which consumers are increasingly willing to share in exchange for personalisation.

Research from Treasure Data confirms this new willingness, showing that seven in 10 French consumers have shared more personal data since the pandemic began, with almost half (48%) doing so to achieve a more personalised, immersive brand experience.

Embracing these new attitudes, an emerging filmmaking cohort are drawing on the value of audience data to create hyper-local, viewer-optimised and culturally nuanced film productions. Collective power and collaborative paths to film financing and ownership are also enabling them to resist the dominance of big-budget narratives.

In response to their new approaches to filmmaking, Symbiotic Storytellers are spurring three key trends: the utilisation of Data Audiences, the boom of Hyper-local Content and the emergence of Decentralised Features.

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# Data Audiences

Smart storytellers are resisting big data's categorisation as a threat to creativity and independent productions, instead collaborating with anthropologically minded data initiatives that bring them closer to their audiences.

Audience data may have originally been characterised as something monopolised by big studios, but a growing number of brands are creating independent, cost-effective solutions for smaller production houses to harness.

Madrid-based marketing agency The Film Agency is one example. Specifically designed for smaller creative and filmmaking companies, its product, THINK DATA: Bridging The Data Gap, provides a unique set of accessible and analytical consumption trends from the perspective of the independent film and tv industry.

THINK DATA drops as monthly data reports that analyse the ever-changing streaming market with an independent and European outlook, providing a diagnosis of the most streamed genres and a detailed production country share. Reports have exclusive insights provided by top 100 movies on leading streaming platforms Netflix and Amazon Prime across the UK, France, Germany, Spain and Italy.

Switzerland-based assistance tool Largo.ai analysed over a million pieces of data to train its AI programmes – providing a certified platform to the industry to aid decision-making at various stages, including pre-production, post-production and distribution. Its software analyses content – whether a script, or a rough or fine cut – to predict audience reaction and the potential revenue of a project.

Smart data platforms are also giving Symbiotic Storytellers access to advanced human data, allowing them to paint a clear, detailed picture of their audience for future production considerations. According to Nathalie Lethbridge, CEO of streamed entertainment strategist agency Atonik Digital, there is an erroneous assumption that data might limit opportunities, but it is a multi-layered concept. Speaking to a panel at Cannes 2021, she explained: 'We can think of data in terms of how people are viewing content, being engaged and how much time they spend watching it, but what else do they do? What are their other interests?'

The PUBLIKUM platform is harnessing this creative approach to data audiences – using smart AI to identify which areas of a film's theme are most important to the audience in order to guide filmmakers on how to explore their creative content further.

Enhancing this concept, in 2022, IMDb teamed up with Amazon to gamify the streaming process, drawing on its vast database of reviews and film information. The games in the IMDb What To Watch app are designed to glean information about the viewer's mood, tastes and preferences. Through a number of interactive questions and prompts, the app also aims to determine whether the viewer is watching alone or with a group, calibrating its choices to suit particular occasions and event settings.

Canon EOS R8 and Canon RF 5.2mm f2.8L DUAL FISHEYE Lens

## FUTURE SCENARIO :
## LOC24

By 2030, expect to see tv go hyper-local. Our citizen-led tv concept, LOC24, would present local audiences with a 24/7 source of information and news. Defined as a civic social service, LOC24 would make use of the standardisation and accessibility of connected cloud processes to keep production costs down, saving the budget to provide a platform for aspiring filmmakers from the local community. The platform could have a cross-channel presence, occupying its own digital space, as well as space on TikTok and Instagram, thanks to the long-form and live video expansion of the social apps.

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# Hyper-local Content

Fuelled by the pandemic and social justice movements, a new era of filmmaking production and streaming is celebrating cultural nuance and putting regional stories on the global stage.

Symbiotic Storytellers are creating regional alternatives to streaming giants and globally popular blockbusters, telling local stories to reach new audiences. They may be a non-mainstream cohort, but their intentions are being driven and facilitated in part by the streaming performances and regional aspirations of leading industry giants themselves.

In 2021, for instance, Netflix's North American commissions accounted for 45% of market share – a drop of 10 percentage points compared to the previous year, according to research from Ampere. And with the streaming giant recently commandeering 3.54m new accounts in Europe, the Middle East, and African markets – compared to just 1.19m new subscribers in the US and Canada – the case for localised content has never been clearer.

Comprehensive data from Mediametrie paints a clear picture of this new industry reality, noting that in 2021 there were 72 new non-English-language series launched on global streamers. Further, surveying television programming across 11 major European territories, the organisation revealed that a large portion of the shows (61%) were local, with only 35% imported. Viewing times were even more skewed towards the local, with local programming making up 70% of individuals' chosen streaming and just 5% allotted to imported series.

Traditionally, subtitles were a deterrent to viewing international films, but now audiences are increasingly open to searching for content beyond their own regional and language borders. 'In the last two years, we have really seen breakout in non-English titles,' says Bela Bajaria, head of global tv for

Netflix, adding that almost all (97%) subscribers in the US watched at least one non-English title in the year to September 2021.

Beyond the emerging mainstream appeal of Glocal programming, hyper-local media created by independent filmmakers is more relevant, truthful and decentralised, giving it the potential to displace the media giants who have the monopoly over the content we watch.

Citizen-led reportage, for example, is giving a voice to misheard communities, providing space for storytelling directly from a location or event. This type of reportage has been gaining ground through social media and the unscripted, unpolished aesthetic it encourages.

Sidetalk NYC, established by Generation Z students Trent Simonian and Jack Byrne, broadcasts minute-long spots from the city's streets, covering rallies, cultural events and interviews with local celebrities. With 1.5m followers on Instagram as of August 2022, Sidetalk has won its founders contracts with agencies WME and Brillstein Entertainment to produce further hyper-local projects.

In the UK, grassroots media organisation Popular Front gets closer to the action than mainstream outlets, without a political agenda and 'in a way that makes important war coverage accessible for everyone,' according to founder Jake Hanrahan. Its community-funded model is appreciated by audiences looking to escape the often-biased news cycle, as Hanrahan and his team connect with locals spontaneously and authentically.

Aided by advancements in connected production processes, the future will see local, citizen-led tv take cues from radio to transform into a 24/7 source of information or public service in local cities – permitting an egalitarian approach to who produces the content, and the stories they tell.

# Decentralised Features

New technologies are empowering fresh attitudes and paths to creative production and consumption. Growing adoption of Web3 and Decentralised Finance (DeFi) is revolutionising economic models, allowing filmmakers to create alongside incentivised film communities.

Beyond establishing new structures for film production, Symbiotic Storytellers are reclaiming the cultural and social capital of their outputs with new economic models grounded in collective ownership.

Initiatives are pushing for more equitable models of creative funding and renumeration, driven in part by an industry that no longer has solid grounding for emerging films and makers. As Mia Powell, new business director at Lammas Park, explains: 'Budget changes are really affecting the industry. The ecosystem of talent working has shifted, and the gap between the high players and the low players is increasing. That room for the middle ground is not there any more, and there isn't opportunity for people to level up.'

Hardware brands are already stepping up to allow creators to move beyond traditional gatekeepers, with accessible tools like Canon's Pro AV range helping a new generation spark creativity into action. Canon's EOS C70, for example, combines smart form and function, packing the power of a cinema camera into a compact package with incredible autofocus, dual gain output sensor and the latest Mount Adapter EF-EOS R 0.71x – meaning complete lens versatility. Most importantly, these tools are putting the power back into filmmakers' hands – giving them the freedom to create content regardless of the industry's strictures.

As well as accessible new tools, Symbiotic Storytellers are also sidestepping traditional financing options by embracing the social pull of DeFi and new value commodities. Writer Camila Russo is leading the way, setting up a crypto crowdfunding campaign for the film adaptation of her book The Infinite Machine, which tells the story of the Ethereum cryptocurrency. Funds were raised in Ethereum by auctioning NFTs; perks for owners include roles in the film and premiere tickets.

For Sami Arpa, CEO and co-founder of Largo, filmmaking's use of new value commodities holds merit beyond cultural cachet. 'There's a potential

for NFTs to evolve into digital copyrights for films – moving beyond the hype to fix real industry issues like ownership and the distribution of benefits,' says Arpa.

Beyond individuals, collaborative platforms are also establishing and incentivising like-minded film communities. Web3 video platform Shibuya is one example. Co-founded by NFT artist pplpleasr, the direct-to-community service built around Ethereum enables creators to crowdfund their films and web series, while allowing backers a say in the creative direction of projects.

The platform's first production, the Studio Ghibli-esque White Rabbit, required users to purchase a Producer Pass NFT for each chapter in order to vote on its narrative direction. The Producer Pass NFTs represent fractional ownership of the film, facilitating an on-chain data system on the platform that provides customisable viewing experiences for each episode.

Co-founder pplpleasr explains that this system of personalisation and exchange is a key element of the new creator/audience dynamic. Shibuya's model allows creators to crowdfund films and web series, and gives token holders a say in the creative direction of each project.

For Jake Hanrahan, the creativity afforded by decentralisation is just as important as the financial freedom. 'People are tired of being told what they can say, but more than that, they are tired of not being able to do something new, something really creative where a set formula hasn't been ticked off and approved,' he says.

Beyond Web3 natives and fringe collectives, established organisations are recognising the cultural pull of decentralisation – including a filmmaking group almost synonymous with the filmmaking establishment. In 2022, producer-director Roman Coppola and members of Francis Ford Coppola's production company American Zoetrope debuted the non-profit organisation Decentralized Pictures Foundation at Cannes Film Festival.

This blockchain-based film financing initiative invites community members to vote on which film pitch should receive funds from its pool. If the film's a commercial success, a portion of its profits will go back to the collective to fund future projects, creating a self-sustaining film fund that functions as an alternative to centralised industry gatekeepers.

'There's a potential for NFTs to evolve into digital copyrights for films – moving moving beyond the hype to fix real industry issues like ownership and the distribution of benefits'

*Sami Arpa, CEO and co-founder, Largo*

# *4* Conscious Collectives

The ethics of the filmmaking industry have been thrust sharply into focus, encouraging a new consumer cohort to prioritise collective and progressive movements towards industry betterment.

As audiences grow closer to the content they consume, they are demanding that approaches to production and industry inclusivity match their own individual aims. As social justice movements continue to push for necessary change, and the climate crisis becomes an ever more pressing global emergency, it's clear that inclusivity, sustainability and accessibility crises will not be solved by existing structures.



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It's a cross-industry revolution. The old gatekeepers of authority and ownership – governments, mass media and big tech – are rapidly losing their status and their influence, with the current and emerging youth generations, Generations Alpha and Z, seeking to reform, reassemble and decentralise outmoded industry standards in search of more equitable solutions to problems.

Notably, it's a vision being adopted globally and unapologetically, with a study by Spotify finding that 62% of Generation Zers across the world are ready to rebuild society from the ground up.

Heeding these values for the filmmaking industry, Conscious Collectives are transforming mission statements into progress, leading to the expansion of three key trends: the emergence of Sustainable Screens, the call for Open Standards and the rise of People Power.

'The only way to achieve a green industry is to have a green deal. It has to come from above all the way to the bottom... The only way to achieve this is to force every production broadcast in Europe to have a green label'

*Álvaro Longoria, vice-president, European Producers Club*

# Sustainable Screens

Collaborative initiatives are moving beyond lip service to action, coming together to offer environmentally conscious solutions that cut the seismic scale of production emissions.

The filmmaking and production industries have a sustainability problem. Research from the Sustainable Production Alliance reveals that large films have an average carbon footprint of 1,081 metric tons, while medium films have a similarly substantial average carbon footprint of 769 metric tons.

Green production, aiming to limit impact with restricted travel, carbon offsetting and newly created environmental steward roles, may go some way towards easing industry consciences, but the scale of damage for average productions is so vast that collective action and strict standards will be the only ways to provoke real and measurable change.

'We have to make it mandatory,' explains Álvaro Longoria, vice-president of the European Producers Club. 'The only way to achieve a green industry is to have a green deal. It has to come from above all the way to the bottom… The only way to achieve this is to force every production broadcast in Europe to have a green label.'

Hoping to provide a practical solution for an entire region's sustainable production, Film London, the British capital's screen industries agency, recently announced the commissioning of the Grid Project. The pilot will supply a centralised renewable energy source for productions in the capital, aiming to reduce emissions and limit noise pollution, while maintaining London as a production hub.

Similarly ensuring multiple productions can reap the rewards of its eco-conscious outputs, the Dimpact app aims to encourage streaming services to act more sustainably. The platform – already being adopted by companies including the BBC, Sky, ITV and Netflix – enables users to map and manage their carbon impact.

Beyond ethical sustainability, policy change is helping to make sure the film and creative industries become more sustainable for the people within it. Heeding the damage of inter-pandemic shutdowns and widespread industry limitations, in 2021 the EU pledged to adopt the new Creative Europe 2021–2027 programme with a significant budget increase of 50% compared to its predecessor programme – taking the total allocated to £2.15bn (€2.44bn, $2.59bn).

# Open Standards

Established and emerging platforms alike are recognising the power of driving new standards across production, creating open-source coding and software that can be trialled and improved by the industry collectively.

For Conscious Collectives, progress extends beyond social, cultural and environmental industry undercurrents to include making sure the industry works better, more efficiently, and for everyone. As cloud-based technologies and virtual production literacies grow, creator collectives will look to create full standardisation and promote industry tools that are accessible and exchangeable.

'Open-source has become an important part of how we move work from one piece of software to another throughout the process,' explains DJ Rahming, head of technology at the RodeoFX studio. 'Open standards and libraries give us a way to define things, like textures for example, and have a common way of working with them throughout the industry.'

Pioneered by individual studios or through collectives, the drive to push for open-source software with source code and implementation documentation is growing. These types of tools – increasingly available to freely download online – also have an equitable approach to development, with users frequently modifying and customising tools for their own needs and sharing their improvements back with the industry.

'Workflow is becoming more about how easy it is to integrate with multiple software systems,' explains Jonathan Jones, creative director of Ember Films. 'Open-source platforms, where codes can be adapted and changed and shared and more community-based, are becoming the future. Tech brands should be mindful of that creative, social element to product, because the biggest, highest resolution that will look fantastic at the cinema is not necessarily the goal any more.'

OpenColorIO is just one example of freely available, open-source software of this type. A management system for VFX and animation pipelines, the tool has been lauded for driving the industry towards open-source standardisation.

For Mark Elendt, senior mathematician at SideFX, these types of open-source libraries build a common language that enables users to understand a core filmmaking principle in the same way. 'Open-source libraries such as OCIO v2 provide great value to the community,' he says. 'Aside from providing stable, secure and optimised code, the tools also provide a common standard of support across all applications and facilities.'

Leading the charge, Pixar's open-source Universal Scene Description (USD) software is an extensible-format library and composition engine that provides an effective way for the industry to describe, assemble, interchange and modify high-complexity virtual scenes between digital content creation tools. Described as the HTML of 3D, USD holds fresh possibilities for metaverse production and world-building – allowing the creation of virtual sets, animations and materials that can be seamlessly exchanged across applications.

Its existence has facilitated the creation of the Metaverse Standards Forum, a group that includes Khronos, Adobe, Meta, Google and Microsoft. The forum recognises that building a pervasive, open and inclusive metaverse on a global scale will require cooperation and coordination between a constellation of international standards organisations.

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## FUTURE JOB ROLE:
## **INCLUSIVITY DIRECTOR**

Across Europe in 2030 it's now mandated that film productions over a certain size employ external IDs – inclusivity directors focused on creating a meeting point between diverse industry talent and production opportunities. Harnessing positive hiring practices, IDs ensure that inclusivity standards are met across publishers, producers, directors, writers and creators – making sure opportunities are available and candidates are considered for demographics such as gender, race, nationality, ability and age.

# People Power

Progressive networks are offering new paths into the filmmaking industry, while opportunities abound for hardware tools and software platforms designed for diverse talent with equally diverse narratives.

Lowering access to filmmaking in terms of budget, formal education or production size is one challenge, and the industry must also work to ensure paths to production are accessible to all, including non-native speakers, and neurodivergent and disabled creators.

Established organisations are slowly recognising this need for change. In 2022, the British Film Institute (BFI) hired its first disability quality lead, responsible for driving forward the strategic aims and objectives for people who identify as deaf, disabled or neurodiverse. In 2021, the BFI partnered with FWD-Doc to create practical resources and information for the film industry on how to engage effectively and creatively with disabled film talent.

Beyond structural shifts, hardware brands have an opportunity to drive the access and adoption of inclusive tools and platforms for diverse needs, from post-production software with complex audio descriptions to standardised equipment support.

In France, the industry is taking a standardised approach to inclusivity practices, with France's National Film Board offering film productions a bonus subsidy for hiring female directors, cinematographers and/or heads of production.

For filmmaker, creative director and artist Jeremy Ngatho Cole, such policies aren't always the answer. 'It's necessary to have forced incentives to make sure there's wider representation, if it gets you in the door and it gets you an opportunity – there's huge power in that,' he says. 'But when the representation doesn't come from the top, you often end up being put in a box. And even though you can do incredible things in that box, there's a limit on what stories you can tell and who you can represent. The key is working out how diverse talent can exist outside of that.'

Industries may be taking steps towards demographic representation, but when it comes to inclusive crews and diverse sets, efforts are falling far behind relative representation. For Mia Powell of Lammas Park, the key lies in taking a step back from hiring under-represented demographics in a vacuum. 'The culture around that talent also needs to live and breathe that ethos of true inclusivity,' Powell observes. She adds that production hiring is often made due to the ubiquity of certain industry names, noting the need to recognise that these names often fit within hegemonic industry standards based on barriers to entry.

'I think blind bidding could go some way to solve a lot of entrenched industry problems,' she says. 'I don't want people to know the names of the directors before they see their work. I think that would really open up the landscape in terms of who can work on things.'

FREE THE WORK is a non-profit organisation that offers a platform to under-represented creators behind the lens of tv, film and marketing. The organisation was built on the initial principle to Free the Bid, which demanded that agencies and brands include at least one woman director every time they triple-bid for a commercial production.

Increasingly, under-represented groups are taking the lack of filmmaking diversity into their own hands. Lammas Park is one example. Founded on the principle of developing a roster of talent to tell culturally transformative narratives, the production company offers a platform for marginalised voices across socioeconomic backgrounds, the LGBTQ+ community, and Black and Brown communities.

Following a similar ideology, London-based TAPE Collective is a grassroots movement that works to programme film-based events in response to a lack of representation on screen. The group has worked with the BFI and the Barbican to create its own film festivals, providing a platform for film content that takes an explicit and creative approach to the industry's lack of diversity.

*Part four*

# Conclusion

The next generation of filmmakers are redefining the industry, transforming how, why and what stories are told in line with fresh priorities

Spurred by new attitudes to digital, emerging technologies, and collective thinking and empowerment, filmmakers are decentralising existing structures and workflows, allowing them to be built back better, with creativity re-emerging as king.

'I hope to see more films, more content and more art being created by people who are free from bonds of the traditional industry and the games we have to play,' says filmmaker, creative director and artist Jeremy Ngatho Cole. 'That's how the best art will be created, and in turn that would benefit the industry massively – and for a long time.'

United by values of creativity, community and innovation, Empowered Creators, New Tech Masters, Symbiotic Storytellers and Conscious Collectives will seek hardware tools, software solutions, workflows and industry structures that act as partners, not gatekeepers, in their respective filmmaking journeys.

This represents the major challenge for the filmmaking establishment of 2025 and beyond, and can lead filmmaking into a new, innovative, ethical and accessible future by:

: Championing Empowered Creators with intuitive and accessible tools, and supporting a culture of knowledge-sharing exchange through community platforms and programming

: Pushing for the integration of AI and virtual production with smart and seamless hardware tools – putting the creative power back into the hands of the New Tech Masters

: Embracing Symbiotic Storytellers' values of localisation and decentralisation by platforming, empowering and rewarding diverse stories and creators at every stage of the production journey

: Taking the lead from Conscious Collectives already making the industry more equitable, and working with them to set standards across sustainability, accessibility and ethics that go beyond tokenism

Occupying a unique space that can represent and reflect our realities, the filmmaking industry has the opportunity to set standards beyond its immediate remit. Now is the time for Future Filmmaking partners to pioneer a new transformative horizon by innovating to meet the needs of Future Filmmakers, from the content they create to the innovations they inspire and the audiences they entertain.



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