SCREEN TECH

INTELLIGENCE REPORT
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SILICON CAPE
INITIATIVE

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1.   Overview of the ScreenTech Sector

1.1   Defining ScreenTech

Towards the fulfilment of its digital strategy to develop the Western Cape as the Tech Capital of Africa, the Western Cape Department of Economic Development and Tourism (DEDAT), has launched five technology ecosystem support initiatives collectively known as DashTech. These include: SafetyTech, 4IR-Tech, ScreenTech, Fintech and Township Tech.

These initiatives are in part a response to a 2018 Endeavor Impact Report, which found that the value of vibrant startup networks is critical to the success of thriving technological ecosystems. The research showed that when a region's digital and technological ecosystem is assessed and evaluated, the primary indicators used are the strength, network, and connections therein. The report also found that the Western Cape exhibited a competitive advantage in several technology streams, which form the foundation of the five DashTech initiatives.

This intelligence report focuses on the ScreenTech initiative which originally included the broad definition of the sector as technology that encompasses all technologies concerning screens; from animation, Augmented Reality (AR), Virtual Reality (VR), Mixed Reality (MR), chat messaging, and design, to digital services, e-commerce, e-learning, e-logistics, film, gaming, IoT, social media, streaming platforms, and television.

Through a mixed-methodology, qualitative research approach combining desktop research, roundtable discussions, Community of Practice workshops and one-on-one interviews with experts in the industry, ScreenTech has come to be defined as:

"All technologies which facilitate human interaction that are optimised by a digital screen, upon which images and/or information are displayed."

This is a definition in flux, being one of constant updating and development, as determined through interviews with stakeholders operating within the sector. As such, this definition remains inclusive to all current and future screen-related sectors, with the aim of facilitating greater connections between stakeholders in screen-related technology fields.

However, as we proceed into the second and third years of this initiative, we recommend that the work of this initiative be refined to key screen-related industries, verticals and with core themes and problem statements set. As our research will show, the sheer span of screen-related technologies often results in too great a diversity of stakeholders – in terms of industry and experience – which results in very few realistic opportunities for collaboration, and in turn, reduces the value stakeholders perceive from this initiative.

1.2   Overview of the ScreenTech Sectors

According to Wesgro (2020), the Western Cape is the leading technology hub in South Africa, being home to roughly 50% of the country's emerging tech companies across all verticals. This is attributed to the Province's existing digital ecosystem and infrastructure, which is supported by a culture of familiarity, high quality of tech entrepreneurs and businesses, ease of access to market, an entrepreneurial culture, a cost-friendly lifestyle, and access to local and international talent. These factors have contributed to Cape Town being host to 60% of South Africa's startups who attracted 21% of venture capital funding in 2019.

The Western Cape boasts a vibrant range of screen-related industries, namely: gaming, film, television, streaming, social media, chat messaging platforms, animation, and design, along with Augmented, Virtual and Mixed Reality, and digital services in the fields of elearning, ecommerce and ecogistics, among others.

According to interviews conducted with stakeholders in year one of this project, these sectors remain mostly stable with many experiencing growth despite recent economic challenges imposed by the COVID-19 pandemic and weakening value of the Rand. This comes as screen-related technologies have found greater adoption due to their ability to overcome physical barriers in both work and leisure for most digitally-enabled citizens.

1.2.1 Gaming

Note: The information gathered below stems from a series of roundtable discussions with local experts in gaming, including Ben Myres and Limpho Moeti (Nyamakop), Steve McIvor (Tasty Poison Games), Francois van Niekerk (Clockwork Acorn), and Nick Hall (IESA).

Additional desktop research has also been conducted.

Before the COVID-19 pandemic, growth in the local games industry was estimated at 5.3% per annum and expected to be worth US$270 million by 2025, according to local experts. To this end, a foremost goal in this sector is the development of an internationally-leading games studio in the Western Cape - also known as a AAA-Studio which boasts large budgets and production capabilities. However, this is being prevented largely due to a lack of sustainability in the Cape's games industry, which relates directly to the further issues of skills development and retention, as well as to the additional challenges of funding and infrastructure, which further hamper the sector's development.

Specifically, entrepreneurs and studios in the Cape – and country - are struggling to simultaneously ensure they cover operating expenses while generating content that is interesting and competitive in international markets. Doing so requires adequate financing in conjunction with the appropriate talent; yet, this represents a dilemma: Currently, there is ample entrepreneurship in gaming, as the lack of established studios forces entrants into the sector to start their own businesses. However, these businesses lack the experience, resources and support to develop content and employ and grow talent, all while remaining competitive. As such, these businesses are unable to mature, and neither are their employees able to increase their experience to a mid or senior level. The result is an undersupply of sustained jobs in games development, which forces prospective talent to enter adjacent industries such as VR, AR and MR, or Fintech, which are experiencing more sustained growth and development.

The lack of financial support notwithstanding – the limited maturity of the Cape's talent base is of additional concern, as it creates a knock-on effect for the training of future skills. While there is ample interest shown from young people looking to enter game development, the lack of mid- to senior-level individuals results in poor training of young people, who further undermine the ability of games studios to create compelling creative content, which in turn cripples their sustainability. This raises yet another dilemma: To empower studios, they require more experienced and skilled talent; however, they are unable to achieve this through a combination of poor training offered by inexperienced educators, who themselves are unable to garner greater expertise due to the lack of sustainable games studios, which all results in a further lack of sustainability in game development.

To undo this twin dilemma, experts in local gaming **recommend a combined focus on training, infrastructure development, and financial assistance** to ensure greater sustainability in the sector.

From a skills development perspective, it is evident that local talent requires more experience and training, but this is in turn limited by the current size of funding offered to the industry. As such, an initial step would be to offer young people access to self-guided training on free software like Unity, and Unreal Engine – this would encourage young people to learn and become more familiar with commonly used software, while affording them an opportunity to develop ideas and portfolios of their own. However, doing so also requires access to infrastructure and tools – namely an adequate internet connection, power supply, and computer – which are necessary to operate the required hardware and software for game development. While these interventions would ensure continued entrepreneurship and skills development in the sector, they should then be supplemented by business-orientated skills development to ensure that new studios and entrepreneurs are able to sustain their businesses, namely through improved production management and business development.

Concerning financial assistance, experts acknowledge that there is currently limited financial support offered by the government, and that studios predominantly receive funding from private entities, namely publishing companies found in international markets. This is secured via a three-stage prototype process, whereby studios develop a concept (minimum viable product), which is then pitched to publishing houses that finance the remainder of the prototype's development and marketing. In turn, publishers then take a significant portion of the revenue earned, with the remainder then sent to the studio (which, according to industry experts, often equates to roughly 20% of the total income generated).

While this results in significant capital outflows to international markets, this is the most used and accessed model for local game developers who, over the years, have developed strong relations with private entities in leading games markets across the globe. But, as Ben Myres notes, "It's not hard to get a game fully funded in South Africa if the prototype is good... The community now has extensive connections to publishers and funders from around the world – this means that if someone makes a really good prototype, we have the network as an industry and community to get that funded internationally… The problem isn't really full-funded projects, the problem is ensuring you have the finances to actually make the prototype in the first place."

To this end, experts would like to see the government intervene to make the prototype model more feasible for smaller studios, who currently dominate the local industry. While the bulk of funding can come from international publishers and funders, they recommend a government grant or fund for prototype development, to ensure that local studios are able to develop competitive concepts. Once that is done, people from the community/industry can help source the rest of the funding.

Through our research, we also came to learn that local game developers are primarily selling their content to international markets. Currently, the South African market has little buying power, due in part to the small consumer base for games driven by socio-economic inequality, which means there is not enough local demand to drive industry growth alone. In turn, this lowers the interest and ability of local studios to create content for local audiences, as developers look to the interests of their international markets to ensure the greatest income.

When taking the current state of games development into account, it becomes evident that the Western Cape – and South Africa at large – is far off from the development of a AAA-Games Studio as the combination of a lack of skills, funding, infrastructure, and to a lesser extent local demand, would

severely undermine the ability of such a studio to operate, nevertheless sustainably. It remains, however, a viable long-term goal so long as interventions are made to address the above challenges. Yet, it may also be worthwhile considering the development of a 'third-party' studio – an organisation that could provide support to smaller developers, which could range from software and design development, to marketing, funding and beyond. Such a studio would go a long way towards achieving stability in the industry.

1.2.2 Film, Television & Streaming

Note: The information gathered below stems from a combination of desktop research and roundtable and one-on-one discussions with local experts in film, television and streaming, including Kate Schalk, Annemarié du Plessis and Herman Binge (Marche Media), Nomfundo Matlala (National Film and Video Foundation), Harriet Gavshon (Quizzical Pictures), Lisa Mini and Monica Rorvik (Wesgro), Ayanda Makayi (Independent Streamer), Jorrie van der Walt (Empty Canvas Productions), Nicholas van der Westhuizen (Freelance Cinematographer and Drone Operator), Wilhelm Conradie (Freelance Editor and Post-Production Supervisor), Eva du Preez (Freelance Editor and Script Supervisor), and Grant Hinds (Independent Streamer).

The film and television industry is one of the oldest and most mature of all screen-related sectors. There are, however, differences between the various provinces, with the Western Cape focusing primarily on film and commercial production, while Gauteng leads in television. These sectors are further segmented by client-base, with the Cape servicing predominantly international clientele.

The most pressing development in the local film and television industry is the advent of streaming platforms, namely Netflix, Showmax, Amazon Prime, and Viu, among others. These are quickly replacing and leading to the closure of physical outlets – such as cinemas and rental shops – due to their accessibility and convenience for audiences in well-connected urban areas.

While these platforms are impinging on the job security and livelihoods of business owners operating more traditional outlets, they are a welcome development for smaller production houses, which through the international reach of these platforms, are able to tap into a much larger audience from across the globe. Recently, smaller production houses have also benefited from the global increase in demand for content following the COVID-19 pandemic, which forced larger production houses around the world to close, giving smaller producers an opportunity to capitalise on demand and generate income.

But while international demand for content has increased, many smaller and unknown production houses are struggling to capitalize on this opportunity as they lack the network, connections and credibility to engage with international streaming platforms. Moreover, streaming platforms tend to be hugely selective in terms of what content they choose to publish, which further limits the ability of emerging producers with limited budgets to benefit from their presence. This also affects their ability to produce high quality content to an international standard. Underpinning these challenges is the fact that international streaming services are not investing enough time and resources back into the local industry and economy.

Yet, consumers too have limited access to streaming platforms, which is hugely dependent on one's access to infrastructure to consume digital media, namely the internet and data. This digital divide disproportionately affects those audiences living in rural and poorer areas, who – despite South Africa's growing mobile phone penetration – live with limited hardware and connectivity to engage

with streaming platforms. On a positive note, this encourages the need for physical outlets that are able to overcome these challenges, but also represents an opportunity for stakeholders in the field to introduce measures to ensure greater accessibility that is feasible to help grow a local streaming audience in these areas. It should be noted though that such interventions should simultaneously seek to limit the number of jobs lost locally as a result.

To overcome the challenges of access to streaming platforms, young producers in particular are increasingly looking to social networking and media platforms, namely Instagram, Facebook and YouTube, as noteworthy alternatives, with their 'live broadcast' features enabling them to reach a widespread and digitally connected audience. However, this then raises issues pertaining to intellectual property rights and usage, with young people unable to lawfully repurpose existing media for their own use, nor generate an adequate income from their own content streamed on such networks.

This need for alternative outlets for smaller and younger production houses also raises the demand for a government-owned distribution network, either in the form of a streaming service or public broadcaster. These platforms provide an exclusive space for locally made content and stories, giving the people and businesses in the sector an opportunity to generate both exposure and income, which will in turn increase their experience and credibility, and offer a pathway towards international platforms. This is currently a role being fulfilled by the South African Broadcast Corporation (SABC), which is a large benefactor of local production houses. However, with claims being recently made against the broadcaster for a lack of payment to producers, there is a need for more robust remuneration channels to make this successful. In addition, the SABC does not share intellectual property rights, meaning local producers are not able to maximise their potential income by distributing to additional platforms.

A lack of remuneration and limited budgets are key issues across the sector and acutely affect all stakeholders, from individuals to organisations. For people acting as freelancers or sole proprietors, the sheer expense of both software and hardware used throughout the filming process represents significant barriers to both their ability to enter the industry as well as to make a sustained living. Meanwhile, smaller production houses are forced to compete with well-funded and established houses nationally, with insufficient means of recouping income over longer periods due to a lack of working remittance and remuneration channels.

As such, experts agree that there is a need for a South African-focused organisation to ensure consistent income for local producers when content is aired, as well as additional assistance from government which would help producers access technology that could enhance their competitive advantage and in turn sustain themselves in the market vis-à-vis their larger counterparts. Financial savings for access to technology could be further enhanced by predictive modelling for smaller production houses, whereby they can better understand their financial circumstances and devise strategies to maximise production costs and revenue with technology.

On a positive note, due to the maturity of the Cape's film industry, there is a good range of talent locally, with ample mid- to senior-level skills and an oversupply of young talent looking to enter the industry (although the limited opportunities for them to acquire experience and income locally, mixed with the costs to entry for individuals looking to enter the sector, is leading to widespread migrations abroad). In addition, there are many tertiary institutions in the Province offering training in film and television production; however, this training differs between institutions.

While universities offer theory-based training, their graduates are considered too inexperienced to be recruited for 'real-world' work in the sector. At the same time, their alternative – film schools – are simply too expensive for most students looking to learn about film and television production. As such, most young professionals are forced to study at university (should they be fortunate enough to be accepted) but are unable to sustain themselves as they compete for limited opportunities exacerbated by the limited work and budgets held by production houses. Research has therefore shown that there is a need to provide a means of funding and training to young people looking to enter the film industry which can support them in their initial years and lower the burden on smaller production studios. This is important as entrepreneurship for these individuals is challenging too, a factor again contributed to by the dearth of work on offer, combined with limited access to competitive technology, and high competition in the space, which together undermine one's ability to remain sustainable.

Yet, this is not to say that local professionals and production houses lack technology to make themselves more competitive; rather, in South Africa, it is the limited budgets (and in some cases convoluted regulations) which prevent these companies from using them. For example, the high costs of real-time editing software such as Frame.io is preventing local film editors from utilising them, despite the software's mainstream appeal amidst the COVID-19 pandemic.

Nevertheless, advancements in technology – especially those concerning fields such as lighting, cameras, sound and real-time editing – will continue to bolster the feasibility of creatives and producers alike in the Cape's film and television industry, by improving production turnaround times and creating higher-quality, more competitive content, thereby helping local studios both service international clientele and maintain global standards (this could be extended still by additional intervention from local government, which could further reduce the costs associated with filming permits in the Cape).

1.2.3 Augmented, Virtual, and Mixed Reality

Note: The information shared below is derived from a combination of desktop research and knowledge shared by local and international experts in the fields of AR, VR and MR, including Judith Okonkwo (Imisi 3D), Jade Duckitt (Sea Monster), and Mmaki Jantjies, Ronel Maart and Trevor Moodley (University of the Western Cape); this is to be updated following a series of discussions with representatives from Sozo Labs, Afriten Technologies, Virtual Reality South Africa, AxioVR, Cobi Interactive, Eden Labs, Fuzzy Logic, and SenseVirtual.

While all three technologies make use of sensory devices to virtually modify a user's environment, completely immerse them in a simulated environment, or provide a combination of the two, it is important to recognise that Augmented Reality (AR), Virtual Reality (VR) and Mixed Reality (MR) represent three related, albeit different, technologies. Together, these technologies are collectively known as XR or digital reality, and for the purposes of this report have been grouped under one banner.

Specifically, AR technology projects digital content into a real-world environment, while VR typically relies on specially designed headsets that offer complete visual immersion into a simulated environment, with MR combining elements of both AR and VR to create spaces where real-world and digital objects interact.

Globally, the XR market is rapidly growing, with the COVID-19 pandemic having contributed to the most recent uptake in demand. According to Deloitte, overall spending on AR and VR headsets, software, and services, including purchases by consumers, rose in 2020 to US$12 billion globally, up 50% from 2019. Although this figure is lower than the pre-pandemic forecast of almost 80% growth, it was much better than worldwide IT spending, which declined by more than 5% in 2020 year over year. Post-pandemic, higher growth is expected to resume for XR, with predictions that the industry will reach a total US$73 billion in 2024, or a 54% annual growth rate between 2020 and 2024. This represents a lucrative opportunity for local developers in the space, who are set to capitalise on the technologies' growing appeal. In fact, the value of VR in South Africa alone is expected to grow from R24 million in 2018 to R195 million by 2023 at a compound annual growth rate of 52.5%, as reported by Statista. This growth will largely be driven by progress achieved in the animation and video game industries, as internet connectivity and accessibility improve combined with the rise in the use of consumer electronic devices.

Globally, the leading producers of XR are large international corporations, namely Google, Microsoft, Facebook/Oculus, Sony, Samsung, and Apple – they are expected to introduce some of the big breakthroughs in XR in 2021-2023. As the South African and Cape XR industry is still in the early phases of maturing, there are currently no hardware developers in the country; however, there is a wide array of startups and organisations working in the field, to develop locally created software and content for both consumers and enterprises.

Research conducted by Deloitte has found that the bulk of XR use and development is currently focused on consumers, however, enterprises are expected to contribute a much larger percentage over the coming years. Interestingly, VR is currently dominated by the consumer market, with AR and MR being primarily enterprise orientated.

To this end, sectors globally investing the most into XR technologies are gaming, healthcare, education, military, retail, industrial products, technology, logistics, and media & telecom. Locally, most resources dedicated to XR are found in the fields of healthcare, education and training; for example, surgeons at Groote Schuur hospital in Cape Town recently performed a procedure using XR glasses that connected those in the room with professionals from around the world - while researchers at the University of the Western Cape are exploring the practicalities of XR technology in higher education. In addition, industries such as banking, retail and tourism are beginning to explore to opportunities presented by these technologies:

For healthcare professionals, XR technology can greatly improve patient outcomes by aiding in the communication between healthcare personnel working in isolation rooms and physicians outside the room or even in remote places. In doing so, XR empowers greater access to healthcare professionals, who are able to liaise with colleagues in real-time to provide appropriate and timely directions.

These benefits have resulted in healthcare being one of the most prominent sectors to benefit from XR, with many applications in other developing markets – namely China and Thailand – exhibiting the potential for these solutions to come from markets outside of the US and Europe. For example, the Chinese startup "Rokid" is already commercially selling its Glass T1 Thermal glasses, equipped with an infrared sensor and a camera, that allow the wearer to "see" several peoples' temperatures simultaneously in different colours. Another is Vuzix Blade Smart Glasses, which are a pair of AR glasses developed in Thailand for telehealth, specifically the care of COVID-19 patients.

Towards education and training, XR provides a cost-effective and efficient solution for training and talent development across all sectors. For instance, XR can be leveraged in place of an aircraft to train a pilot in civil aviation or in military applications. Similarly, human participation in the training of students or nurses or other medical professionals is unethical and could be harmful in healthcare. As such, the market for educational XR is poised to be among the fastest-growing XR segments globally over the next few years. However, the widespread adoption of XR is expected to grow at a much slower pace in South Africa, as access and connectivity to digital hardware and software continues to plague poorer and more rural areas.

Following the COVID-19 pandemic, the local banking, retail and tourism sectors have started investing more time and resources towards the use and adoption of XR technology, as travel restrictions and social distancing measures have impeded their ability to operate as per pre-pandemic norms.

According to [Forrester's Top Emerging Technologies in Banking in 2021](#) report, AR and VR are among the top "on-the-radar" banking technologies in which banks are planning to inject more investment. To this end, First National Bank, Nedbank, Absa and Standard Bank have all launched investments into either AR or VR for integration into mobile banking apps – uses include finding branch locations, advanced gamification and education tutorials. Specifically, Absa has previously partnered with Snapchat to introduce an Augmented Reality game on the multimedia messaging app, and more recently launched its own Absa Advantage, an AR-led platform that teaches users to adopt positive banking behaviours.

As the cost associated with XR technology improves for users, retailers are now taking advantage of the XR to develop virtual, interactive spaces, where consumers can explore, customise products and interact with brands. For example, Pick 'n Pay's Super Cards game, is an AR mobile app that allows users to scan their Super Cards and see their favourite players in 3D augmented reality. Similarly, Disney's Lion King merchandise sold at Ackermans allows fans to scan these using the associated mobile app and see animated 3D scenes come to life. These companies are increasingly looking to XR as their costs are considerably less in relation to mainstream media advertising and produce more engaging and positive results for consumers and producers alike.

XR is also being explored by businesses in the tourism sector for the technology's ability to create digital environments offering would-be travellers the ability to explore locations ahead of their trip (although this has raised concerns about whether XR tourism experiences will reduce the number of people taking actual vacations).

With XR representing a COVID-19 compliant alternative, these and other sectors are set to benefit tremendously from technological advances and the rise in application areas among various industry verticals, which will provide lucrative market expansion opportunities for local stakeholders in the field of XR.

However, this expansion must coincide with efforts to reduce the challenges affecting XR development, use and adoption. Foremost is the need to develop a more conducive environment for XR development – this stems from the need for greater financial support, with innovation in XR being a costly endeavour particularly for African enterprises where adoption of the technology remains low and embryonic. This is coupled with the need for more local mid- to senior talent and expertise in XR software development, with the high global demand seeing many local developers incentivised to migrate abroad to more lucrative markets. Finally, the use and adoption by consumers (and therefore

industry) is limited by challenges associated with the digital divide, namely connectivity and access to technology.

1.2.4 Animation & Design

Note: The information below stems predominantly from desktop research and discussions held with Glen Gillis (Sea Monster); however, due to the impact of the COVID-19 pandemic on the DashTech project, interviews with additional stakeholders were delayed, with this information to be updated following consultations with representatives from Triggerfish, Animation South Africa, Astral Studios, Bugbox Animation, Luma Animation Studios, Masters & Savant, Mind's Eye Creative, The Animation School Cape Town, and Sinister Studios.

According to research conducted by Wesgro, the Western Cape boasts arguably the most advanced animation and digital design sector on the African continent, with internationally recognised animation studios able to produce high profile productions demonstrating the ability of the sector to compete internationally (however, more mature industries in the United States and Japan continue to lead globally).

The Cape's positioning is expected to improve further as demand for local content within the sector increases. This comes as local production houses appear more cost-effective to competitors in rival markets, and as local demand increases. In turn, this local uptick in demand is allowing younger, less experienced animators the opportunity to produce short local content productions.

According to a report on The Film, Gaming and Animation Industry and Renting of Film Equipment in South Africa 2020, the local animation and design sector is additionally benefiting from the introduction of and increased accessibility to high speed internet in urban areas where most studios are based. These are namely found in Cape Town, Port Elizabeth, Plettenberg Bay, Johannesburg and Durban.

As with studios operating in the film and television industry, animation and design studios are hugely benefiting from the entry of international streaming services, which are undoing the long-held monopoly of local broadcasters – specifically the SABC, M-Net and eTV – which limited the ability of local studios to reach wider audiences and derive greater income from their creative content. With access to streaming platforms, local industry is now able to secure distribution deals with global reach.

They are also simultaneously supported by a range of award organisations, which recognise animation and design for film, namely the Durban International Film Festival, South African Film and Television Awards, and Cape Town International Animation Festival, among others. These help local studios develop international recognition and increase their reputation amidst foreign competitors.

Yet, significant barriers to entry into the animation and design sector persist. Specifically, content creation is capital intensive and requires high-level technology and high-level skill sets; this is complicated by the costs associated with skills development, with enrolment into animation schools being costly for most prospective students. In addition, studios are struggling to secure funding and high enough budgets, with limited remuneration systems undermining their ability to secure income post-distribution, coupled with a highly competitive market for securing funds to produce films. As a positive, technology is increasing accessibility and making production more cost-effective, although access to technology is limited by the digital divide and socio-economic conditions.

To ensure the Cape's competitiveness in animation and design, greater efforts should be made to ensure more reliant broadband connectivity and a constant power supply, which studios rely on to utilise technology. In addition, financial sustainability is required to ensure that local talent is able to remain in the Province, rather than be poached by competing and more attractive industries both domestically and internationally. To this end, access to skills training needs to be made more readily available to people, especially in the areas of creative and artistic editing, and business management to convert technicians and artists into business owners. This will also go a long way towards catering for greater transformation in the sector, with there being limited interest in talented black computer technicians – this comes as the industry cannot compete with other IT-related sectors due to inconsistent workflows and limited salary opportunities when compared to other areas of IT. Finally, financial sustainability must also impact businesses, which require development around exchange controls in intellectual property transfer.

1.2.5 Social Networks & Platforms

Note: Due to the impact of the COVID-19 pandemic on the DahsTech project, interviews with key representatives from leading platforms including Facebook, Snapchat, Spotify, and WhatsApp were postponed - information to be updated once interviews have been completed.

1.2.6 Digital Services

Note: The information below is a result of desktop research coupled with information shared by Jared Molko (Yenza), Gys Klappers (Wyzetalk) and Wesley Lynch (Snapplify) during various discussions. Due to the impact of the COVID-19 pandemic on the roll-out of the DashTech project, additional interviews with Snapscan, Takealot, Ozow, Uber, SweepSouth and others were postponed. This information will be updated once these discussions have taken place.

Digital services encompass a broad range of offerings that facilitate business-to-consumer, business-to-business, and business-to-government transactions via online channels. These are mostly automated, require little human intervention, and take the form of either a web-based or mobile phone application.

Digital services are at their core technology that enables effective interactions between an entity and the people it serves. In doing so, they present several benefits to both the consumer and provider of the service, namely: reduced costs, less time to market, improved efficiency, higher transparency, and full auditability, along with high levels of customer service (although the realisation of this may not always be the case).

South Africa – and the world at large – has seen steady growth in the development of digital services, which has paralleled rising internet adoption and mobile phone penetration rates. Locally, sectors which are swiftly adopting digital services include stakeholders in banking and finance, retail, hospitality, tourism, logistics, cleaning, and education.

This is a welcome development which – according to a report compiled by the University of Pretoria's Gordon Institute of Business Science (GIBS), Genesis Analytics and the Pathways for Prosperity Commission on South Africa in the Digital Age – is set to contribute to the creation of some 500,000 jobs over the next ten years. This follows as digital services migrate away from proximity-based

provision and instead are able to facilitate demand anywhere in the world. However, doing so will require the local industry to expand its market share of business-process services by offering niche services, tapping into the global demand for digital services, and working to innovate personalised and social services.

However, for South Africa and the Western Cape to benefit from the potential presented by digital services, more needs to be done to ensure an encouraging sustainable environment in which to develop. Specifically, experts have cited existing regulation pertaining to taxation as a key barrier to digital service business development. For smaller and younger businesses, stringent taxation measures are a major deterrent to entrepreneurs looking to enter the space, and these severely undermine their ability to remain afloat or develop at the necessary speed. This comes as smaller businesses are required to endure the same levels of taxation as their larger and more established counterparts.

Emerging businesses in the digital services sector have additional hurdles pertaining to taxation in that the country has yet to impose more robust tax regulations on digital services rendered from abroad. This means that foreign digital service providers are not taxed on their services provided to South Africans, giving them a competitive advantage over local companies. In turn, this puts South Africa's digital service industry under significant pressure as it battles against global digital giants for revenue in the local marketplace.

Coupled with the need for more venture capital funding for startups – the financial pressures placed on businesses operating in this sector is a driving force behind many entrepreneurs looking to move their businesses abroad. Interviewees reference markets in the Netherlands as attractive alternatives for South African businesses looking to migrate, with the country imposing a significantly smaller corporate tax rate and salary holiday for start-ups that choose to move there. These same interviewees note that in South Africa, businesses receive none of these incentives and in fact endure additional costs for skills development, unemployment, and employment equity. This affords them no opportunity in terms of relief, despite being key contributors to both socio-economic development and that of the sector at large.

To overcome these challenges, interviewees call for greater collaboration between stakeholders in the field of digital services to ensure a more conducive environment in which to address key challenges that inhibit the growth of smaller businesses. In addition to regulation concerning taxation, more research and intervention is required into the feasibility of a South African-focused intellectual property domicile, combined with greater investment into infrastructure to ensure that digital service providers are able to develop online solutions, and that their consumers are positioned to access them.

1.2.7 Stakeholders, Culture & Modus Operandi

To date, we have identified some 300 stakeholders operating in the greater ScreenTech space across South Africa. They range from startups, corporates, investors, and business advisors, to industry associations, government, academia, incubators, and accelerators (for a full list, please click here). This list is continuously being updated as more stakeholders are identified.

Yet, while the ScreenTech space is widely populated by a range of stakeholders – and with the Endeavor Insights Report (2018) stipulating the need for interconnectedness between stakeholders –

there is a widespread lack of integration and collaboration amongst individuals, businesses and organisations across screen-related sectors. From our research, it remains clear that, while screen-related stakeholders are cognisant of and friendly towards contemporaries in the same vertical – for instance, in the games industry, there is frequent communication between individuals operating in the space via social networks – these verticals tend to operate in silos with limited interaction between them. As such, there is a significant lack of awareness around screen-related projects (unless communicated by a multi-vertical organisation like The Silicon Cape Initiative), which hinders the hopeful outcomes of the DashTech initiative.

1.2.8 Funding & Financial Channels

According to Invest Cape Town, raising startup funding is challenging for entrepreneurs across all tech sectors in both the Western Cape and country. This is partly due to the relative size of the ecosystem in relation to others on the global stage, with South Africa boasting few consumers with limited buying power and the limited size and frequency of local investments made by investors, who tend to commit at much later stages than is typical of investors in more developed economies.

It is also important to note that the Western Cape funding landscape differs considerably from Gauteng:

The Western Cape ecosystem investor landscape primarily benefits from its proximity to the large number of wealthy families that reside in and near Cape Town and Stellenbosch. These prominent individuals and families are often limited partners of venture capital companies, and startups typically fundraise via social networks and personal connections. This is part of the reason why the Cape has more angel investment, which is largely absent from the Gauteng ecosystem. However, these connections are limited for incubators and innovation hubs, with most of these prominent families operating outside of the incubator sector.

Alternatively, in Gauteng, government grants represent most of the funding going into the Province's ecosystem, with innovation hubs acting as the primary conduits. This is paralleled by corporate funding into corporate investment-backed venture funding or corporate-branded innovation hubs.

There are also differences between the two provinces with regards to the amounts raised by startups in each respective ecosystem; according to the most recent report from 2018 on the Tech Entrepreneurship Ecosystem in South Africa by OC&C, Cape Town startups typically raise roughly double that of Gauteng-based startups.

However, the report also notes that in both provinces, private and public funding for early-stage entrepreneurship is neither at the right level nor sizable enough to adequately support the ecosystems. This is due again to the limited relationships between incubators and investors, but more so due to the ecosystem's relative lack of maturity and economic uncertainty, which causes investors to be risk averse.

As shared by interviewees from this project's engagement sessions, there is a significant lack of – and dire need for – funding for entrepreneurs and businesses operating specifically in screen-related sectors. However, research has shown that there are several potential funding channels for stakeholders which are active in the ScreenTech sector (although this does not necessarily equate to ample access to them). In total, there are 71 direct finance providers for stakeholders in the Western

Cape, consisting of fund managers, private equity providers, venture capitalists, angel investors, crowd funders, commercial banks, government and development finance institutions (DFIs). Those with an active interest in screen-related technologies include:

1.2.8.1 Venture Capital Investors

- **Kalon Venture Partners**: Kalon Venture Partners invests in and builds a portfolio of high-growth technology companies with innovative business models geared to existing and emerging institutions and their customers. Kalon Venture Partners invests growth capital in the form of equity to be used to assist established (but still high-risk) ventures in expanding activity such as creating additional traction in South Africa, launching into Africa and then foreign markets, as well as creating new product / technology lines. To date, they have invested in several ScreenTech businesses, namely from the perspective of digital services (Carscan; FinChatBot; Ozow; and SnapnSave).

- **4DiCapital**: 4Di Capital is an independent venture capital fund manager specialising in high-growth technology venture opportunities, at the seed, early-and growth-funding stages. The fund manager has offices in Cape Town, South Africa and Atlanta, Georgia, U.S.A. Their ScreenTech investments to date have mainly been in digital services (Bet.co.za; Sokowatch).

- **Knife Capital**: Knife Capital is a venture capital investment manager that accelerates the international expansion of African innovation-driven businesses by leveraging knowledge, networks and funding. Knife Capital also runs the Grindstone Accelerator, a structured entrepreneurship development programme that assists high-growth innovation-driven companies to become sustainable and fundable. They have invested across the digital service and eLearning spheres (Quicket; SkillUp; Snapplify; mmhmm).

- **Omidyar Network**: Omidyar Network is a social change venture that works to bring about structural changes that will fundamentally shift the systems that govern our daily lives. Omidyar Network is part of The Omidyar Group which is a diverse collection of companies, organisations and initiatives, each guided by its own approach, but all united by a common desire to catalyse social impact. Omidyar invests in new models, tools, ideas and policies that build power for everyday people, strengthen communities, and promote a society in which we can all thrive as equals. They have to date invested in digital innovation in media via their Media Innovation Programme.

- **Seedstars Worldwide**: Seedstars is a Swiss-based private group of companies with a mission to impact people's lives in emerging markets through technology and entrepreneurship. They have invested across screen-related verticals, namely into digital services (Kludio; Qidz) and social networking and platforms (Caramella), among others.

1.2.8.2 Angel Investors

- **Newton Partners**: Newtown Partners is an early-stage venture capital firm that actively invests in emerging, disruptive technology startup businesses. Founded and run by internationally successful entrepreneurs, Vinny Lingham and Llew Claasen, Newtown Partners has an entrepreneurial focus that goes beyond investment. The team operates out of offices in Cape Town, South Africa and San Diego, California. The firm has a strong track record of investing in successful technology startups at the forefront of innovation and has successfully invested in and nurtured a number of early-stage companies, taking them from ideation to

market-leading businesses. They have invested in gaming ([Turbo Drift AR](#)), XR ([Atheer](#); [Vizor.io](#)), and digital services ([Lori](#); [Bloomable](#)).

1.2.8.3 Private Equity

- **[Ethos Private Equity](#)**: Ethos Private Equity is an investment manager with private equity and credit strategies in Sub-Saharan Africa. Ethos helps businesses grow by being an active investor, using the experience of owning over 100 businesses to maximise value and generate superior returns. Their investments have been made into leading media companies ([Primedia](#)) as well as screen-technology accessory companies ([Gammatek](#)).

1.2.8.4 Government Funding

- **[Wesgro](#)**: The official destination marketing, investment and trade promotion agency for the Western Cape, Wesgro does its part to promote entrepreneurship. The Wesgro Investment Promotion Unit provides a free and confidential service to help individuals establish and grow their business in Cape Town and the Western Cape, leveraging a team of sector-expert portfolio managers with more than 50 years of combined experience in investment promotion.

- **[Technology Innovation Agency (TIA)](#):** Supported by the Department of Science and Technology, the Technology Innovation Agency (TIA) develops and nurtures technological innovation to improve economic growth in South Africa. TIA administers a seed fund, which the agency launched in 2013 and provides entrepreneurs and innovators with grant funding of up to R500,000 to R650,000 per project.

The investors mentioned above are a few examples of the diverse pool of investment channels that are available within the ScreenTech ecosystem across South Africa. With the tech ecosystem continuing to advance and be home to more innovative startups and businesses that have a global presence, the Western Cape continues to provide investors with boundless opportunities to be a part of the imminent technological shift that is taking place not only here in Africa's Tech Capital, but across the globe.

1.3   Positioning of the ScreenTech Sector

Domestically, Cape Town is leading the charge in ScreenTech development as is evidenced by the wide range of success stories to emerge from the province, combined with multi-stakeholder efforts aimed at bolstering the ecosystem's development.

In support of this statement, the [World Bank Digital Economy Diagnostic Report on South Africa](#) – and by extension the Western Cape – highlights that the overall state of the Province's digital economy is encouraging when considering that the Cape region is: (1) rapidly improving the availability of affordable and quality internet, which is instrumental to the use, adoption and adaption of ScreenTech; (2) witnessing a steady rise in the presence and use of digital platforms that can support greater digital exchange, transactions and access to public services online; (3) seeing consistent growth in the adoption and use of digital financial services - namely the ability to pay, save, borrow, and invest through digital means - which is key to financial inclusion and increasing the e-commerce market; (4)the home of digital entrepreneurship and an ecosystem that supports entrepreneurs, startups and bigger companies in generating new products and services that leverage new technologies and business models, including private platforms that are critical for widening and

deepening digital economic transformation; and (5) adept at understanding the need for digital skills towards the development of a tech-savvy workforce, with both the basic and advanced digital skills to support increased technology adoption and innovation as well as to enable investment in value-adding services.

These findings are reinforced by noteworthy success stories to emerge from the Western Cape region in the verticals of ScreenTech, including:

Over, which launched in Cape Town in 2012 and began life as a simple "text over photos" app for sharing goals and inspirational quotes. The company developed into a multifaceted tool that allows businesses to easily create photos and videos to post on their social media platforms, and is now used by more than one million people, In January 2020, it was acquired by American publicly traded internet domain registrar and web hosting company, GoDaddy, for an undisclosed amount.

The animation studio, **Triggerfish**, received international acclaim for creating Netflix's first original animated television series from Africa and now plans to open its first international studio in Galway, Ireland. The company, which was founded in 1996, said in a statement that the project is supported by the Irish government through investment agency IDA Ireland and is expected to create 60 new jobs over the next three years.

In addition, **Sea Monster Entertainment**, an animation, gaming and AR/VR company from Cape Town recently raised US$1 million in funding to help change the way corporates tackle training and communication globally.

According to thought leaders in the tech industry, it may seem that South Africa, and in particular the Western Cape, is trailing behind stronger global forces – namely China and Silicon Valley – when it comes to technology in general, and therefore screen-related technology. However, these same thought leaders are also of the opinion that the Western Cape has the upper hand in South Africa, at least, and that South Africa can collaborate with other ecosystems across the world to ensure that the Cape builds up its reputation as a global contender.

To this end, the Western Cape would do well to take inspiration from leading ecosystems abroad which share a competitive advantage in screen-related sectors. For instance, in a report by GlobalMe, it is estimated that China has positioned itself as the world's leader in VR startups and funding, with the Chinese government having invested approximately US$ 593 million USD in 2015 and 2016 alone, as part of their "Internet plus" initiative, which aims to transform traditional businesses and industries through digitisation and new technologies. We can only expect this amount of funding to have increased exponentially in recent years, taking into account inflation and the rapid adoption of AR/VR technology following the COVID-19 pandemic. Similarly to China, the Northern American provincial government is making a clear effort to support the Mixed Reality industry. In 2016, British Columbia's Creative Industry Catalyst invested US$ 641,000 through its interactive fund in 14 different VR companies. By July 2016, there were 168 Mixed Reality companies, and 5,500 full-time employees in British Columbia alone.

Looking abroad to ecosystems with strong ScreenTech sectors, the Western Cape would do well to look to Stockholm, Sweden. The city has robust networks and support for entrepreneurs and businesses in screen-related sectors, particularly those in games development. Notably, Sweden has the highest number of incubators in the Baltic Sea region that focus fully on games. Sweden has eight games incubators, two of which are based in the Stockholm region: Sting Game and East Games. These

incubators are matched by games-centric investment companies, namely [Amplifier Game Investor](#) and [Aldeon](#), whose primary focus is on emerging and expanding games studios in the country.

To this end, the Western Cape is already well connected with Stockholm, thanks to the 'Cape Town/Stockholm Connect' initiative which took place in February 2021 and was organised in partnership with [Business Sweden](#), the [Swedish Embassy](#), [City of Cape Town](#), [Wesgro](#), and [Silicon Cape](#).

2.   Threats & Challenges in ScreenTech

Following extensive desktop research and interviews with stakeholders from across screen-related verticals, the need for sustainability and a more supportive environment emerged as the key underlying issues affecting stakeholders in ScreenTech. However, these issues can be unpacked further into six key focus areas: funding, access to stakeholders, access to resources, digital exclusion, skills and talent, and regulatory policy.

2.1 Funding

- According to a report on the [State of Tech Entrepreneurship in South Africa by OC&C](#), limited funds and funding are key barriers confronting local entrepreneurs and directly undermine their ability to launch, grow and scale, thereby crippling progressive growth and innovation within all tech sectors.

- Across screen-related verticals, poor finances are a result of an inability to generate significant revenue from products and services sold and is exacerbated by the need for greater access to bridge financing to help fledgling businesses cover costly overheads. As such, startups in the space are forced to mark-up the prices of their products and services to cover capital shortfalls. This, in turn, creates product exclusivity, which on one hand reduces the amount of demand these businesses see, and on the other, contributes to a broadening accessibility gap between consumers in different socio-economic realities.

- As local businesses in ScreenTech compete primarily in the international market, price competitiveness is a key weapon in their arsenal to generate interest and work. However, as these businesses are forced to raise their prices, they become less competitive, which contributes to talent migration and sometimes results in successful studios leaving the country all together.

- As a result, smaller- to medium-sized businesses in screen-related fields are struggling to generate enough income to mature their businesses and retain talent into the long run, which in turn threatens the sector's development. This is partly due to a lack of income generated by their intellectual property, as well as the high costs associated with hardware and software needed for content creation. And while international companies – namely foreign streaming

services and distributors – offer greater access to international markets and additional revenue channels for local businesses, they tend to provide few financial incentives.

- For instance, while international publishing companies may afford local games studios access to a much larger market abroad, the studios recoup only a fraction of the total income generated. Similarly, emerging film studios - without the experience or credibility of their more seasoned counterparts - are unable to access streaming platforms, which prioritise larger, more well-known production houses. While young professionals in film and television are now taking to 'free' platforms like YouTube, Facebook and Instagram, they too offer very little means of generating sustainable incomes for emerging businesses. Yet, larger studios struggle to generate sustainable incomes too, with many of these businesses unable to earn royalties on content repurposed by broadcasters and platforms for years on end.

2.2 Access to Stakeholders

- Access to stakeholders encompasses a wide range of individuals, from government and academia, to fellow startups, entrepreneurs and investors, among others.

- Key issues which contribute to this challenge pertain to regulations and formalities which limit the ability of ScreenTech stakeholders to directly engage with the relevant people and organisations that could contribute to both business and sector development. This, in turn, extends the amount of time required to complete certain objectives and goals, which discourages the rate of development in the sector.

- It also presents additional threats to startups, entrepreneurs and other small businesses; namely, delays in their ability to scale are further exacerbated due to long private and public procurement cycles that create disadvantages for smaller players.

2.3 Access to Resources

- Limited access to resources, devices, training, and skills development were also identified by interviewees as key hindrances to technological advancement in screen-related sectors. This extends to a lack of adequate infrastructure which adds further limitations within operating markets as businesses do not have the infrastructure and resources to accommodate and participate in emerging new technologies and foster the sustainable creation of new tech.

- While access to resources affects all producers in screen-related verticals, gaming, film and television emerged as pressing sectors, as they are both hardware and software dependent. However, access to resources in South Africa are expensive for younger and financially

vulnerable players in the sector. Without access, they are unable to make content that is competitive.

2.4 Digital Exclusion

- Despite the positive outlook of and performance by the South African tech ecosystem, much of the population remains excluded from the digital economy. Further exacerbating the issue of inclusivity is continued difficulty in gaining access to both the domestic, regional and international markets with digital entrepreneurs, pleading for greater regional programmes and integration. This conflates the Cape's reputation as the 'Tech Capital of Africa' as at a grassroot level, communities within the Province cannot access nor afford to participate in the digital transition that the country is undergoing.

- With South Africa, specifically the Western Cape, assuming this leading role in innovation and digital growth, it cannot afford to leave anyone behind. The lack of access to data, resources and funding that adequately give insight into – as well as access to – the existing and emerging tech ecosystem, creates blind spots that have the potential to widen existing ecosystem gaps and leave startups and businesses vulnerable to catching on late to emerging technologies, trends, and essential investors.

- Gender inequalities within the tech ecosystem further feed into existing inequalities and exclusionary tactics. For female entrepreneurs, these challenges are exacerbated by male dominance within the entrepreneurial space, lack of adequate education, insufficient access to opportunities and gender discrimination. These issues are particularly heightened within poorer communities.

2.5 Skills & Talent

- Another weakness that stifles innovation and growth within the digital ecosystem is the lack of digital skills. To develop a vibrant, dynamic, and inclusive digital economy, there is a pressing need to have a pool of skilled digital entrepreneurs to build new businesses, and a deep labour pool to work with technology.

- The Western Cape needs to make broader reforms in education, have good governance and create a supportive business environment for entrepreneurs and professionals or risk falling behind in attracting both domestic and foreign interests and investments within the tech entrepreneurship ecosystem.

- Currently, the lack of financial security in product and service development in screen technologies is forcing people to leave the sector (and country), resulting in less mid-to-senior

talent. This is exacerbated by the fact that emerging talent is trained by inexperienced professionals – particularly in the field of game development – who further undermine the development of a mature talent pool in the Western Cape and country. The dearth of specific skills also prevents studios from scaling effectively when opportunities do arise for them.

- Alternatively, while the film and television industries have a strong talent pool, most young professionals find it difficult to get into the industry as most university graduates have little practical experience to warrant paid employment. On the other hand, practical film schools are expensive and out of reach for most interested in the sector.

2.6 Regulatory & Policy

- The most pressing complaint regarding current regulation and policy stems from the games sector, which cites the recent Film Publication Board Amendment Act as a key inhibiting force limiting the ability of local games studios to publish and distribute their content. This, in turn, undermines their ability to generate income, which – as discussed above – is already a challenging process for players in the sector. Interviewees ask that this legislation be reconsidered to be more in-line with the needs of local games development.

- Regulatory issues concerning taxation are also present in the digital services sector. Specifically, businesses in this space cite the need for redress to current levels of taxation, which do not differentiate between larger and smaller businesses.

- Emerging businesses in the digital services sector have additional hurdles pertaining to taxation in that South Africa has yet to impose more robust tax regulations on digital services rendered from abroad. This means that foreign digital service providers are not taxed on their services provided to South Africans, giving them a competitive advantage over local companies.

Impact of COVID-19

The COVID-19 pandemic has led to an inevitable surge in the use of digital technologies, following the introduction of social distancing norms and nationwide lockdowns. As such, people and organisations have had to adjust to new ways of work and life – however, this has brought with it significant gains for technologies in screen-related fields.

The surging adoption of screen-related entertainment in the form of games, film and television, along with migrations to social networking platforms, the desire to explore the world through digital lenses, and the need for digital services have resulted in huge gains across the ScreenTech sector both in the Western Cape and abroad:

With outdoor entertainment largely prohibited, consumers began buying more video games as a means of entertainment and escape. The same was true for local animation, film and television studios, which benefited from the global surge in demand for content. Similarly, the XR sector witnessed widespread market growth for headsets and AR-apps which helped create new learning and engagement experiences in socially distant ways. The digital services sector also seemed to thrive amidst the pandemic, with companies operating in the digital economy, including new entrants to the market, having reported a jump in earnings in general and in some instances have had to hire additional staff to meet an unprecedented surge in the demand of their digital goods and services.

According to a report by the International Finance Commission on the [Impact of COVID-19 on Disruptive Technology Adoption in Emerging Markets](), this uptick is expected to continue as uncertainties surrounding the economic outlook post–COVID-19 persist. As such, emerging markets in places like the Western Cape are expected to experience an acceleration in the adoption of these technologies.

Yet, this growth must be met with a concerted effort to improve digital connectivity and digital skills, which are fast becoming ever more critical as foundations to enable the adoption of broader screen-related technologies. In low-income countries, governments have the potential to significantly accelerate interventions in these spaces, which can include infrastructure sharing through independent private sector operators, limited taxation of mobile devices and digital services, and digital connectivity at education institutions, among others. In doing so, it is essential to understand that the pandemic has brought the world to a situation where those not connected to the internet are facing total exclusion.

3.   Opportunities in ScreenTech

Following extensive desktop research and interviews with stakeholders from across screen-related verticals, it is apparent that the Western Cape holds both a strong track-record and potential for screen technologies. However, the sector requires support, which has highlighted several opportunities for local stakeholders in the fields of gaming, film and television, digital reality, animation, and digital services.

3.1 Strengths & Advantages

South Africa, and by extension the Western Cape, is well positioned to adopt and finance emerging technologies in the fields of ScreenTech, having been ranked well ahead of other developing economies by the United Nations Conference on Trade and Development (UNCTAD) for finance into emerging technologies. This is an encouraging sign considering that the need for funding is a chief concern among all screen-related sectors.

- South Africa's ICT products and services industry are penetrating the fast-growing African market with the country now being seen as a regional hub and a supply base for neighbouring countries. Additionally, SA is home to several international corporates that operate their subsidiaries here, including IBM, Unisys, Microsoft, Intel, Systems Application Protocol (SAP), Dell,   Novell   and   Compaq.

- South Africa and the Western Cape have a wide range of software development skills which can be leveraged to develop additional screen-related technologies. This is in line with fDi, which reports that South Africa received the most projects in the software and IT sector between January and July 2020, attracting 15 out of the 39 projects in Africa followed by Nigeria with 7 projects, and Egypt and Kenya both attracting 4.

- ITA identifies South Africa as the leader in Africa for Smart City technology, with the ability of South African cities to recognise the numerous benefits that directly impact an array of industries and enhance not only the ease of business but life in general in a multitude of ways.

- To these ends, the Western Cape boasts ScreenTech verticals that present an internationally competitive advantage: While lacking mature studios and skills, the Cape is home to the most successful games studios on the continent, many of which hold strong connections to international markets. Similarly, animation and design studios in the province are among the most well-known in South Africa, boasting incredible talent and skills, albeit a very competitive market. Meanwhile, the Cape's well-matured film and television sector is increasingly tapping into international streaming services and developing audiences for high quality local content abroad. Likewise, digital reality companies in the Western Cape are set to benefit from the global uptick in demand for AR, VR and MR experiences, with digital services also capable of servicing consumers outside of the Cape's borders.

3.2 Emerging Opportunities

Underpinned by the Western Cape's above strengths and in line with the research presented above, there exists several opportunities for provincial government to exploit towards the development of a more competitive ScreenTech sector:

Training & Skills Development

- Skills training and development is a foremost issue in the fields of game development and film and television. These sectors could benefit from an intervention that would offer young people and those looking to enter the industry free training on widely used platforms like Unreal Engine and Unity. Doing so would help them become more familiar with industry software and develop a portfolio of skills. These individuals would also benefit from business-focused skills to support the high levels of entrepreneurship experienced in the sector, and in turn promote more mature studio development. To this end, there is also an opportunity for government to engage with the private sector – namely businesses that own such software – to organise training and education opportunities in those programs.

- At the same time, it would be worthwhile reworking university curricula to include practical training and experience on film and television sets, or alternatively, make it easier for people interested in the sector to enrol in practical film schools. This comes as universities rely too much on academic theory and as film schools are too expensive for most prospective learners.

Financial Assistance

- While funding remains an issue for most screen-related sectors, local games studios would benefit hugely from a grant for games development. This would make them less reliant on international publishers, and more capable of covering their overheads, thereby promoting sustainability   in   the   sector.

- At the same time, free streaming platforms should be engaged to devise more financially sustainable means of enabling emerging creatives to generate an income from these services.

- This should be coupled with research into the development of a South African-centric remittance channel to ensure adequate payment to local creatives for creative content repurposed down the line. Similarly, both the local games and film and television sectors would benefit from a local distribution network.

Access to Tools and Resources

- Game developers need to reduce the costs associated with accessing hardware and software, as well as stable internet and electricity connections. They could benefit from tax breaks and lower import duties, along with special treatment for studios. This could come in the form of a 'third-party' studio or collaborative space, which would help bridge the gap for many local developers who need help accessing certain high-level skills in fields of software development, business   management,   marketing,   and   more.

- Local production and talent would benefit hugely from a direct means of connecting with international streaming services which could help guide content development to meet international standards, thereby investing more back into local industry.

- There is also an opportunity in film and television to help reduce the costs associated with software and hardware for professionals in the production and post-production phases, making it possible for more people to enter the industry.

Driving Local Demand

- As local games sales are made predominantly from international markets, local studios would benefit from strategies aimed at incentivising access to, and sales of, locally made content. This would reduce capital outflows from the local economy and create a larger market for local   content.

- Similarly, local animation, film and television houses would benefit from a growth in local audience size. This concerns giving consumers greater access to screen-related technologies and the resources – namely electricity and internet connection – with which to enjoy them.

- In addition, local demand for animation, film and television content could also be stimulated by a South African-centric public streaming service which would afford rising creatives a platform upon which to create a name and income for themselves, while also making space for local stories to be told.

- Lastly, with the widespread uptake of XR-technology, DEDAT specifically could act as a facilitator between local XR businesses and the tourism sector, considering the technology's ability to create digital environments that offer would-be travellers the ability to explore locations ahead of their trip.

3.3 Emerging Technologies

Drones

- Drones are today a common tool in filmmaking and production, with the drone manufacturing and operating industry's exponential growth allowing for safe commercial use.

- Drone technology has made it more affordable and accessible for local filmmakers and budgets to achieve interesting and dynamic shots. Drones therefore make it possible for smaller productions to achieve higher production values at a lower price point.

- Drones also create new occupations, in the form of drone pilots/drone camera operators. The infrastructure necessary for training is already established in South Africa and is at a very high standard. Unfortunately, there are just a few aerial film companies that provide drone work for licensed pilots, making the industry small and hard to get into.

- However, there is a huge disconnect between the practicalities of drone work in the field and the regulations laid out by the Civil Aviation Authority. These regulations make it more expensive for drone operators to work, which in turn leads to higher prices and reduced access for filmmakers and production houses, many of which are on tight budgets. As a result, many drone operators/filmmakers use drones illegally.

- These regulations and prices aren't practical to the looser approach to filming taken by local TV and smaller content providers. For example, a local reality show wanting a few aerial views of the area they are shooting that morning won't want to hire a drone team for one shot, or a photographer wanting to take beautiful landscapes with a drone now has to pay

for a Remotely Piloted Aircraft System Operator's Certificate (ROC) to comply with regulations. One solution is to create 'tiered regulation' for drone work, whereby the need for certain licenses and regulations differs depending on the scope of the production/shot.

Real-time Production Software

- The global trend among script supervisors in film and television is to use an application called ScriptE, which makes it easier and more efficient for people to take notes while on set. This is a mandatory app that script supervising professionals in other markets are required to have, yet in South Africa we still rely largely on pen and paper, which is subject to damage, getting lost, etc. However, ScriptE is expensive with no local variation or special access, which makes it difficult for local professionals to use and therefore hampers their ability to work on set.

- Real-time editing on virtual channels is a major opportunity for local people to access international work, but internet infrastructure and hardware are key challenges to overcome.

- In this vein, data compression tools would help alleviate some of the burden on internet access, but these tools would need to ensure the quality of compressed information for production purposes.

- Frame.io is essential for pandemic-era editing work and allows professionals to edit and collaborate online. However, accessibility is determined by one's hardware and internet connection and until these issues are addressed, those in the space we will struggle to adopt innovative working alternatives locally.

4.   Lessons and Recommendations for Local Actors

From the research provided above, sustainability and issues connected to the digital divide are amongst the most pressing challenges facing stakeholders in screen-related sectors. These issues are, however, highly nuanced and contain within them several sub-challenges that can only be adequately addressed by a concerted effort involving stakeholders from across public and private spheres. A joint initiative is imperative to the Western Cape's emergence as the leading ScreenTech economy not only in South Africa, but regionally and internationally too.

 To this end, this report recommends the following actions be taken by stakeholders:

4.1 Provincial Government

- It is important to recognise that government is a leading enabling factor in ScreenTech as it is capable of creating favourable terms and incentives for the growth of stakeholders in screen-related sectors. As OC&C have previously noted, government exerts its influence on all components to create a constructive environment and facilitate interconnectivity between

these components.

- This is most poignant in lower and middle-income countries, where governments can enable fast scale-up of technology companies by supporting local venture capital funds, promoting public-private partnerships, strategically adjusting the taxation of online services with the goal of enabling affordability, and aligning competition policy between online and offline services. These interventions can be complemented by setting up digital systems, and promoting advanced digital skills at scale, among others (see International Finance Commission).

- To this end – and as the custodian of the greater technology ecosystem – provincial government must continue its work to support and encourage networking and collaboration amongst stakeholders in screen-related verticals (in addition, it would be worthwhile increasing the scope of these activities to an international level). While engagements within the streams of gaming, film, animation, and others are frequent; engagements between streams – e.g. film and gaming – are few and far between. To this end, the provincial government should take measures to enrol itself in existing intra-stream engagements, wherein it could gather additional information about the current state and goings on of industry. There is also an opportunity for government to act as an intermediary between larger organisations and smaller enterprises in ScreenTech fields.

- Provincial government should investigate the potential of a government-funded grant and/or tax incentives for businesses in ScreenTech. Such policy should be focused on improving access to resources, tools and skills – for instance, a grant for producers to acquire hardware and software, or tax breaks for emerging companies – thereby promoting greater sustainability vis-à-vis funding across sectors. This could also come in the form of specialised spaces (co-working spaces mimicking the benefits of a national Industrial Development Zone) where persons and companies in ScreenTech sectors can operate from, engage with each other, access tools and resources, and receive special incentives to stimulate their growth and development.

- There is dire need for government-led interventions to skills and infrastructure development. As shown in this report, many sectors (barring that of the film and television industry) lack a matured talent base. Government should find ways of stimulating local talent development and retention, which could entail a 'training incentive' for local businesses. Alternatively, government needs to attract foreign talent from abroad. This latter point goes hand-in-hand with the need for improved infrastructure, namely the supply of consistent and strong internet and electricity.

- Improved infrastructure will also work to stimulate greater access to and use of ScreenTech by consumers locally. This further feeds into the need to drive local interest and demand for screen-related products and services. To this end, the idea of a government distribution hub for content such as games, animation, film and television would create additional revenue opportunities and promote financial sustainability for local sectors.

4.2 Large Corporations & Businesses

- Considering that many businesses in ScreenTech depend on access to hardware and software for production purposes, large corporations and businesses – especially those that produce or afford access to relevant hardware and software, or have an interest in ScreenTech – could be approached to offer local persons and businesses improved access to professional-level tools and resources. This would act as both an opportunity for large organisations to promote their products and services amongst industry, while at the same time affording local players access to tools and resources which currently exacerbate their financial sustainability and ability   to   mature   skills.

- The above is in line with the need for greater reinvestment into the Western Cape's ScreenTech sub-sectors by the private sector. Currently, international private sector organisations – namely those in streaming and games distribution – are extracting more income, skills and benefits from the local ecosystem than is returned. This ultimately undermines the growth and development of local industry.

4.3 Academia

- According to a report on the [Role of Universities in Regional Innovation Ecosystems](#) by the European University Association, the role of universities in conducting research and growing talent and skills – especially relating to technology and entrepreneurship – makes them a prominent player in the development of innovative and sustainable tech ecosystems. Moreover, as impartial actors, they are key to forging partnerships between the public and private   sector.

- Universities in the Western Cape would do well to expand their pedagogical endeavours in screen-related fields – especially in game development, animation, film and television – towards the development of a strong mid- to senior-level talent pool across ScreenTech verticals. As has been shared by interviewees, the lack of a mature talent pool directly undermines the ability of businesses to create high-quality goods and services, which in turn hampers both their individual sustainability and that of the sector at large. The development of a highly-skilled and experienced talent pool is also the cornerstone of future educational endeavours   which   seek   to   train   up   the   next   generation   of   professionals.

- In this vein, academia needs to challenge commonly held notions of universities as 'ivory towers' and instead ingrain themselves in the daily activities of each sector. This is especially important in relation to the training of young professionals, who severely lack hands-on experience in industry, which exacerbates their ability to enter and remain in such industries and   maintain   a   sustainable   income.

- While scholarships and bursaries are present, academia should engage with government and the private sector to secure additional funding for prospective students, especially those educational institutions that specialise in the production of specific ScreenTech, but which remain financially unviable for most would-be learners.

- Similarly, academia – as a key connection point – should continue to engage with the public and private sector, to conduct more research into the current challenges and opportunities presented in ScreenTech sectors.

4.4 Funders

- Successful technology ecosystems require adequate and timely funding, however, they also require this funding to be tailored to the needs of the ecosystem and for it to be accompanied by guidance and support for healthy growth. This is no different for the development of the Western Cape's ScreenTech sector, yet as the research to date has shown, there is a need for greater capital intervention that is ScreenTech specific.

  Funders in the Western Cape can reference ScreenTech specific funds that have been launched in international markets; for example: Animation UK has set aside funding specifically aimed at animation; March Capital funded the $60 million March Gaming Fund which focused on boosting startup gaming companies; and AIXR has launched year-round investment activities into the VR/AR space.

  Considering the rapid growth experienced by ScreenTech following the COVID-19 pandemic, such sector-specific funding opportunities would provide ample returns for those looking to invest in local sector players.

THANK YOU