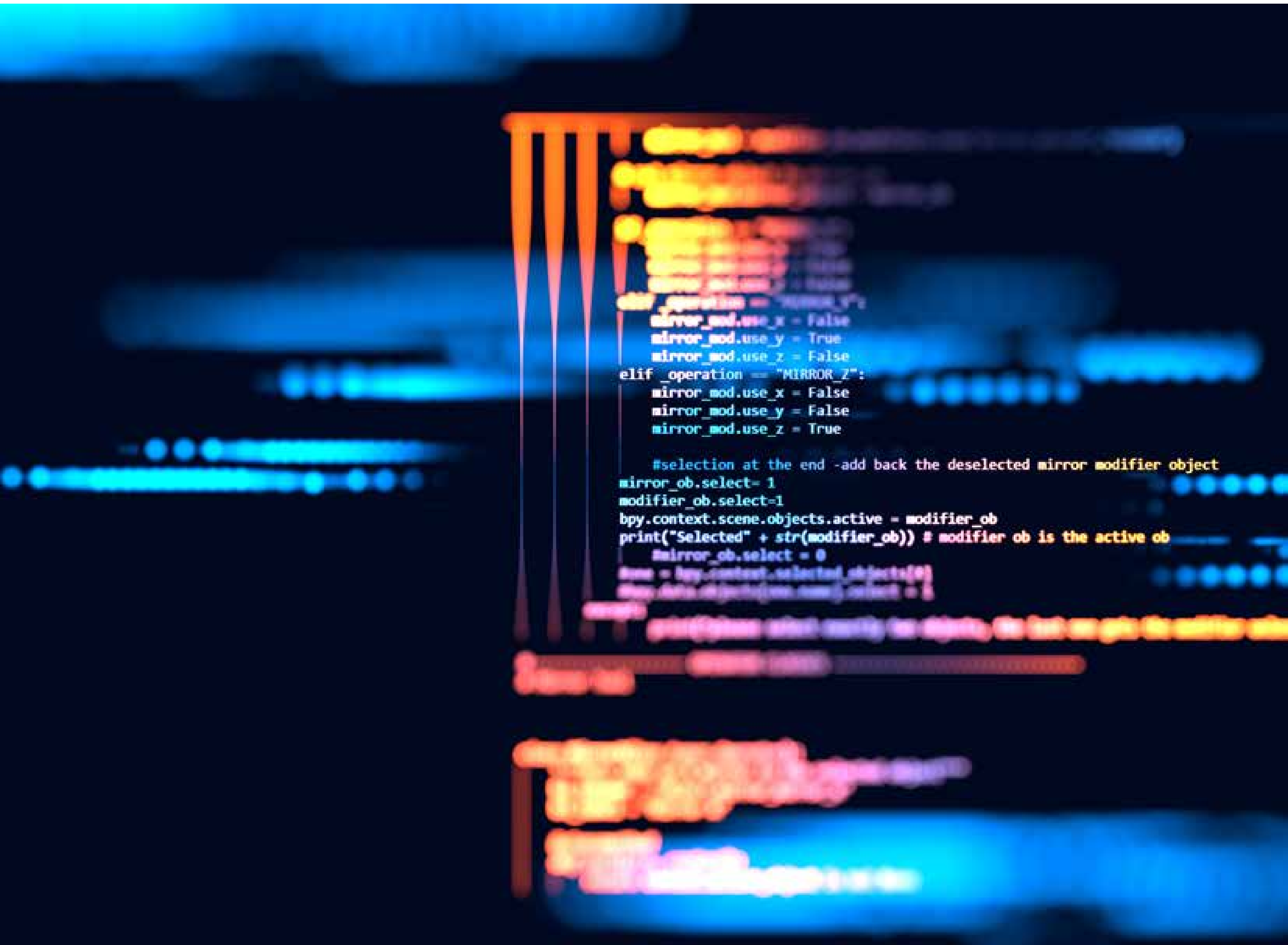
Games Industry in Coventry and Warwickshire

A Blueprint for Growth



Foreword

As Member of Parliament for Warwick and Leamington and Co-Chair of the All-Party Group for Video Games, I am delighted to endorse the Blueprint for Growth and offer my support to ensure that the games sector locally realises its potential. With one of the biggest clusters of games companies in the UK, our local area is well placed to lead the way. We are home to a high growth, high export and high value interactive media sector coupled with a strong skills base. If we can ensure that investment is targeted in the most effective way there is enormous opportunity, not least through important local initiatives such as the Creative Quarter.

Our local area has a strong history in games production, dating back to the 1980s and evolving today into a vibrant mix of small and larger design studios. Of particular note is the collaboration that is abundant between games companies locally, illustrating the kind of approach that can reap rewards for all involved. Leamington has been dubbed 'Silicon Spa' due to the high-tech nature of the local economy.

In recent months, I asked the then Secretary of State for Business, Innovation and Skills, Sajid Javid MP, "Whether through energy providers, video games companies or manufacturers, Warwick and Leamington's local economy is a great contributor to the region's prosperity. What measures are being implemented to build on such successes and to transform the wider Midlands Engine from concept to reality?"

The response was positive: "The Midlands Engine is already delivering. For example, we have a £5 million trade and investment package, £60 million for research, and a £5 million award for Midlands Connect. I am determined to do more."

This report also directly responds to most of the ten pillars laid out in the government's recent industrial strategy white paper – in particular, directly addressing the call to consider the best structures to support people, industries and places to maximise local strengths.

Tying this into the work of the Coventry & Warwickshire LEP, as well as the relevant local authorities is of the utmost importance and this new report will be instrumental in guiding this work.

I also commend Ukie and its representatives for their significant impact, both to this report and more widely for the video games sector. Having worked with Ukie for many years, I know how dedicated and diligent the staff are in championing the video games sector; a vital contributor to the local and national economy. Tying this into the work of the Coventry & Warwickshire LEP, as well as the relevant local authorities is of the utmost importance and this new report will be instrumental in guiding this work.

I look forward to the work ahead in supporting the video games sector and once again thank the Coventry & Warwickshire LEP and Ukie for this valuable report.

Chris White
Member of Parliament for Warwick & Leamington
Co-Chair of the All-Party Parliamentary Group on Video Games

Executive summary

This report provides evidence about the heritage, size and performance of the games cluster in Leamington and South Warwickshire, along with recommendations for future sector-specific support in areas such as funding, skills, R&D and workspace. It's illustrated by case studies of businesses in Leamington and other international clusters – this allows us to give an overview of the impact of the global political and economic environment on games, and to highlight what is working in games clusters elsewhere. The output of the report is a list of opportunities and practical recommendations of how to grow this culturally important sector for the next generation.

The West Midlands' Games Sector is a 21st century growth industry. The global video games industry is an economic and cultural success story. Around 130 of the UK's best games businesses are based in the West Midlands - notably in and around Leamington Spa - creating, highly skilled, productive jobs and opportunities throughout the region. At any one time, there are between 2,000 and 2,500 full time employees in 50+ games companies in and around Leamington, out of a total of 3,000- 3,500 games industry professionals across the West Midlands. These are highly skilled and productive jobs. The games industry in the West Midlands generated an estimated £224 million in GVA in 2015 – of which £188 million was from the 'core' of fifty firms clustered around Leamington, Southam and Warwick.

> Around 130 of the UK's best games businesses are based in the West Midlands.

Games is a global and export-led industry. Between them, businesses from Coventry & Warwickshire have over the years been responsible for many of the best-known games titles in the world including console blockbusters like Colin McCrae, Grid, F1, Forza Horizon, Dirt, Overload, Operation Flashpoint, and DJ Hero. Mobile hits for Disney, Warner Bros, Sega, Rovio and Supercell were developed with the talent and technology of local teams; recent hits like Warhammer Freeblade and global MMO SkySaga were created in Leamington.

Games are an example of 'digital manufacturing', requiring and developing a blend of transferable 21st century skills. Making games is a fusion of art, design, programming, data analysis, science, maths – all skills transferable to other sectors. The process of developing games creates innovation in technology and tools for their manufacture – many of which are transferable to other sectors.

AR and VR will be a $100 billion+ industry within the next decade. AR and VR technologies, first developed in the games industry, are starting to come into their own across all genres of audio-visual media. Coventry & Warwickshire is home to some amazing and original developments of 'mixed media' culture, such as the use of 'avatars' in the recent RSC production of The Tempest at Stratford. But entertainment represents only a small fraction of the commercial opportunity that exists in the application of those technologies in other sectors such as manufacturing, healthcare, logistics and education.

Games are a magnet for talent. The games industry attracts young, highly educated new entrants – and motivates students to tackle both 'STEM' subjects and art & design. Universities and Colleges in Coventry and Warwickshire, and across the West Midlands offer some relevant courses, but there is a common understanding that they all need to improve engagement with industry to understand the rapidly changing development environment and tools required. Working with Ukie and Creative Skillset, and working in co-operation with international clusters and studios with an interest in helping grow the capacity of the games sector here, the region is well-placed to develop industry-led approaches to skills:

- To support the region's need for talent by developing the skills of local people and raising the awareness of employment in the games sector.
- To use games to get children of primary school age interested in the principles, applications and range of career opportunities of software development, technology, design, creativity and ICT. The need for these transferable skills in technology is only going to grow; increasing focused support for games-related skills will underpin the future talent pipeline needs of the wider Midlands Engine.
- To act as a magnet for emerging and experienced talent from outside the region.

We should not take the continued success of Silicon Spa for granted. Whilst the macro economics of the games industry and its attraction to new entrants have never been healthier, it has never been harder for independent producers to create profitable new titles.

Games developers need industry led and sector specific expertise and support. The issues that face the games sector are complex and specific. The complexity of the product itself – one that blends the best of British creativity with leading technology, creating successful games exported around the world – is often acknowledged. But the complexity of the business environment for games is too often overlooked when it is viewed from the outside as one of a group of audio-visual or creative industries. The assumption that these have a common business model is faulty, although it still permeates many 'top down' policy approaches. In order for the sector to overcome the structural barriers to growth that persist at the 'micro level', successful strategies for games need to be differentiated from generic creative industries support.

The heritage and culture of 'Silicon Spa' are a source of competitive advantage for the region. Unlike other parts of the creative sector, the UK games industry is not dominated by London. Some 85% of employment in games is outside the capital.[1] The cluster of games companies centred on Leamington Spa, taking in nearby towns such as Warwick and Southam and with a growing presence in Coventry, has developed over more than two decades through a distinctive focus on quality and creativity. It is an outstanding example of developing regional economic growth through 'smart specialisation' in a sector that demonstrates clear advantages over its competitors in international markets.

1/ Creative Skillset (2014). Skills needed by the games industry. Accessed online 28 January 2016

eSports is the biggest spectator sport you have never heard of. A form of competitive team-based multi-player gaming watched by live, TV and online audiences, eSports is an international growth business with estimated global revenues of $493m in 2016, and year-on-year growth of 51.7%. By 2019, eSports will be a billion-dollar industry. Encouraging investment in all the component parts of the eSports sector and the commercial opportunities around them will help accelerate and nurture the businesses which are developing those platforms, and help them to monetise it. This is a significant further opportunity to raise the profile and brand of the Leamington cluster in a fast-growing international market place.

The interrelationship between history and culture, quality and technological innovation are the drivers of the dynamism and competitiveness of Silicon Spa. To allow the cluster to 'punch its weight' and act as a driver for regional competitiveness and growth, the factors that drive the international standing and competitiveness of Silicon Spa need to be **differentiated from widespread and generalised growth of the creative industries in the region and celebrated as one of the UK's leading digital manufacturing clusters.**

Whilst there are some similarities to the audio-visual industries, **games are structurally different** from other creative industries sub-sectors. We recommend that Ukie come together with CWLEP and the West Midlands Combined Authority to create an industry-led resource, based in Leamington, to offer sector specific support to games businesses in the areas of skills, funding, innovation support and infrastructure development. To maximise the output of the activity, this local activity should be plugged into and benefit from a wider national strategy to support and grow the games sector. The model being proposed here can also be replicated in other games clusters to provide locally focused support.

What does that model consist of? Our recommendations are that the LEP should work in concert with its local authority partners, the West Midlands Combined Authority, the Midlands Engine, national Government and Ukie to:

- Invest in specialist games sector support and development of an interactive media and digital manufacturing cluster
- Promote the heritage and culture of Silicon Spa as source of regional competitive advantage; a distinctive digital manufacturing sector that also develops enabling technologies to catalyse growth in other priority industry sectors
- Underpin the supply of talent through a range of industry-led approaches to skills in schools, colleges and Universities, building on evidence of international best practice
- Explore ways to use co-investment to unlock investment in new IP and growth
- Celebrate 'games as culture' as part of a story of cutting edge UK innovation, offering a stimulus to education, inward investment and the visitor economy
- Encourage collaboration between games businesses, Universities and research institutes to build a supportive and forward looking climate for R&D and innovation across the region
- Encourage information sharing between Councils, landlords and developers to ensure supply of a range of workspace across Coventry & Warwickshire to meet the diverse needs of existing businesses, start-ups and inward investors
- Work with internet service providers and DCMS to address shortcomings in the digital communications infrastructure that place businesses across Coventry & Warwickshire – and games companies in particular – at a disadvantage to other UK regions and to international competitors

Leamington as a blueprint

'Silicon Spa' represents a great opportunity to enact the call within the Government's draft 'Modern Industrial Strategy' to create 'the right institutions to bring together sectors and places' to allow games to be projected internationally as a beacon of the talent, innovation and culture at the heart of a digital manufacturing cluster that stretches across the West Midlands. Many of the recommendations build on knowledge and practice developed elsewhere, whether through Games London or other international clusters. The importance of proving this model for specialist support outside London is twofold: to drive the continuing growth of Coventry & Warwickshire's thriving games sector; and as a blueprint to increase the competitiveness of other clusters of games and interactive media companies across the UK.

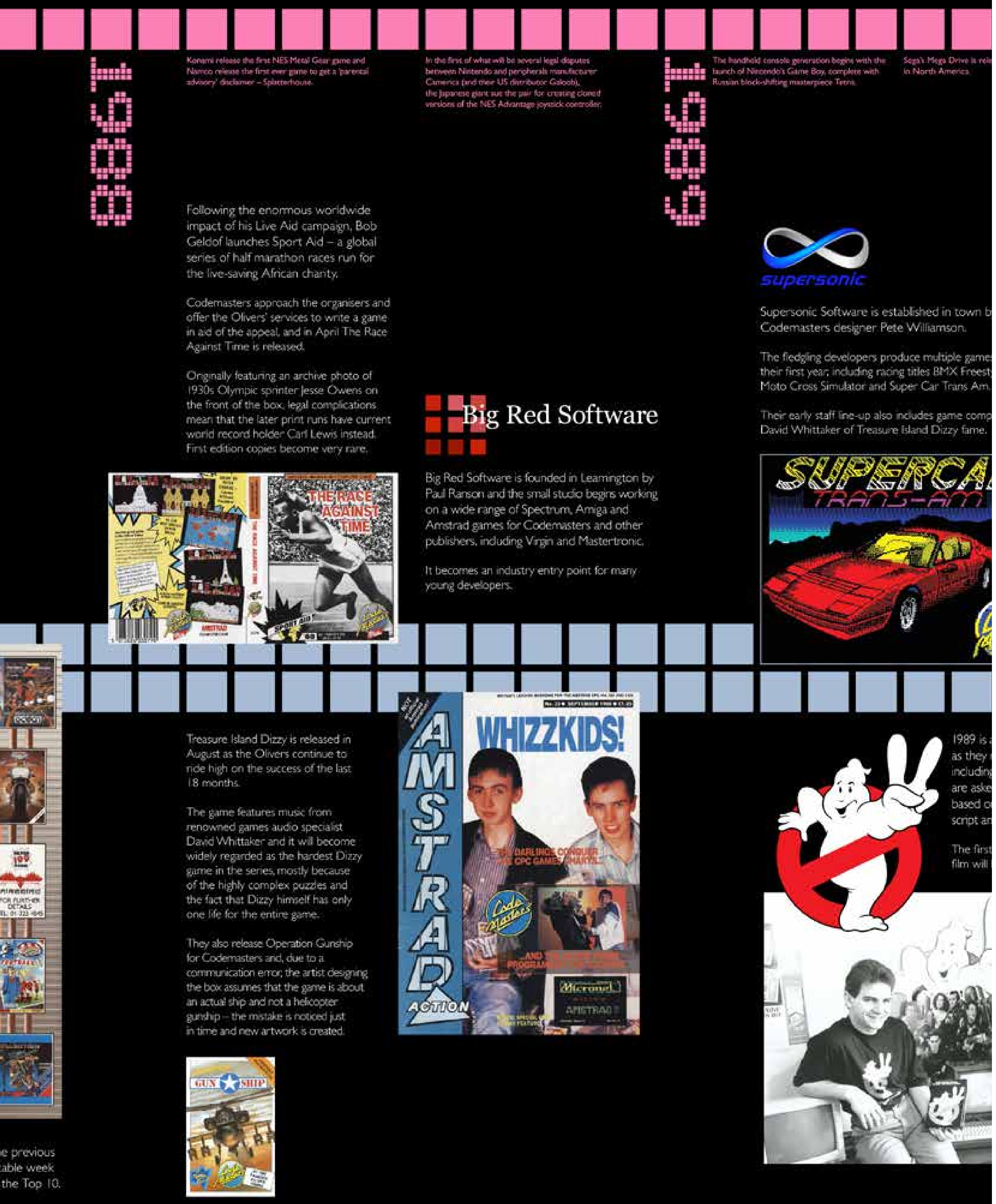


Image: Excerpt from Backspace's Timeline, 1980s Panel

BOP Consulting

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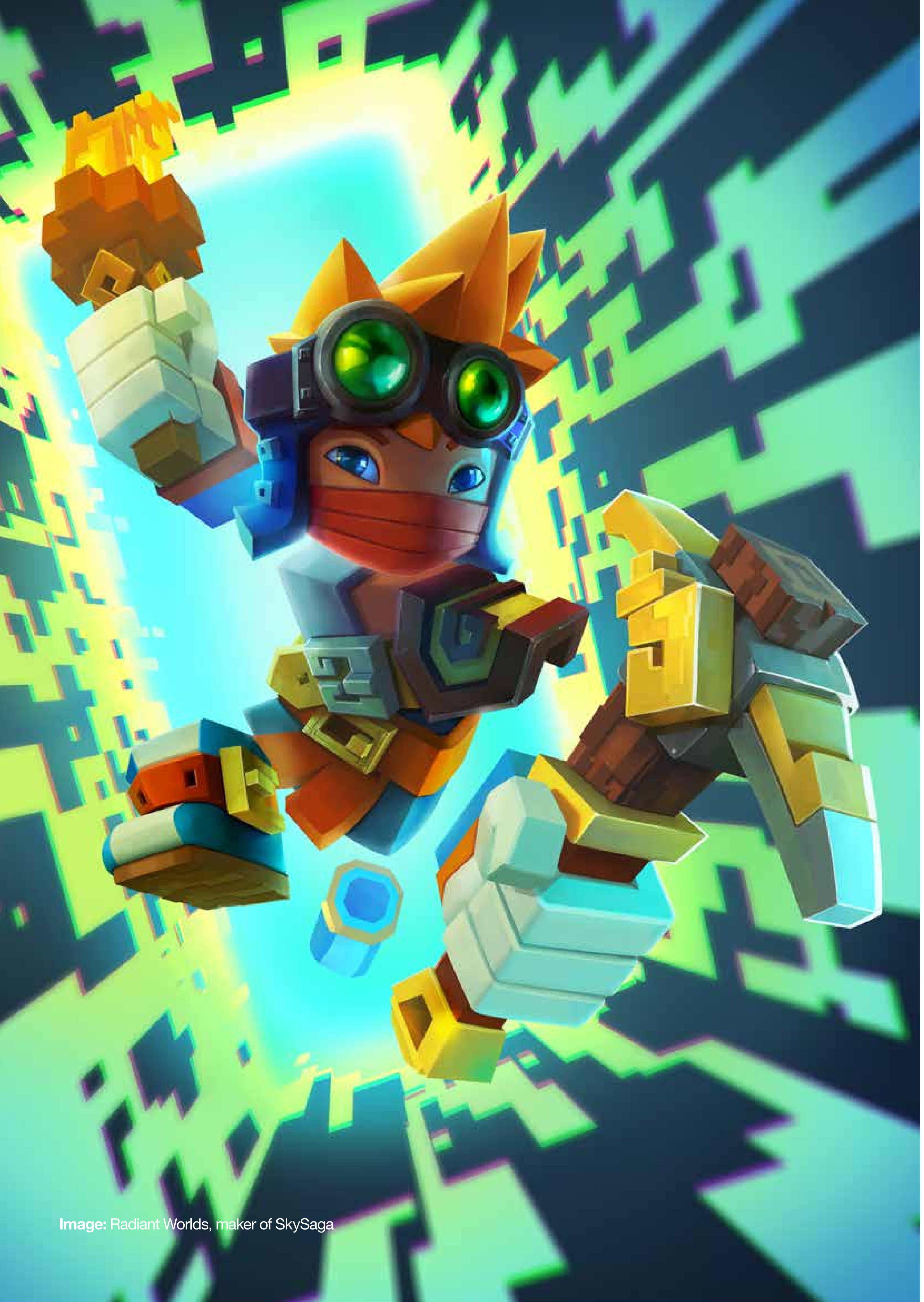


Image: Radiant Worlds, maker of SkySaga

1 Introduction

A blueprint for growth

Ukie and Coventry & Warwickshire Local Enterprise Partnership (CWLEP) have come together to create a new three-year strategic plan that will support and grow the games industry in the West Midlands. The plan will address the following areas:

- Promoting the local games industry by celebrating its economic and cultural impact
- Affordable workspace and network support
- Building the talent pipeline, improving skills and inspiring the next generation, including the Digital Schoolhouse Initiative
- Developing business skills amongst games companies
- Export and investment support

This report forms part of the evidence base for that plan and sets out a ‘Blueprint for Growth’ for the videogames sector in Coventry & Warwickshire.

Silicon Spa’s heritage

Over 130 of the UK’s best games businesses are based in the West Midlands – notably in and around Leamington Spa – creating highly skilled, productive jobs and opportunities throughout the region. ‘Silicon Spa’ is an established games cluster, centred on Leamington Spa and taking in Coventry and the towns of Warwick and Southam, with over 50 studios directly employing some 1,500 people and supporting a wider base of contractors. Local names include Codemasters, Fish In A Bottle, Pixel Toys, Modern Dream, Radiant Worlds, Kwalee, Playground Games, Exient, Sega Hardlight and its newest addition, Ubisoft Leamington.

In nearby Coventry, the Serious Games Institute, a spin out of the School of Computing, Engineering and Mathematics at Coventry University, is an internationally recognised centre of excellence in the application of games technologies in learning, professional development and applied research. Both Coventry University and the University of Warwick provide a pipeline of skilled individuals in a range of technical and creative disciplines.

The Leamington games cluster has developed over more than two decades through a distinctive focus on quality and creativity. It is an outstanding example of developing regional economic growth through a local ‘smart specialisation’ in a sector that demonstrates clear advantages over its competitors in international markets. This report sets out the evidence, analysis and rational for a strategy and action plan that preserves, protects and projects the heritage of ‘Silicon Spa’ to frame its future potential to generate long term economic advantages for games sector and the region’s wider economy.

Digital manufacturing

Games development is a distinctive 'hybrid' of digital technology and creative content: the way in which the creative and design process drives iterative innovations in the tools and technology used to make and distribute games is more akin to advanced manufacturing than to the craft-based elements of the creative industries, or even other audio-visual sub-sectors.

The issues that face the games sector are complex and specific. The hybrid nature of the product itself – one that blends the best of British creativity with leading technology, creating successful games exported around the world – is often acknowledged. But the complexity of the business environment for games is too often overlooked when it is viewed from the outside as one of a group of audio-visual or creative industries. The assumption that these have a common business model is faulty, although it still permeates many 'top down' policy approaches. Attempts to present 'umbrella' sector support or funding strategies have not addressed the specific concerns of games companies. In order for the sector to overcome the structural barriers to growth that persist at the 'micro level', successful strategies for games need to be differentiated from generic audio-visual sector plans.

Stimulating growth in this knowledge-intensive and high value digital manufacturing activity also has spillovers and benefits for economic growth and skills at a West Midlands Combined Authority (WMCA) and Midlands Engine level. This blueprint for growth impacts upon policies for education, skills, inward investment promotion, digital infrastructure, creative and digital industries and science and innovation policy in these wider geographies.

2 Methodology

The project-based nature of the games industry - one that demonstrates high rates of company birth and death, and where teams can grow rapidly as businesses gear up for production of new IP, contracting rapidly once it has been delivered – makes collection and comparison of sample or census data of companies and employment problematic.

Unsurprisingly, then, previous work by Ukie and Nesta highlights the shortcomings of official national statistics in providing a record of the number of companies and employment in the games sector.[2] For this report, we used a mixture of methods, using both primary and secondary sources, to try to address the gaps in the statistical record.

- Ukie's own data, including that expressed in the UK Games Map from September 2016
- Coventry & Warwickshire Growth Hub databases of companies in the games sector in the West Midlands
- Literature review, taking in both UK and international sources
- Evidence from UK national statistics – primarily BRES and APS
- An online survey of games businesses, promoted through Ukie and CWLEP
- Focus groups and interviews with games businesses, investors, local authorities, LEPs and Universities in the West Midlands and across the UK
- Case studies built up from interviews and secondary research into successful international games clusters in North America and Europe. Every videogames company, wherever it is located, faces the challenge of structural changes in the games industry; here, case studies from other international clusters augment trends analysis, in-depth research and survey data to develop a business case for intervention.
- Analysis of LinkedIn data on company size, employment and populations of people working in games and interactive media within specific geographies

2/ Ukie and Nesta (2016). UK Games Map. https://gamesmap.uk

Image: Playground Games, makers of Forza

3 Market Trends

"The great irony is that the gaming industry today is larger than it's ever been and still growing solidly - all appears well at the macro level - yet beneath the surface it has never been more difficult for individual game developers and publishers to break even." [3]

The video games industry is still relatively young, but has grown faster than any other form of popular entertainment to reach annual sales of nearly $100 billion in 2016[4]. Global sales of UK-made games content – console games, PC games, mobile games and apps – exceed £2 billion per annum. 95% of games companies are exporters and 45% of UK games turnover is generated from overseas sales.

The business model for games is constantly evolving, too. When Codemasters, one of the first games businesses in and around Leamington, was set up in 1991, console games were undisputed the 'box office heavyweights'. A quarter of a century later, the industry is on the eighth 'generation' of console platforms – wholly new operating systems for gameplay emerge on average roughly twice a decade – and in-app purchases within 'free to play' (F2P) games, a concept that didn't exist in 1991, are the main source of revenue for games developers across a range of devices – including smartphones, introduced to the market barely a decade ago and now the single most popular platform for games.

The polarisation of spiralling costs and complexity of console games versus the unprecedently low barrier to entry and readily available tools involved in developing a mobile game presents a whole range of challenges and strategic choices to independent games developers like those in Silicon Spa.

Hollywood-type sales call for Hollywood-level development and marketing budgets

As consoles have developed, the games created for those platforms have become more complex, and more expensive to make. So why isn't technological progress in the games sector associated with reduced costs, as in so many other areas of software and hardware development?

The answer to this lies in the economics of the console market, and highlights the complexity of the 'hybrid' nature of games as a digital manufacturing industry that sells both hardware and software: the biggest single purchase most users will make is the purchase of the games console itself.

To attract new audiences (and to encourage existing 'gamers' to invest in new hardware), developers need to push the bounds of the game-playing experience by including features that are unique to consoles that can take advantage of the new capabilities of the latest platform. This results in games that are more technically and creatively complex and their development becomes more expensive. Teams as large as 600 can be needed to develop 'Triple - A' games (the flagship console titles for the major games studios) and budgets typically run into multiples of millions. Having invested that much in development, publishers cannot afford the risk of having a title fail, so millions more are spent on marketing the product to a global audience – the estimated development and marketing budget for Grand Theft Auto V (a 7th generation console game) was a combined £170m[5].

3/ IDG Consulting (2016). The Business of Games. San Francisco, 14 July 2016.

4/ https://newzoo.com/insights/articles/global-games-market-reaches-99-6-billion-2016-mobile-generating-37/ accessed 28 January 2017

5/ Huffington Tech UK, 9 September 2013: "GTA 5 Cost £170 Million To Make And Market, Officially The Most Expensive Game Ever", accessed 12 December 2016

8th generation shifts the risk rather than reducing it

There is an industry view that the combination of 8th generation technology, faster broadband and the development of a 'Games as a Service' model (downloadable content, or DLC) that allows gamers to purchase access to additional features and upgrades 'in game', rather than as part of a 'boxed' product, will help change the model so that not all of that development cost, and risk, need be expended up front, the lifetime of individual IPs can be extended, and the chances of profitability increased.

Console games, despite development costs ranging from $5m - $80m and marketing budgets up to half as much again, have a longer 'shelf life' (often extended by DLC) and are more likely to be profitable over time.

But each platform upgrade also brings its own demands for increased sophistication in the technical, creative and business modelling of a product that combines hardware and content in a single value chain. If you are only developing content, you aren't benefitting from the hardware sales. But increased complexity of console operating systems requires ever larger and more skilled teams to produce games that can reflect the power of the technology in an enhanced player experience. No wonder, then, that development costs can run into the tens of millions of pounds.

The rise and risks of mobile games

Many independent developers, including most of those in Silicon Spa, pursue a different strategy: to develop games for mobile and PC, where development costs and barriers to entry are lower. Many of these are on the F2P model, where return on investment comes from in-game purchases. Some indies, particularly the larger ones, continue to develop for both console, PC and FTP platforms.

Sales of mobile games are greater than those of console games, and growing more quickly: games played on mobile phones, tablets and handhelds now constitute the largest share of global market revenues – 39%, versus 29% for console and 27% for PC games[6].

But reduced costs and risks are also reflected in reduced rewards. Industry research[7] suggests that only 15-20% of mobile games, and a smaller percentage still of PC games (10-15%), ever break even.

To offset those risks, the big players in the mobile games space (such as EA Games, Supercell and King) are pursuing a similar 'consolidation' strategy (increasing investment in development and backing those bets with bigger marketing budgets) to that observed in console games:

"Higher development and production budgets coupled with better distribution channels and advanced marketing campaigns make it nearly impossible for less-financially endowed publishers to gain share in the mobile market." [8]

6/ Newzoo, op cit

7/ IDG Consulting (2016). IDG Thought Piece: The Business of Games. San Francisco, 14 July 2016

8/ IDG Consulting, *ibid*

AR/VR

Most of the main VR headsets (Oculus Rift, HTC Vive, PlayStation VR) on the market today were created by the games sector. The games industry is also the source of much of the development of content and applications for augmented reality (AR) and virtual reality (VR). After a few false dawns, it seems that a tipping point has been reached in the price/performance equation of consumer VR hardware for entertainment use, making it a viable mass market product for the first time.

Development of AR/VR content within the audio-visual industries both creates new market opportunities and brings a wider range of talent into contact with games developers, such as cinematographers, theatre producers, dance companies. These interdisciplinary partnerships will require the development of new skills and new business models to drive the proliferation of interactive media into the entertainment industry overall.

Estimates of growth in AR and VR range from the conservative ($85 billion by 2025, Goldman Sachs 2016) to the hyperbolic ($150 billion by 2020, Digi-capital, 2016).[9]

In a gold rush, the ones making the most money are those building the shovels

Industry analysis reflects that the largest opportunity is in the creation of AR/VR tools and platforms within for use within other industries. Revenues for firms who can build the 'picks and shovels' for this new generation of technologies (at $120m by 2020) will exceed those of content and application developers by a factor of four to one.[10] Last year saw a record $2.3 billion in investments in AR/VR, with significant investments in VR platform makers Unity and Mindmaze.

Game tools, middleware, Software as a Service (SaaS) and games engines (also known as Games as a Service - GaaS) allow games companies to build games more quickly and more profitably. They form an important part of the 'digital manufacturing' supply chain of games, and can be exploited commercially as products in their own right. This is exemplified in the success of Leamington-based developer Exient in spinning out its proprietary technology as a multi-platform games engine for other developers to develop and distribute their own games. Exient's success highlights that in games, creative content can pull through technological development; this is the opposite model to that assumed in most models of digital and manufacturing 'technology transfer'.

See Exient case study, below.

9/ Weinswig, D (2016). Virtual And Augmented Reality Become Realistic Revenue Generators, Forbes, 26 October 2016 - http://www.forbes.com/sites/deborahweinswig/2016/10/26/virtual-and-augmented-reality-become-realistic-revenue-generators/#3c0b2bed45aa, accessed online 4 February 2017

10/ http://www.digi-capital.com/news/2017/#.WJZnrhuLRPY

Games as culture

eSports is the biggest global spectator sport you've never heard of. A form of competitive team-based multi-player gaming watched by live, TV and online audiences, eSports is an international growth business with estimated global revenues of $493m in 2016, and year-on-year growth of 51.7%. By 2019, eSports will be a billion-dollar industry. Leading media brands are backing it; leading professional players have the salaries, image rights deals and commercial endorsements that go with being a successful athlete in 'conventional' sports. Already a national pastime in South Korea, eSports platforms like Twitch (https://www.twitch.tv) act as both entertainment channel and social media platform for millions of eSports fans. In the UK, recent developments such as the launch of GINX.tv's 24 hour channel by Sky and ITV have opened eSports to a new mass audience. The West Midlands has a potential head start in the development of eSports in the UK: Silicon Spa developers produce the kind of content that forms the basis of the sport; the NEC already hosts events for games enthusiasts with a growing eSports element; and the region sits in the middle of the UK, with a potentially huge catchment of players and, as importantly, live audiences.

'Media companies embrace eSports: traditional media companies see eSports as a way to engage with millennials and make up for the aging viewer community around traditional sports. Many non-endemic sponsors are following in the slipstream of these initiatives.' [12]

Encouraging investment in all the component parts of the eSports sector and the commercial opportunities around them will help accelerate and nurture the businesses which are developing those platforms, and help them to monetise it. This is a significant further opportunity to raise the profile and brand of the Leamington cluster in a fast-growing international market place.

Europe remains a place to do good business in games

London Venture Partners report: Value Creation In the European Game Sector is Best in the World (http://www.londonvp.com/news/20/10/2015value-creation-in-european-game-sector-is-best-in-the-world) highlights the added value to local economies of clusters like Silicon Spa.

Our case study of Malta's determined state intervention to build a global games sector (8.3) highlights some of the challenges and opportunities for games developers and their investors posed by Brexit.

The games industry thrives across the UK

Unlike other creative industries sectors, games has never been London-centric – another way in which it more closely resembles manufacturing. The West Midlands is one of the largest clusters, representing about one-fifth of the UK games industry employment and more than 25% of its output, most of which is concentrated in Coventry & Warwickshire. TechNation 2016 highlights the fact that growing companies and inward investors are looking outside of London for cost effective talent, while regionally based firms look to London for investment and publishers

12/ Newzoo Games (2106). 2016 Global Games Market report

4 Barriers for Growth

The trends above point to the existence of some important structural barriers to growth of the games industry in Coventry & Warwickshire.

Access to finance

The barriers to and costs of investing in new games IP is not unique to Leamington, or even to the UK. Findings from the WIN Impact Study (see 8.iii, below) reinforce this: even in the US market, and despite being one of the most successful regions in the world for tech investment, access to finance is still a main issue for growing games companies in Washington State. Finding working capital for early stage companies and access to mezzanine finance for growing companies is also an issue.

Understanding barriers to market entry

Many small developers are drawn to mobile games, which offer a lower barrier to entry. However, console games, particularly 'Triple A' blockbuster titles, are still the most profitable.[13] Early-stage companies need to work with experienced investors to understand the respective risks and benefits in each of these markets. and then to capture that growth opportunity, you need to get in new investment to scale the development team as soon as a publisher is secured.

Asymmetric information leads to irrational and inefficient allocation of working and investment capital

Investment strategy for the video games sector needs to address structural failings in the industry's own custom and practice, which place barriers in the way of investment. Games as a sector has struggled to attract the attention of mainstream financiers and now must compete for attention and investment with newer sectors such as medtech, fintech, lifetech and govtech. When games is a mature global market, what are the reasons for that?

Investors' approach to games combines some of the worst features of both creative and tech sector investment:

- Exaggerated perception of risk, based on inadequate data, limits access to retail sources of dent funding and deters angel and non-specialist professional investors.
- Project-based funding limits scope for development of secondary markets, limiting liquidity and deterring investors who want to be able to secure and exit
- Dependence on heavy handed methods to protect IP - eg, use of NDAs as a precursor to any discussion of ideas even at the pre-development stage – makes it harder to put together consortia of investors.
- Games clusters outside of London are not connected and suffer from lack of investment and experienced commercial management to scale businesses. Small community of specialist investors makes it harder for businesses outside London to build relationships.
- Project development budgets overly constrained by funding thresholds – eg, £150k for SEIS – in a way that presents a barrier to independent developers looking to address larger opportunities.
- Talent and skills.

13/ IDG Consulting, *op cit*

Skills gaps and shortages

Skills shortages, and the inability to find graduates with 'work ready' skills, are a barrier to growth of the UK games industry. Games companies need to develop and retain the best talent to further their own growth; inward investors typically place skills high in their priorities when considering new locations; and the presence of an existing talent pool is more likely to attract skilled people to a region.

This isn't just about the need to fill the 'pipeline' of skilled employees over the long term; it is a structural problem that relates to the way in which games development works. When companies secure investment in new titles, particularly larger games, they need to be able to quickly 'scale up' and identify artists, developers, programmers and project managers to form the production team.

Employers express skills concerns mostly in terms of:

- Shortages of experienced staff in key programming, creative and management roles.
- Risk of losing existing staff– including to clusters outside the UK, which can offer better incentives. (Departure of non-UK nationals is perceived as the number one threat from Brexit).
- Graduates are not 'work ready' and employers need to take time retraining them.

Employer survey findings

We carried out a survey of employers which asked them about their ability to hire staff in the following disciplines:

Studio management	Coding	Finance
Marketing, PR	Animation	Legal
Sales, Business Development	Art	HR
Public Affairs	Audio	Retail
Production	Social and community	Media
Design	Quality assurance	Facilities

We also asked about the relative difficulty of hiring at three levels of experience: new entrants; people with 1-5 years' experience; people with more than 5 years' experience.

Our findings emphasised that a focus on the graduate pipeline, whilst necessary, is not sufficient. Competition for the services of experienced talent remains intense. Employers reported that the hardest roles to fill were those for programmers, artists and managers with an industry track record of five years' or more; with other shortages in coders and artists with between one and five years' experience. Although one of the strengths of the Silicon Spa cluster is its access to a pool of experienced professionals, the 'war for talent' remains a major challenge. Skills shortages, not just for games companies, but all software-based and digital manufacturing businesses, can inflate wage levels, making companies across the region less competitive.

Careers advice and diversity

Diversity is increasingly critical to games companies whose market is made up of people of all races, young and old, with an increasing number of women gamers. Their workforce needs to represent both their current and future audiences if they are to continue to successfully design new content to appeal to global markets, where growth is going to be driven increasingly by population increases in Asia, South America and Africa. A recent report by the Next Gen Skills Academy highlights the fact that the issue around strengthening the talent pipeline for games is not merely one of developing the right skills, but also improving the message that there is a career in the games industry, particularly for women, and communicating that message in primary and secondary schools:

'The school system is most consistently singled out for criticism, with many employers worried that girls are not encouraged in technology subjects, nor made aware that careers in game development exist or represent a valid career path to pursue. Universities attract less criticism than has historically been the case, although some employers still think universities should do more to attract girls to technology subjects. This change is possibly due to improved relations between the UK game industries and Higher Education in recent years, enabled through increased communication and collaboration. Encouragingly, 56% of employers said they now engaged in outreach activities with education providers, although most interaction was with universities.' [14]

Image from Sarah Emerald Group: Digital Schoolhouse

14/ Next Gen Skills Academy (2106). Gender Balance Research & Development Programme for the Games Industry Report. London, 7 September 2016. https://www.nextgenskillsacademy.com/gender-balance-research-development-programme-games-industry-report

Political uncertainty

Brexit and threats to free trade pose a threat to the international and export focused nature of integrated global markets that are key to the success of games. This will lead to a growing need for those with the skills to develop international networks; promote and sell UK outputs overseas; identify competitive threats; respond to new business models, and regulatory and legal expertise to help shape and comply with new rules on IP and data protection; and develop strategies to maximise the UK's share of the global market.

Digital infrastructure

West Midlands area has some serious shortcomings in its digital infrastructure. 50% of SMEs in Coventry & Warwickshire are constrained by average broadband speeds of 10 Mbps or less. Interventions in high capacity digital infrastructure (both fixed line and wireless) with the performance characteristics required to support the whole games value chain, need to be made both to sustain and safeguard existing businesses and to underpin any case for new inward investment.

Energy costs

Games companies – or more particularly, the infrastructure of servers, render farms, desktops and other digital manufacturing hardware needed to support them – are big consumers of energy. Energy costs in the UK put games (and other ICT) companies in Coventry & Warwickshire at a comparative disadvantage to international competitors with access to plentiful cheap power.

For example: clean, sustainable hydro-electric power (and early adoption of alternative energy sources such as wind and solar) offers businesses in Washington State low-cost energy (as low as 4.25¢ per kilowatt-hour) and a stable, scalable grid that can meet the most demanding user needs. It is cited by the cluster organisation, WIN, as one of the drivers for the establishment of so many large ICT businesses in the State.

This presents a challenge to policy makers and developers in the West Midlands to think of new ways to ensure energy security for its critical digital and manufacturing sectors.

5 The Games industry in the West Midlands

Sector baseline

- There are more than 50 active games companies in Coventry & Warwickshire (of which two-thirds are in and around Leamington, and one-third in Coventry) and a further 80 in the remainder of the WMCA area.
- Responses to our online survey of companies in the cluster confirm that a high proportion of companies in Leamington are high-growth (hitting £1m turnover within 3 years of trading, and growing at 20%+ per annum) with a significant minority turning over more than £5m.
- There is a core of medium sized companies (between 50 and 500 employees) that 'anchor' the cluster: Codemasters, Exient, Ubisoft Leamington (previously Freestyle Games), Playground Games and Radiant Worlds. This spread of larger companies underpins the employment opportunity for games professionals in the sub-region: there is a very high likelihood that one or more of those companies will be 'gearing up' for a new game at any time, smoothing out the 'peaks and troughs' of a hit-based business that can affect less well-established clusters, or those dependent on a single large company.
- The rate of company formation in Silicon Spa is high – 50% of active businesses in the cluster have been established since 2012, and two-thirds since 2010.
- Many founders can trace their games industry lineage back 20 or more years to larger firms such as Codemasters and Blitz Games.
- In addition to recent inward investment successes – notably the acquisition by Ubisoft of Freestyle Games - there are examples of other mergers and acquisitions, with investors and larger firms growing by acquiring IP and successful development teams. Both FDI and M&A are measures of success for the cluster, and indicate continuing industry confidence in the ability and capacity of the local talent pool to build new teams to create success original IP in content and games technology.

Employment

We estimate that at any one time there are between 2,000 and 2,500 full time employees in 50+ companies in CWLEP, and in the region of 3,000- 3,500 across the West Midlands.

The Ukie/Nesta UK games map reflects the fact that official statistics capture only around 60% of games companies; so we would expect the 'official' record of 700 employees in CWLEP and 1,100 in the West Midlands region in 2015 to be a serious underestimate of actual jobs. As an indicator of growth trends, it is notable that those figures have increased since 2010 from 200 in CWLEP and 700 in the West Midlands – increases of 214% and 66% respectively. This reflects our evidence that more than half of active games companies in CWLEP were formed since 2010 and that those firms larger than the UK average for the sector.

To try to arrive at a more accurate estimate of employment, we used some other data sources: a database of companies held by CWLEP; analysis of personal and company accounts on LinkedIn; and an online survey of games businesses.

Our online survey, which reports consistently high use of contractors across the cluster, supports the idea that games businesses in the South Warwickshire area can draw upon an additional pool of skilled freelance games professionals of between 500 and 1,000 people, depending on cycles of games development, at any one time. The talent pool includes a range of skills from art direction, to animation, to programming. Companies regularly augment their own teams with a supply chain of smaller developers willing to do 'work for hire' on other companies'

IPs; 60% of companies surveyed said that they offered services on a 'work for hire' basis.

This kind of interdisciplinary and mobile workforce will not be captured in official statistics for the sector, but represents a significant resource and source of competitive advantage for the cluster.

The remaining 80 games companies in the West Midlands are mostly more typical 'micro-enterprises. They do not directly benefit from the agglomeration effects of the Silicon Spa cluster, and as a result are on average smaller and less productive. Therefore, our estimates of employment for these businesses are lower, around 500-800.

Although not in the West Midlands, the presence of Rare (a Microsoft Xbox studio with some 200 employees) just over the M42 in Leicestershire can be seen as another extension to the cluster. Looking across the wider area of the Midlands Engine, companies like Rare and Lutterworth-based AR/VR specialist Holovis, which employs over 130 people and has a portfolio ranging from development of '4D rides' for theme parks to work on new engine design for Jaguar Land Rover, should be factored into the consideration of the discrete impact of games, AR/VR and related digital manufacturing technologies on employment and productivity of the region.

Economic impact

Productivity in games is closer to that of advanced manufacturing than other sectors of the creative and audio-visual industries.

- Analysis of BRES and APS data for Coventry & Warwickshire, based on the DCMS definition of creative industries, gives average GVA per capita in 2015 of just over £12,200 (an increase of £3,000 since 2010).
- Ukie data[15] suggests that average GVA per UK games worker is £68,000.
- Our research, which takes into account records of actual company turnover, suggests that the inner 'core' of Leamington Spa and Coventry has higher productivity still – we think £75,000 per employee is a conservative estimate.

We don't have such detailed evidence for games companies in other parts of the region, so have taken a more conservative view of average GVA per capita - £45k per annum - based on national statistics for games and software professionals. So our estimate of output for the games sector is as follows:

- GVA of 2,500 employees and skilled freelancers in the 'Silicon Spa' cluster: £188 million.
- GVA of 800 employees in the remainder of West Midlands: £36m.
- Total GVA for games in WMCA: £224m.

This suggests that Coventry & Warwickshire represents about one-fifth of employment and 25% of GVA directly generated by the UK games sector. [16]

15/ Ukie and Nesta, ibid

16/ Olsberg SPI with Nordicity (2015). Economic Contribution of the UK's Film, High-End TV, Video Game, and Animation Programming Sectors. London.

6 Innovation environment in Coventry & Warwickshire

Research and innovation

The region has prioritised the sector for R&D support over the past ten years. Examples include SGI, Warwick's Digital Lab, the IDM project and the Disruptive Media Learning Lab (DMLL). Industry and academia now stand in a great position to capitalise on opportunities to take games and games technologies to the next level, and into new markets. Within AR/VR developments alone, there are numerous funding opportunities to bring the 'fused' agenda to the region and increase engagement between the games industry and universities.

Role of Universities in supply of graduate talent

The computer games workforce is highly qualified, with 63% having a degree compared to 57% of the wider Creative Media workforce and 37% of the wider UK economy. UK higher education is a strong supporter of the games industry. 60 universities and colleges provide 215 undergraduate and 40 masters-level video game courses throughout the UK in 2014. 18% of courses on offer are in the West Midlands.[17]

There is mixed evidence on the 'fit' between the content of computer games courses and employers' need – although local institutions show high levels of employment in the industry, some studies report as few as 12% of graduates obtaining work in games within six months of graduation – so it is helpful that HE and FE institutions in the region take a mix of complementary approaches to the sector:

- Coventry University offers two focused courses: a BA in Games Art from the School of Art and Design and a BSc in Games Technology (which includes an optional year's placement with an employer) within its School of Computing, Electronics and Mathematics producing up to 30 graduates a year.
- University of Warwick doesn't offer a tailored games curriculum; but it has a world ranking mathematics department and research institute. Several Silicon Spa employers are themselves graduates of its maths and physics courses and it is recognised within industry as a valued resource.
- Warwickshire College offers a two-year Foundation Degree in Games Art in Leamington and North Warwickshire and South Leicestershire College runs an HND in Games Animation and Screen Design at its Hinckley campus.
- Further afield, Staffordshire University runs a much greater number of dedicated full time and part time courses, many of them Creative Skillset accredited, in subjects including animation, games art, design, programming and VR.
- In Birmingham, the Gamer Camp, set up by BCU, has been working with Sony on projects, as well as nationally with Microsoft's X48 game development programme. It reflects the fact that those institutions, including BCU, that have had meaningful engagement with industry have the best reputation amongst students and employers.

17/ Creative Skillset

Supporting the development of 'fused' skills

Rapid technological change, higher client expectations and greater competitive pressures mean that employers in the games industry increasingly seek a 'fusion' of technical expertise, creativity and other skills in areas of customer engagement and community management.

Employers will value those workers who are best able to adapt and respond to technology. They will also seek those who can think strategically to identify ways to best exploit and adapt new technologies. Firms increasingly require expertise to anticipate how markets and consumers may respond to changes in specific products and to the overall economic and political environment.

The proposal to link Coventry, Staffordshire and Wolverhampton Universities in a 'virtual' combined West Midlands institution offers potential to promote a common understanding that these institutions and others all need to improve engagement with industry to understand the rapidly changing development environment and tools required. Working with Ukie and Creative Skillset, the region is well-placed to develop industry-led approaches to skills:

- To support the region's need for talent by developing the skills of local people and raising the awareness of employment in the games sector.
- To use games to get children of primary school age interested in the principles, applications and range of career opportunities of software development, technology, design, creativity and ICT. The need for these transferable skills in technology is only going to grow; increasing focused support for games-related skills will underpin the future talent pipeline needs of the wider Midlands Engine.
- To act as a magnet for emerging and experienced talent from outside the region.

Serious games

Research carried out by Advantage West Midlands in the last decade highlighted an opportunity in serious games that Coventry University was quick to capitalise on in the form of the Serious Games Institute, which has helped develop the market for new technologies for training staff and managing transformation of production in sectors such as advanced manufacturing and was spun out as a successful commercial educational and training software company. Coventry graduates continue to be inspired by this heritage to create their own serious games businesses – which acts a complement to the content and games technology-driven cluster in Leamington.

Opportunities in AR/VR

Understanding of the education, training and safety applications and benefits of AR/VR technologies in prototyping, testing and manufacturing is also gaining ground in other industry sectors. Many of the West Midlands' advanced manufacturing companies – including major players such as JLR – make extensive use of AR and VR, in applications which allow them to develop and test new power trains, new control technologies, safety features and whole new products without having to cast a single metal object.

The School of Media and Performance at Coventry University is looking to build upon the kinds of interdisciplinary applications of VR as those observed in the RSC's recent production of The Tempest at Stratford-upon-Avon (which featured an avatar as Ariel) and dance company Motion House's VR collaboration with Leamington games technology company Fish In A Bottle. This will help develop both the skills, technologies and business models for the exploitation of AR/VR not only in other entertainment sectors, but also in its wider application in other high value-added industries. This has the combined benefit of more closely identifying the breadth of digital manufacturing as a regional specialism for the West Midlands, and of increasing export earnings from services and licensing of the resulting applications and technologies.

Wider collaboration and knowledge exchange to unlock mega-markets

A focus group held with University of Warwick, Warwickshire County Council, Coventry City Council, Warwick District Council and Coventry & Warwickshire Growth Hub in October 2016 highlighted the opportunities for region-wide collaboration to help games companies better access the R&D capacity and potential of the region's universities. The partners outlined a proposal to create a regional games 'sandpit' - a shared platform for 'open innovation' and new product development with 'single entry point but multiple physical locations.'
The initiative would use the reputation of the games industry in the region to project what the Universities in the region can offer to a global audience. In return, the combination of businesses and the knowledge base would offer capacity to jointly address:

- A future world of 'megamarkets' – megacities and conurbations with a population of 25 million or more.
- Stacks of services, refining elements of games and AR/VR technologies developed for online delivery within wider SaaS models.
- Technologies in the 'enabling and emerging technologies' space.

The 'sandpit' would work with industry, investors and public sector agencies to add to some other elements of a regional innovation system, including:

- A structured approach to prototype funding.
- Funding for growth and commercialisation.
- Co-investment funds to provide opportunities for sector specialist and general investors.

The partners undertook to put the physical and knowledge assets of their institutions at the disposal of a dispersed network of innovation environments across the region, with Ukie playing a central role in coordination and signposting; defining industry requirements; horizon scanning of 'next gen' developments; and identifying investors with relevant sector.

Image: Coventry Digital Laboratory

7 South Warwickshire's USP

South Warwickshire has a combination of factors that make it attractive to games companies, employees and investors.

The history, international reputation and diversity of the cluster is significant:

- The mix of large and smaller companies means that there are always new IPs in development across the cluster. This means that there is always demand for skilled labour, and individual career prospects – whether as an employee or a freelancer - are not tied to the fate of a single company.
- For larger employers and inward investors, access to a pool of skilled labour across a range of disciplines, including senior and mid-level executives with experience of leading the development and publication of globally successful games, is a significant advantage when evaluating locations for new games development.
- Smaller companies in the cluster access the kind of strategic benefits typically enjoyed by larger developers: they can access a range of skills within the cluster means that they can afford to invest in development of new IPs, secure in the knowledge that they can quickly build development teams through a mixture of employment, freelance workers and sub-contracting once they secure investment in a new product.
- Newer companies can access mentoring and support from more experienced members of the cluster.

Although it doesn't reflect the typology of a 'typical' urban creative cluster, South Warwickshire offers an attractive quality of life: a range of housing options (from relatively affordable accommodation for recent graduates and young families to more upscale options in Leamington, Warwick and surrounding market towns), diverse transport links and good schools complement the attractive natural and built environment. Coventry is actively growing and promoting its cultural offer, including through a bid for UK City of Culture status in 2021.

Leamington case studies

These case studies of Leamington games firms represent four different business typologies, each of which demonstrates the importance of the Silicon Spa 'ecosystem' in attracting and retaining talent, developing new IP, accelerated development from start up to scale up, and extending the reach of games technologies into other markets and industry sectors.

CASE STUDY 1

Playground Games: experience + scale up = profitable console game development

It is sometimes the case that you need an experienced investor to recognise the different levels of profitability for IP over the hardware development cycle as well as overall revenue trends for different genres or platforms, even in markets that present high barriers to entry. In Leamington, Playground Games demonstrates this kind of 'counter cyclical growth'.

Established in 2010, Playground Games brought together some of the most experienced and talented developers from the UK industry, with the vision to create genre-defining titles for a global audience of console games players. It built upon the strong heritage of racing games and experience and skills available in Leamington and the surrounding region to assemble a 100+ person development team that quickly swelled to a studio of more than 300 people.

The experience and contacts of its management team allowed it secure investment in a major new console game series, the critically acclaimed Forza Horizon franchise, which has earned more than 80 industry awards. Combined with a steady stream of contract work on other Triple A titles, this boosted Playground Games to revenues of over £10m in 2016.

CASE STUDY 2

Pixel Toys

Pixel Toys is one of the latest success stories of the region. Coming from a successful sale of their previous company to Activision, the founders bring over 30 years combined experience leading the development of premium videogame projects on a variety of consoles, personal computers and handheld devices. Together with an exceptional senior team, the studio's vision is to produce truly ground breaking mobile entertainment.

The growing team has been supported by Creative England's Games Lab and having an early hit on the App Store with Gunfinger, has meant that they have been able to grow and have already moved into bigger premises with the help of Warwick District Council.

PIXELTOYS

CASE STUDY 3

Exient – from content development to technology and tools

Leamington-based developer Exient is a good example of a company that has evolved its business model to take advantage of its technical excellence.

Exient has specialised in the 're-imagineering' of popular video games, applying its excellence in gameplay and graphical quality as a service provider to other companies' IP, ranging from big console debut titles to mobile games. It worked on some of the most successful mobile games in recent history, including Rovio's Angry Birds, becoming the fastest-growing mobile developer in the UK.

Exient developed a set of tools and techniques 'in house' - its XGS games engine - which was then successfully spun out as a proprietary multi-platform games engine for other companies to develop and distribute their own games.

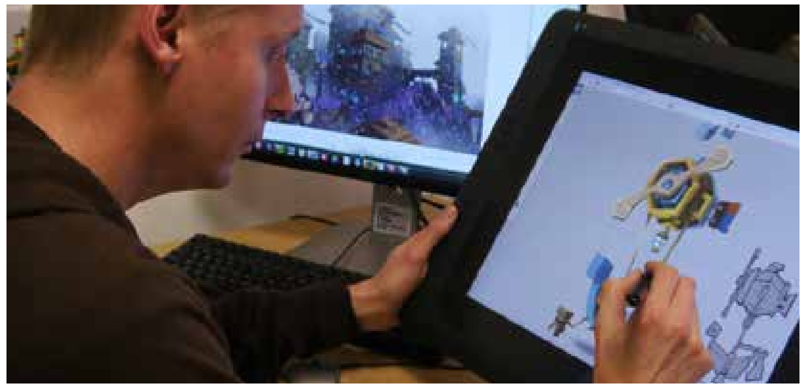
CASE STUDY 4

Fish in a Bottle – applying games technology in the wider digital and creative supply chain

Fish In A Bottle is one of the UK's leading interactive agencies, with a ten-year track record that includes the BBC's first interactive episode of a prime-time drama, Casualty: The First Day.

Primarily a service-based business, it has developed a global reputation as a leading specialist in children's interactive entertainment. Its clients include Disney, Warner Brothers and Nickelodeon, for which it developed Blaze and The Monster Machines, a top-ranked children's application on the App Store and Google Play.

More recently, Fish In A Bottle has used its expertise in VR to branch out into other forms of entertainment content, working with local dance company Motion House to create new interactive experiences mixing live performance and VR.



8 Bringing a competitive and international perspective

There needs to be a focus on the competitive and international position of the cluster from the outset; in the case of Coventry & Warwickshire, that investors don't recognise its world-leading position nor the depth of the talent pool that continues to grow it.

Setting that international context means that mapping at a local level to understand the existing capacity, potential and any critical gaps needs to be accompanied from the start by a programme of international research and analysis.

i. Finland

structured supply side intervention

Best talent, private investments and Tekes funding and networks have helped build an internationally significant Finnish games industry and an increasingly lucrative investment target.

The turnover of the Finnish game industry has grown from €40 million in 2004 to over €1.8 billion in 2014. Today 260 game companies employ 2.500 persons and the turnover is about to break the €2 billion barrier. Game industry is a remarkable business in Finland as its turnover formed 10 percent of Finland's whole IT industry turnover in 2013.

Tekes is Finland's most important public funder for game industry. During the last 10 years Tekes has funded over 100 game companies with appr. €70 million. In 2012 Tekes launched a programme dedicated solely to the Finnish game industry, Skene – Games Refueled. The goal of the programme has been funding of game business development and networking. Skene has funded Finnish game companies with MEUR 30 and companies themselves have invested MEUR 28 into their development projects in Skene. "In 2012–2015 under Skene's operating time Finnish game companies have raised over MEUR 70 in private investments alone. Tekes funding is a sign of a very potential company to an investor.

Besides networking and investors pitching sessions, projects funded in Skene have covered e.g. development of game engine, development tools and innovative distribution platforms. Skene has funded also development of smart watch games, comic-game combination concept, episode based games and worklife wellness game.

Benefits of the Finnish approach

Return on public investment

Every euro Tekes has put into game companies has yielded €6 to €24 to Finnish tax payers. Tax income already totals hundreds of millions of euros.

Public investment is de-risked by private sector leadership

Tekes is a co-investment fund: it funds only a matched share of development project costs in companies whose promise is validated by other private sector investments.

Differentiation of games as a knowledge sector

"We expect Finland to get hi-tech jobs and know-how that is difficult to copy and move away," says Skene programme manager Kari Korhonen from Tekes.

A magnet for foreign direct investment

Tekes' Skene programme has helped secure investment of global game companies like EA, Ubisoft and Unity in Finland.

Diversification into more profitable market segments

Most Finnish game companies focus on mobile, but Tekes support gives companies confidence to embrace the higher level of risk and upfront in investment required for PC and consoles. For example, Remedy Entertainment launches its Xbox One debut game next April which is to be the most expensive entertainment product in the history of Finland.

ii. WIN

Industry led coordination, strengthening supply chains and talent retention across interactive media and ICT sectors

The US Pacific Northwest has one of the most successful digital media clusters in the world. The growth of this sector has been boosted by the Washington Interactive Network (WIN), an industry-led support organisation that has helped create over 2,500 jobs in the region over the last ten years.

The cluster

- 423 companies, ranging from more than 40 companies working in the burgeoning virtual and augmented reality field, to global businesses such as Microsoft, Amazon, Bungie, and Valve.
- Estimated 20,800 employees in interactive media, both at large multi-purpose firms and at small to mid-size firms, with a further 2,400 freelancers working in the cluster.
- In 2015, Washington's interactive media cluster boasted revenues of $21.4 billion.
- Seattle ranks fourth among US cities in employment within interactive media-related occupations, with 107,000 employees.
- Seattle ranks third in the US in terms of average wages in interactive media-related occupations at almost $109,000 per annum.

Wider economic impacts

- The total economic impacts of the cluster throughout Washington's economy are significant. The cluster supports a total of 94,200 jobs through direct, indirect and induced impacts.
- Overall, the cluster generates almost $28 billion in revenue throughout the state and $7.6 billion in payroll taxes.

#Trends

- Rapid growth in augmented reality (AR) and virtual reality (VR) as one of the biggest trends within the industry.
- The development of AR/VR content is bringing in a wider range of talent into the cluster, such as cinematographers, actors and more.
- This AR/VR subsector has seen increased venture capital and fundraising successes and experts predict that it will continue to attract investment dollars.
- There is an increasing recognition that free to play games (F2P), whilst a growing segment of the overall game market, present a difficult business model on which to sustain and grow a company. As a result, this market is now seeing increased diversification in strategies.

Talent

- Washington State's interactive media cluster is supported by a strong backbone of talent throughout the region's ICT industry, in part attracted by the presence of major corporates such as Microsoft and Amazon, strengthening growth and innovation.
- However, the IM sector is also in competition with the larger regional market for IT talent to support the demand for skills to support diversification into AR/VR and the proliferation of interactive media (IM) into the entertainment industry overall.

iii. Malta

Building the right environment for games

Malta is pursuing an aggressive policy in respect of attracting high growth digital and technology companies, including games companies and the specialist investment funds to support their growth. Malta Enterprise is the lead agency for efforts to bring about the exponential growth potential of the games industry on the island by:

- Leveraging its status as a well-regulated EU jurisdiction that gives access to protection of intellectual property in the European and international markets; Malta's games companies may protect their artistic creations or distinguish the goods and services from those of other traders through straight-forward or hybrid solutions.
- Offering direct incentives, such as a business development cash grant of up to €200,000 to facilitate start up or relocation.
- Favourable fiscal policies, such as the qualifying employment in innovation and creativity incentive, whereby individuals working in an eligible office enjoy a 15% flat rate tax.
- Malta operates a full imputation tax system which eliminates the economic double taxation of company profits. While the corporate tax rate stands at 35%, upon a distribution of dividends, the shareholders are entitled to a refund of the Malta tax charged (generally 6/7ths), which reduces the effective tax to as low as 5% - the lowest effective tax rate in the EU.

These measures, and its strategic location, mean that Malta is fast becoming a sought-after games hub, attracting companies seeking to relocate their business or set up operations there.

Benefits of Malta's approach

Malta presents itself as a jurisdiction apt to address the dimension of the games market. The growth of the industry and the government's initiatives for the industry, are translating into varied opportunities for new start-ups to conceptualise new projects while permitting existing operators to explore new niches obtaining an edge on competitors.

The policies and incentives outlined above have been designed to enhance Malta's global reputation for enterprise - it has ranks 41st of 148 countries in the Global Competitiveness Report.

A country the size and population of Coventry now boasts over 35 games companies producing everything from large AAA titles, to VR games on mobile.

In attracting major investment partners – renowned London-based VC firm Ariadne Capital recently acquired the Malta-based Portcullis Asset Management Ltd (PANL), with the express intention of developing a post-Brexit base in the EU for its investment platform – Malta is ensuring that businesses have continuing access to both investment and specialist advice.

Although the settlement for the Midlands Engine will fall some way short of devolving powers over taxation, there is still scope for CWLEP and the wider region to promote the games sector as an asset to attract specialist finance firms and to ensure that marketing of the region's games industry is streamlined and coordinated around a single, specialist point of contact to deal with all investment-related queries and business support needs.

COMPETITIVE AND INTERNATIONAL PERSPECTIVE

iv. Strategy needs to take an international and competitive perspective

How can a strategy for Silicon Spa help create the conditions in which a range of companies, from the micro to the medium-sized, can survive and thrive? What do the international case studies tell us in this respect?

The global games market is extremely competitive – a 'red ocean'. Although Coventry & Warwickshire may represent a lower cost option than London, there is no immediate prospect that it will ever represent a low-cost location for games development from an international perspective. If competing on cost is not an option, there are only a limited number of appropriate strategic responses open to firms looking to address those competitive pressures, including:

- To retain a talent base that allows them deliver products of superior quality.
- To scale the operation to allow for the production of 'blockbuster' games which, although they individually represent a higher risk, are statistically more likely to be profitable over time (particularly if delivered as one of a 'slate' of similar products).
- To pursue technological innovation that allows for diversification into adjacent markets.
- Our case studies of firms in Silicon Spa provides evidence of all of these strategies.

"IN RED OCEANS, QUALITY AND SIZE MATTER"

IDG Consulting, San Francisco, July 2016

v. Harnessing Talent

Successful international clusters all demonstrate a strategic approach to skills development. For Silicon Spa, retaining experience and diversity in the cluster is critical. The four case studies of Leamington-based games companies demonstrate the importance of the Silicon Spa 'ecosystem' in attracting and retaining talent, developing new IP, spinning out high growth start-ups, providing the conditions for companies to successfully scale up, and extending the reach of games technologies into other markets and industry sectors. They highlight the need to combine creative, technical and management talent.

Each of the four international clusters studied includes a significant intervention in skills development for the sector:

- The Finnish education system is admired across the world for its focus on creativity and pupil-centred learning. **Oulu Game Lab**[18], established in 2012 at the University of Applied Sciences as an interdisciplinary programme to support the development of games prototypes, products and start-ups.

  In addition to assisting in the development of specialised skills required for the game building field, Oulu Game LAB also supports the recycling of talents from companies like Nokia and Microsoft, in effort to decrease the unemployment rates in the area through the creation of new jobs and opportunities.

  Growing the talent pool in this way develops capacity to respond to new opportunities for inward investment – for example, TenCent's $8.6 billion stake in Finnish mobile games developer Supercell[19] – and allows companies to 'scale up' quickly to develop new games content and technologies.

- In the Pacific North West, specialist training is offered by **DigiPen Institute of Technology**[20], a specialist private sector provider with several international campuses that offers:

  _ Graduate and undergraduate degrees.
  _ Two-week exploratory workshops and online courses for middle- and high school students.
  _ Comprehensive high-school programs.
  _ Continuing education programs for industry professionals.

  DigiPen was set up by Nintendo as a private university for students interested in working in the emerging games industry. It boasts that over 90% of the graduates get work in the industry, many before they graduate. The first graduating class built the game Portal as their class project and were hired by Valve to take it to market.

- In Malta, the University of Malta (a public University) St Martin's (a private University) and MCAST[21] (a college of further education) all offer a mix of full- and part-time degrees, short courses and specialist apprenticeships for the sector.

18/ http://www.oulugamelab.net/

19/ http://www.wsj.com/articles/tencent-agrees-to-acquire-clash-of-clans-maker-supercell-1466493612

20/ https://www.digipen.edu/about/

21/ http://www.mcast.edu.mt/

COMPETITIVE AND INTERNATIONAL PERSPECTIVE

vi. Attraction and retention of talent

Money follows talent. Investment in skills development is most likely to take place where there are existing clusters; and inward investors are drawn first to regions with a strong and diverse talent base. DigiPen, established in the Pacific North West through an initial investment from Nintendo, developed in a new campus in Singapore not only because of support from MDA (Singaporean government's Media Development Agency) but because of the demand created by opening of a new Ubisoft office. The Digipen example, and that of Oulu Games Lab in Finland, demonstrate how investment in skills builds capacity in a region and creates a virtuous circle of talent attraction, continuing professional development and talent retention that is repaid many times over in new commercial investment. People with relevant skills and experience are more likely to be drawn to locate themselves near clusters that offer a range of opportunities – not just the first employer, but confidence that there are other jobs out there. And, as we know from recent investment decisions in Leamington by companies such as Ubisoft, Sega and others, access to a pool of experienced talent is a driver for investment.

vii. Avoiding pitfalls in public sector support

Articulating a sector proposition

Games has a business model distinct from that of other audio-visual sectors. WIN's survey of interactive media firms in Washington State identified very similar priorities to those expressed by games companies in Coventry & Warwickshire:

- Access to capital
- A highly connected Interactive Media cluster
- Benign regulatory environment
- Favourable fiscal policy

To succeed creatively and commercially, games companies need to be able to work with investors who appreciate the complexity of the creative, technical and marketing capabilities involved in developing a new 'IP'. Given the hyper-competitive nature of the global marketplace for games, once investment or market opportunity is proven, the kind of access to talent, technology and support that a cluster can offer provides individual firms with the capacity to scale up quickly across all these domains. Business support for games needs to reflect those specialist requirements, and provide access to specialist financial and business support that helps companies move quickly through the gears from prototyping through scale up to global commercialisation.

In the context of Coventry & Warwickshire, where the businesses themselves have identified the need to define a sector specific offer that meets their needs and Government is expressing support for institutions appropriate to both place and sector, there are two considerations that need to take precedence:

- Defining the service proposition from the user point of view
- Articulating proposals as an industry-led, sector-based approach to identify distinctive drivers that address local and regional competitiveness

Defining the service proposition from the user's point of view

Tekes (www.tekes.fi), the Finnish innovation funding agency, provides a model in its structured approach and presentation of the offer to businesses. It addresses businesses as customers; presents a clearly defined set of products; its programmes offer a clear 'escalator' of progression in terms of both business support and funding; and its marketing expresses corporate objectives in terms of what the end-user business wants to achieve.

Providing industry expertise and a sector-based approach

The WIN survey acknowledged that it is challenging for policymakers to keep up with the needs of the industry as technology continues to advance rapidly. WIN's success in growing the IM cluster demonstrates the contribution that local and sector specialist expertise can make in collaboration with public agencies.

Clustering and 'smart specialisation'

Part of WIN's commercial and lobbying success is that its membership includes the wider supply chain to interactive media, not just 'core' businesses. WIN's private sector membership structure, combined its 'wide angle' view of opportunities across a range of ICT=-based businesses, guards against one major pitfall in publicly funded support agencies: the tendency for public bodies to try to 'pick winners' without having the skills and industry experience require to evaluate new technologies and market trends.

This helps overcome information failures across the sector, has a multiplier effect on adoption of new technologies (eg, AR/VR) in adjacent sectors, and strengthens regional marketing messages. CWLEP, WMCA and the Midlands Engine could help replicate that effect by:

- Framing skills and education policies that take account of the interrelation of games, interactive media and the wider ICT sector at a regional level
- Understanding the importance of promoting 'smart specialisation' - truly world class firms in different sub-sectors of interactive media and ICT in different places across the region, all drawing on the market and technological advantages of their shared business 'ecosystem' - and tailoring inward investment marketing and business support priorities accordingly

Supply chain and cluster definition

Dialogue with other established clusters has introduced new perspectives on how they measure the scale of the sector and prioritise interventions and investment within it. This provides a useful balance to the lack of available quantitative evidence for games in UK official statistics and helps us corroborate the use of other sources of data and intelligence.

WIN, in particular, has created a strategic partnership across the supply chain for interactive media. The figure below shows how this might be replicated for Coventry & Warwickshire (and for the wider WMCA and Midlands regions):

This wider view of the cluster sits well with the strategic prioritisation of digital as an 'emerging and enabling' technology' at national and Midlands engine level. Providing companies with a visual representation of the wider sector context also promotes self-awareness – some companies will not have 'seen' businesses in adjacent sectors as part of their potential market, or supply chain. It also provides a useful model to set the wider impacts of games and interactive media in context of a wider industrial strategy.

We can also put this into context in terms of GVA. Our estimate of total output of £186m for the games sector in the West Midlands, of which £150m is in Coventry & Warwickshire, compares to the estimate based on BRES and APS figures only of total GVA for digital (software) industries[22] in CWLEP of £195m, and GVA of £180m for Creative Industries[23]. The games sector would be included in both of those figures, so it is clear that the official statistics are significantly underestimating output – perhaps by as much as 100%. Official estimates for GVA of software industries for the West Midlands region are £786m – which on the same basis suggests that digital and interactive media may be creating as much as £1.5 billion in direct and indirect outputs across the region.

Balanced and supportive fiscal and regulatory policy

SMEs need regulatory and fiscal policies that support developers to invest in both research and development and the release of a product that will become profitable over time. An environment that promotes investment in new intellectual property should also allow time for the successful commercialisation and release of finished projects.

{reinstate the point about WIN tax and health benefits and contrast with Canada's approach]

So, the duration of incentives, and timing of any recoupment of benefits through taxation, is as important as their cash value. It is critical SMEs that are attempting to scale up that they do not end up paying taxes before they earn revenues on the product they are developing.

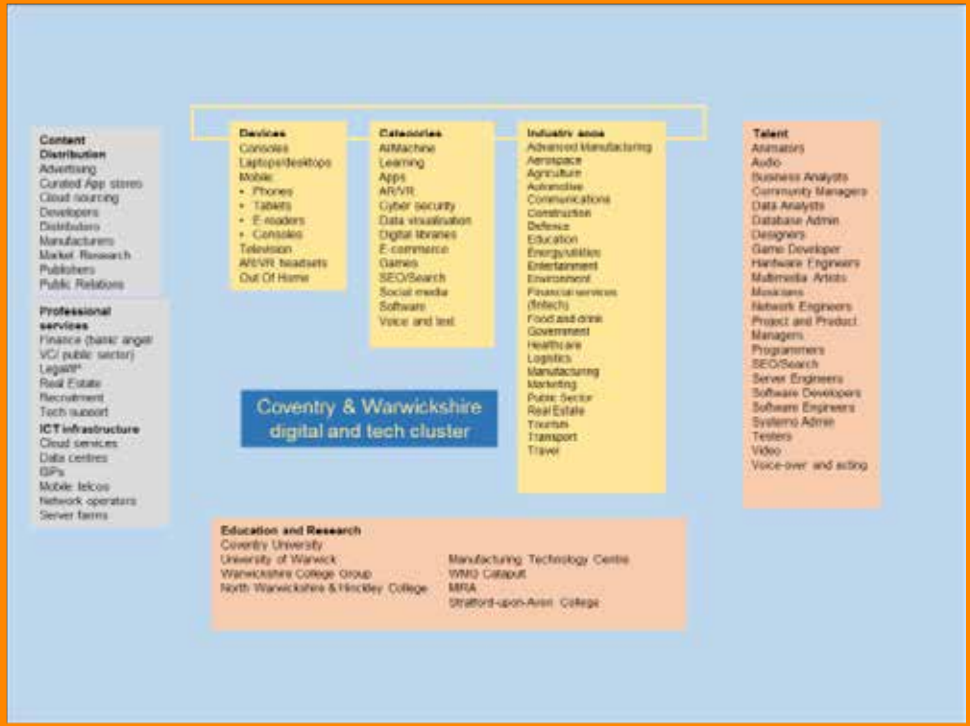


Image: Digital and tech cluster model for Coventry & Warwickshire

22/ Defined by returns from companies in SIC codes: 58210- Publishing of computer games; 58290 - Other software publishing; 62011 - Ready-made interactive leisure and entertainment software development; 62012 - Business and domestic software development; 62020 - Computer consultancy activities; 62090 - Other information technology and computer service activities

23/ Using DCMS definitions of Creative Industries

Stable political and policy environment

Consistent policy is enhanced by stability in the external environment that allows for long term planning – but neither of those factors pertains in the UK, and uncertainties are exacerbated by Brexit and protectionist voices in the US. Concerns about the potential imposition of tariff and non-tariff barriers on UK goods and services are particularly acute in export-led sectors such as this one.

The UK sector cannot simply wait for government policy to evolve –games companies and agencies that support them need to understand the potential to develop strategies to retain access to international talent and to safeguard access to markets.

Opportunities for international cooperation

The case study examples from Finland, US and Malta demonstrate different strengths and approaches that could be adopted by the Leamington cluster. They are also included because they highlight opportunities for international cooperation:

- Oulu Game Lab is collaborating with Birmingham City University to create new Gamer Lab courses and events
- WIN is offering cooperation around developing the eSports market, working with major developers and publishers (Microsoft, Bungie), platforms (Amazon) and with other retail brands
- Malta's strategy threatens to attract inward investment from parties looking for an EU base post-Brexit – but there is also potential for cooperation with UK businesses on the basis strong historical and trading connections – this brings new investment opportunities and continuing access to European markets making the island a unique place for games companies.

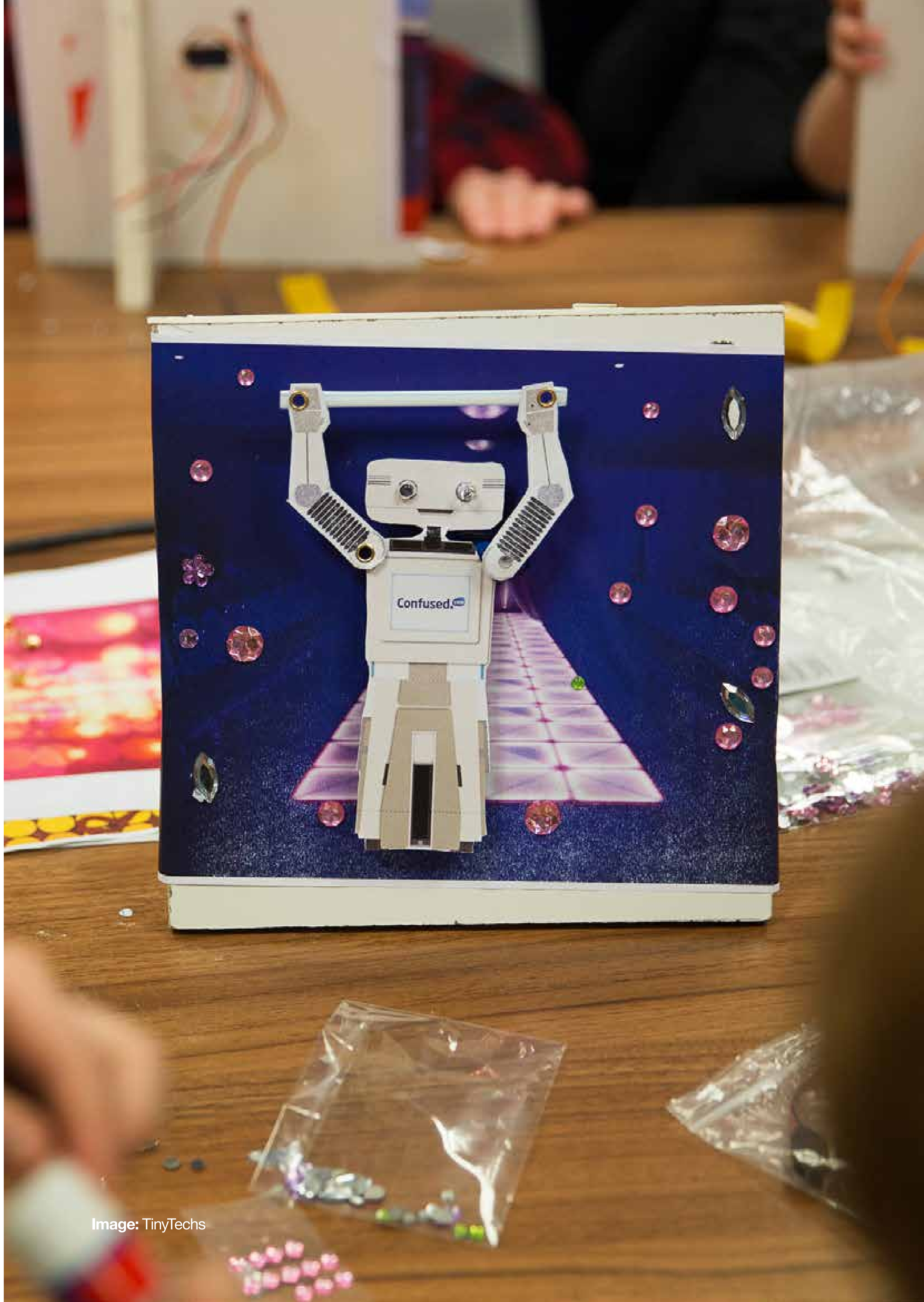


Image: TinyTechs

9 Recommendations

The recommendations of this report build on our research findings and develop CWLEP's renewed commitment in its Strategic Economic Plan to support the growth of the video games cluster.

We believe that these recommendations highlight the best routes, for industry and policy makers, to stimulate investment in talent, games development, physical spaces and digital infrastructure. We propose a distinctive and specialist approach to support and promote the heritage and dynamism of one of the UK's oldest and most celebrated clusters.

The interrelationship between history and culture, quality and technological innovation are the drivers of the dynamism and competitiveness of Silicon Spa. To allow the cluster to 'punch its weight' and act as a driver for regional competitiveness and growth, the factors that drive the international standing and competitiveness of Silicon Spa need to be differentiated from widespread and generalised growth of the creative industries in the region and celebrated as one of the UK's leading digital manufacturing clusters.

Our report comes at a time when Government is looking to refresh its approach to industrial strategy, including for the games industry. The point that we would reflect in any response is that games are structurally different from other creative industries sub-sectors.

Along with other proposals to create a specialist national agency to coordinate public and private investment in UK games developers, the recommendations and actions set out below represent an opportunity to address information failures that have hobbled the investment potential of the sector.

Their aim: to unlock the creative and technical excellence of the games sector to provide a transformational and enabling driver of growth for the Midlands region and its people.

Image: Blizzard Expansion by 2noLogo

i. Specialist games sector support and development of an interactive media and digital manufacturing cluster

The Government's draft 'Modern Industrial Strategy' prioritises creative industries, of which games were explicitly named as an important and export-led sub-sector. It also speaks of the need to create, 'the right institutions to bring together sectors and places.'

The digital and creative sector in the West Midlands lacks both a clear identity and a physical 'hub'. The heritage and talent base of the cluster of games businesses around Leamington Spa represents a rare example of a 'smart specialisation' in UK industry – a combination of structural and human factors that combine to create a sector with distinct characteristics that make it globally competitive out of all relation to its physical size.

All our consultees identified the need for sector-specialist resource – not an overarching creative industries or audio-visual sector initiative. The sector-specific approach of Games London, a joint initiative between Ukie and GLA, has been successful in raising the profile of games with investors. The global reach of the games sector in Silicon Spa makes the case for a bottom-up, sector and place-specific pilot initiative that could deliver a strategy tailored to reflect the distinctive heritage and industry structure of games companies in this part of the world, whilst also serving to pilot approaches that might find expression through a national games agency.

Actions

- Ukie to come together with CWLEP and the West Midlands Combined Authority to create an industry-led resource, based in Leamington, to offer sector specific support to games businesses in the areas of skills, funding, innovation support and infrastructure development.
- Mapping of wider regional cluster and ecosystem for digital manufacturing and interactive media, supported by UKIE and other public sector and educational stakeholders, of the Combined Authority region, to inform inward investment marketing and capacity building.
- To maximise the output of the activity, this local activity should be plugged into and benefit from a wider national strategy to support and grow the games sector. The model being proposed here can also be replicated in other games clusters to provide locally focused support.
- Partners (including Coventry & Warwickshire Growth Hub and Warwick DC) to collocate this sector-specific support with other business support, innovation agencies and marketing teams in a central Leamington location.

ii. Promote the heritage and culture of 'Silicon Spa' as a source of regional competitive advantage

Coventry & Warwickshire needs a differentiated investment focus to distinguish it from other parts of the region. This would emphasise the specialised nature of its case, to prioritise support for the games sector in and around Leamington, over that of a generic case for creative industries across the West Midlands region. Promoting the heritage and culture of 'Silicon Spa' - and identifying games as a key 'digital manufacturing' sector within the Midlands Engine – differentiates the games industry in Coventry & Warwickshire from other UK clusters and sharpens the inward investment marketing messages around it. Being identified with a sector that genuinely represents 'smart specialisation' provides the region's companies with a source of competitive advantage in international markets.

Regional strategy should identify games as a 'beacon' sector for digital manufacturing in the West Midlands: high value, IP-creating, export focused, knowledge intensive, high skill and high growth. Combined with the depth and breadth of the local talent pool, and the quality of life offered in South Warwickshire, this makes a distinctive and differentiated set of marketing messages to attract inward investment, including FDI.

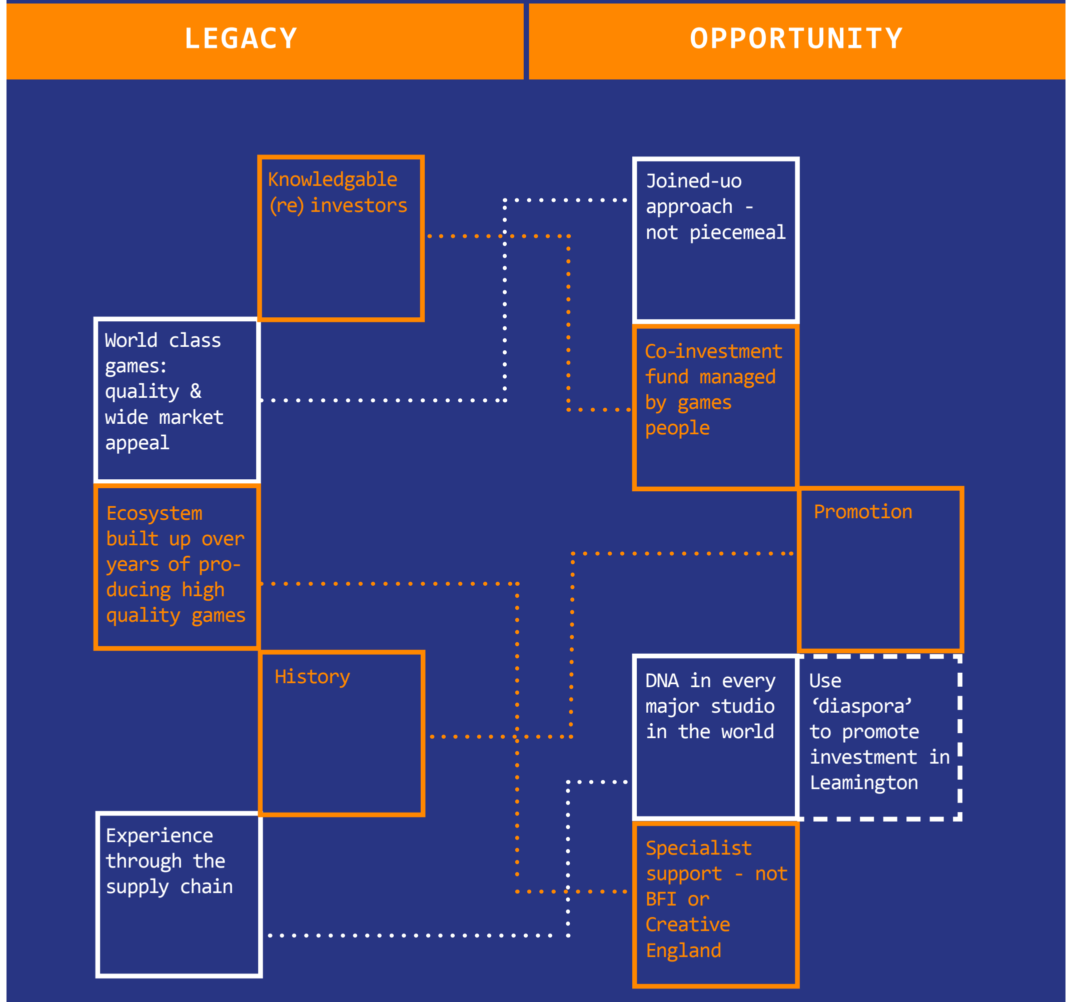


Diagram: Connecting legacy and opportunity for Silicon Spa

ii. Promote the heritage and culture of 'Silicon Spa' as a source of regional competitive advantage *(continued)*

Emphasising the heritage and talent base of Silicon Spa will allow to region to

- Project the inward investment benefits of 'smart specialisation' as a driver of regional economic advantage, making a clear business case that you can't sell four or five sites across the UK, let alone within the Midlands.
- Highlight the pivotal role of games companies in development of 'emerging and enabling' digital technologies (including UI, UX, AI, AR, VR) generating spillovers to innovation a globally competitive 'digital manufacturing' environment that includes other high value sectors, such as automotive.

Action

Ukie and CWLEP to establish the prioritisation of inward investment promotion of Leamington within WMCA and the Midlands Engine and with DIT as an international games hub capable of unlocking international market opportunities, with the objective of generating:

- New FDI
- Expansion projects
- Scale up
- Relocation
- Start up

iii. Talent and skills

Shortages in experienced talent are mitigated by the exchange of talent within the Leamington cluster; but they also emphasise the need for continuing professional development and access to a pool of experienced talent.

This is something that games employers already do well - research shows that 80% of UK studios are investing in training and, extraordinarily, the average studio provides 14 days of training to a member of staff - double the average of other industries. But they could benefit from more help.

In addition to its commercial potential, eSports offers an alternative route into the games industry, with lower barriers to entry

"eSports are inherently social and can engage young people with technology and team based, strategic thinking - opening opportunities for young people to discover careers in eSports, the games sector and wider digital creative professions." [23]

DSH has launched the UK's first inter-school eSports competition, which will see over 400 secondary and sixth form students from Digital Schoolhouses across the country competing in teams to become the winner of the first ever DSH eSports tournament.

Warwickshire County Council supports the DSH scheme in principle and is working towards finding a way of developing the idea in Warwickshire schools.

Action - developing employer-led provision

Ukie and Creative Skillset to work with Universities and Colleges across the region to:

- Establish models of employer-led provision for CPD in areas of critical skills shortages and gaps and roll out examples of knowledge and practice (eg, BCU Gamer Camp) which lack capacity to meet demand.
- Consult on curriculum of undergraduate and Masters courses to assess best 'fit' with employer needs and deliver a complementary range of subjects.
- Establish frameworks of higher level apprenticeships and group training schemes to allow early-stage and microbusinesses to benefit from this level of funded provision and, building upon initiatives in secondary education around digital skills and careers advice (see below) provide more diverse routs to entry to the industry**Digital Schoolhouse eSports tournament.**

24/ Ukie (2016). Growing the UK as an esports hub

iii. Talent and skills *(continued)*

Games as education

Not just games companies, but all software-based and digital manufacturing businesses, need to address their talent pipeline and encourage development of skills for digital manufacturing and knowledge economy roles from school age onwards.

Initiatives like Digital Schoolhouse (DSH) use games to inspire pupils to take up programming and computational thinking.

Games in schools

Back in 2011 games industry leader Ian Livingstone and Nesta undertook research on the skills gap for the games industry called the Next Gen report. This report helped put computer science back into the school curriculum and launched the Next Gen Academy. Since publication of the report, several local and national programmes have been started such as Digital Schoolhouse, Young Rewired State, Coder Dojo and Code Academy. The key to all these activities was engagement with industry.

Action - Digital Schoolhouse

The Digital Schoolhouse (DSH - http://www.digitalschoolhouse.org.uk/) is an initiative, backed by Sony, that aims to teach school age pupils about coding through the medium of games. It 'teaches' essential skills for games, and ones that are transferable into all other software and digital manufacturing sectors:

- Algorithms and programming
- Communication and the Internet
- Data representation
- Hardware and processing
- Digital literacy and e-safety

RECOMMENDATIONS

iv. Funding

Ukie to use specialist support role in Leamington as a platform to pilot measures to reduce the information asymmetries between games companies and investors and promote investment in new prototypes and product development

Fiscal interventions by the UK Government – such as Video Games Tax Relief and SEIS/EIS incentives – have helped some companies. But It is important for all businesses within the cluster to be able to access large investments, as well as smaller seed funds.

Actions

The sector specialist post identified above would:

- Work with CWLEP, ME and Innovate UK to establish a co-investment fund to translate the success of the Games Finance Market established through Games London into a year-round programme, based in Ukie's Leamington hub, with an annual target to deliver '60 companies looking for investment meeting 60 investors and funders.'
- Build a network of experienced investor mentors to help companies to recognise the different levels of profitability for IP over the hardware development cycle as well as overall revenue trends for different genres or platforms.
- Introduce games investors to local angel groups to provide co-investors with more detailed knowledge of the sector.
- Promote increased coordination with trusts and foundations, eg Wellcome (which offers grants at £10k/£40k/£300k thresholds) and Nominet, to identify funding for games and applications of games technology based on their social impacts and innovation outputs.
- Lobby publishers and investors to take a more imaginative approach to early-stage games development where the likelihood of success in small and focus on business model is key: only a small percentage of games released today reach break-even. We recommend that consideration be given to establishing a Leamington-based 'Script Factory' shared development environment and pooled/co- investment fund for breaking down R&D into a series of £10-15k 'sprints' to promote and accelerate the development of new IPs by increasing their visibility and reducing the risk to any individual investor.

In addition, Ukie will enlist the support of the LEP and Combined Authority in its efforts to:

- Continue to lobby to ensure that the UK offers best tax environment and digital marketplace to do business worldwide.
- Ensure Video Games Tax Relief is 'ringfenced' from threats of Brexit .
- Ensure that SEIS/EIS reform reflects the needs and priorities of games companies and investors.

v. Promote games-as-culture and celebrate cutting-edge UK innovation

The links between the heritage of the Leamington cluster and its role in the future development of the industry present an opportunity to reconcile inward investment promotion, visitor economy and, through the links between eSports and education detailed in the Digital Schoolhouse programme, developing a talent pipeline for games.

Action – Establish a cultural programme for the games sector

Warwick DC to consider feasibility of a new installation that brings culture and technology together in promoting tourism and the heritage of the Leamington cluster. Consider the value of creating a regular programme of formats that have been successfully run before – such as Backspace and Open Studio. Link this programme to other sectors: collaborations over virtual reality experiences such as Fish in a Bottle working with local dance company Motion House and the Royal Shakespeare Company's Winter 2016 production of The Tempest, the first use of performance capture technology (developed in games) to render an digital avatar of Ariel the sprite live on the Royal Shakespeare Theatre stage, represent an exciting and distinctive offer for the region.

Action – identify Coventry & Warwickshire as an eSports hub

Exponential growth of eSports presents an opportunity to partner locally, with NEC, and internationally, with WIN, in the development of an eSports studio to highlight output of the Silicon Spa cluster - CWLEP to meet with NEC Group to explore ideas, including around an international eSports competition to be held at NEC.

vi. Innovation

Create a multi-site 'sandpit' for R&D in games technologies

The area has an opportunity to build a world class innovation environment for games built on the heritage and legacy of the Leamington cluster. Past successes, such as SGI, serve to provide confidence that the region's institution have both the foresight, technical and industry knowledge to accurately evaluation opportunities in digital technology and the production and management skills to successfully carry them off.

University of Warwick has been a driver of innovation in other fields, and is willing to participate more widely in a regional innovation system for games; Coventry University's excellence in interdisciplinary research in other fields that combine art and technology, such as its world-class auto design studio, provide a methodology for engaging with industry and other institutions to develop a shared platform for development. The creation of the 'virtual' West Midlands combined university brings the added capacity of the universities of Staffordshire, which offers more specialist games degrees that any other HEI in England, and Wolverhampton. Within the West Midlands region, BCU has already demonstrated its commitment to engage with the games sector through its tailoring of curriculum and skills offers to meet industry needs.

The dynamism and export-led nature of the cluster, along with a reasonable expectation of sustained high levels of FDI, provide a range of incentives for games companies, investors and the public sector to invest in R&D.

The intention is to create a number of hub sites for knowledge exchange and processes of business incubation rather than new physical incubators or co-working spaces. Prototyping facilities should be accessible at any one of the partner HEIs, or other organisations, depending on the specific technical requirements of the project. There is national /international precedent for this in projects including:

- London College of Fashion's Fashion Innovation Agency (http://www.fashion-enterprise.com/agency/)
- Copenhagen Institute of Interaction Design (http://ciid.dk/education/industry-projects/)
- Tekes (www.tekes.fi)

As with many of the other recommendations, the proposed specialist Ukie resource will be invaluable in addressing effective coordination of and disseminating information about opportunities for knowledge exchange to businesses in a timely fashion and in an appropriate form.

vii. Physical infrastructure

A review of the physical environment for workspace, business incubation and inward investment suggested that greater coordination is needed to present the opportunities to businesses and investors in a way that is 'more than the sum of its parts'.

- The distributed and polycentric nature of the cluster is good in offering a range of environments for company founders and managers of existing businesses, but less helpful in coordination of marketing messages.
- Efforts around creating start up space to date have been good, and evidence of demand provides a rationale for further investment in incubator and grow-on space.
- University of Warwick Innovation Centre, SGI, CUE and Warwickshire College all offer capacity for new start-up businesses.

Developers and investors were keen to identify larger floorplates that would allow companies to scale quickly and build development teams.

Action - Ensure a pipeline of games-ready business premises

- Map supply of business premises across CWLEP to present a wider range of building typologies for investors in urban, business park and 'out of town' settings.
- Identify any gaps in provision - and promote those opportunities to landlords and developers with existing workspace or planning permission for new commercial premises.
- Look at using existing capacity in Coventry and Warwickshire, and other new developments in Coventry (eg Friargate, Far Gosford Street) with the potential to offer bigger floorplates, (a) to attract inward investors and (b) to provide space for companies to rapidly scale up development teams for large new projects.
- Provide a 'toolkit' for local authority planning departments to help them address demand and resist threats that may lead to loss of industrial space (eg. pressure from housing).

Action – Create a physical hub for the games industry in Leamington

Carry out feasibility study to establish required space, business case and capital funding for a central hub in Leamington that collocates sector specialist support for games businesses, including:

- Specialist investment support, including access to finance manager(s).
- Other business and inward investment support services from District, County and LEP.
- Single point of access to skills support from multiple HE, FE and private providers.
- Brokerage for innovation and knowledge exchange, including a point of entry to the regional innovation 'sandbox' – offering project and meeting space, access to knowledge exchange and R&D support from HEIs across the region, rather than shared workspace.

The hub will also celebrate the culture of games and Leamington's heritage as a cluster, offering:

- Space for businesses, the local community and visitors to celebrate the cultural aspect of games and digital creativity through the heritage of the Leamington games cluster.
- A venue for eSports events and 'games in education' initiatives.

This could be furnished either by a new build or conversion of an existing building.

viii. Digital infrastructure

Coventry & Warwickshire is in the bottom 10% of LEPs in terms of access to ultrafast broadband. In order to meet the current and future needs of games companies and the wider digital manufacturing sector across the region, the LEP and the Combined Authority needs to come together with ISPs and other investors to address not just broadband, but provision of digital exchanges, data centres and to offer future proof capacity for developing 5G networks.

Actions

Look at options to ensure 100% access to ultrafast broadband for digital manufacturing SMEs, including:

- Survey of SME access to ultrafast business broadband.
- Supplier engagement and infrastructure sharing.
- Possible demand-side intervention to complement Phase 3 investment in National Broadband Scheme and address SME connectivity as a priority.

Opportunities to invest arise from:

- Clawback (of existing National Broadband Scheme underspend).
- Reinvestment of 'gain share' (return of public investment from higher take up of publicly funded broadband in Phase 1 of NBS).
- New investment.

BOP
Consulting

February, 2017