Serious Games: A ‘State of the Market’ Review

Produced by Coventry University Enterprises for Digital Central, and supported by nmp

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Overview

This report was commissioned by Digital Central to analysis the Serious Games industry and to provide an understanding of what has been achieved in the industry to date, as well as a look at the future, with the following objectives:

- Identification of the key growth areas with regard to Serious Games
- Analysis and overview of the West Midlands with regard to Serious Games, focusing upon current developers, commissioners, intermediaries and growth sectors.
- A detailed investigation of the both the Skills and Infrastructure required to establish a Serious Games Industry
- Identification of key opportunities for Serious Game development in the West Midlands
- Identification of both Skills and Infrastructure gaps in the West Midlands with regard to the Serious Games Industry – along with recommendations to fill such gaps in provision.
- Establishment of serious games market forecast for the West Midlands incorporating jobs created, export opportunities, market value etc.
- Identification of serious games industry support infrastructures in the West Midlands
- Investigation of potential partnerships between the West Midlands and UK regions/ Serious Games champions.
- Identification of key performance indicators to drive industry development.

The report consists of results from both a survey and interviews conducted with over fifty organisations operating in the Serious Games industry, including developers, commissioners and trade bodies. nmp (having acquired a GBL consultancy is very interested and will become core to the industry in the UK, and globally) also contributed to this report with previous and recent research carried out.

The objective of Coventry University's survey was to provide a snapshot of the industry using a varied sample of developers from around the world. It will show the similarities amongst companies in the industry as well as some indication of the short-to-medium term outlook.

The interviews were conducted with a collection of contacts from large corporate commissioners, game developer groups and government agencies to gauge the interest and outlook amongst the wider audience in the industry.

nmp provided research, carried out previously, and more recently, which covers market adoption and trends, and also some of the main competitor's in the space in terms of developing platforms to create e-learning/GBL applications.

Contents

Defining the Serious Games market

What are Serious Games?

Serious Games are computer and video games that are intended to not only entertain users, but have additional purposes. There are a number of other terms are used to describe this type of activity, from games-based learning, to edutainment, to elearning. Although for the purposes of this report, it is also important to differentiate e-learning from serious games. If you take the most basic definition, e-learning is learning based on any electronic format. This would mean that serious games is merely a type of e-learning. The reality is that typically e-learning content is based on learning manuals, texts and course work. Whereas, the main point that differentiates the two is the embedded form of learning in a game versus the explicit objective of an e-learning product.

Charles Jennings, Head of Global Learning at Reuters says,

"…in Reuters one of the thing's we've done is this move away from big e-learning programmes many of which were simply replicating classroom events on a screen and quite often not doing the same things that can be done in a workshop or a classroom as well."

When asked to look beyond 2006, what trends he thought would take hold, Jennings believes, "the use of gaming, which is an area of interest, but is still in the early stages," "will become more important, certainly something we want to focus on in 2006/2007."

Jennings also stated some facts around 'digital natives' (predominantly those under the age of 35, as described by Marc Prensky, GBL guru). These facts included that not just boys, but girls are spending somewhere upwards of around 5 hours a week playing games on digital devices, and as these children are the future of our workforce, there has to be other methods used in order to help them learn their organisational needs, using tools and approaches they have grown up with.

An interesting article appeared in the New York Times in September 2006 investigated gaming and how benefits can be drawn through games into learning and training. One man in his mid 30's was interviewed as he spends over 30 hours per week playing games. His reaction was that this is the normal length of time for a person to watch TV, and he doesn't watch TV, he would rather be the creator and immersed in his own entertainment than be passive to it. This is an excellent example of the way in which our minds are evolving, but it seems to have started much before it was even realised.

Another definition of '*serious gaming'* offered by Zyda [2005] defines a serious game as, "a mental contest, played with a computer in accordance with specific rules, that uses entertainment to further government or corporate training, education, health, public policy, and strategic communication objectives."

'Simulations' is another term under the umbrella of Serious Games. Simulations are representations of real or hypothetical processes, mechanisms or systems. Simulation-based learning, which often mimics real situations, has been used in areas such as sales, contact centres, interviewing skills and project management. It has also has been used extensively in fields such as health and military where the benefit can be that lives are saved due to the results of such training. The aspects of winning or losing, randomness of potential situations and embedded prizes are some of the differentiation points between games and pure simulations.

Why Computer Gaming?

In the US, the use of serious games has been evident for over ten years, but has grown significantly over the last few. One main contributing factor to this increase has been the financing of large scale projects for the military. These projects have been highlighted at the Serious Games Summit, the industry's largest event, hosted by game group CMP. In addition, research has been commissioned by a number of bodies, including a recent piece produced by Gartner Research.

"Games can transform learning into a more-engaging and dynamic process, enhancing people's work performance and driving business results. When students learn by experience, their understanding and retention are higher." (Gartner research, 2006)

Cisco also recently commissioned a study to assess the success of games-based learning, and found that games were the best medium for delivering complex information because they created better engagement and retention. Nader Nanjiani, marketing programmes manager at Cisco's Creative Learning Studio, who developed the game, said:

"Games are the ideal way to introduce people to new topics and ideas,"

Learner Perceptions

The general feeling in the industry is that games will form a big part of learning in the future, it is only a question of when.

Through discussions with a sample number of typical learners (between 27 and 45) within blue chip organisations, the reactions gained from current training, and switching to a more immersed application such as gaming is highlighted below (anonymous due to confidentiality)

“If we didn’t listen all those years ago in school when we were ‘talked at’, there is no chance we are listening now. A 100 slide power point presentation does not involve us and is boring”

“We know we have to do our e-learning courses, but they are so dull we just log on and never complete it, not even start it!”

“We can’t relate our training back to our real jobs and the real world!”

From these quotes it is obvious that training and learning is not an enjoyable, nor relevant experience for those coming through our workforce today. If this is the general feeling currently, the changes have to be made to change these perceptions and feeling not only for the current workforce, but for the future workforce.

Kevin Corti MD of Pixelearning: *“GBL has the potential to significantly improve training and education activities and initiatives. You only have to observe an ‘average gamer’ at play to see that the computer & videogame industry has more or less mastered the art of using computer technology to not only captivate it’s audience but to also persuade it to spend approximately £10bn a year to use it. “*

Market Inception and Growth

The first industry sectors to embrace Serious Games have largely been in the public sector; Military, Education and Public Services/Policy. The military applications have around since the late nineties. One of the first applications was Marine Doom. This was a modification (mod) of a commercial-off-the-shelf (COTS) game known as Doom, a first-person shooter game. It was originally designed to teach teamwork, coordination and decision-making for frontline combat troops.

The biggest project to date has been the commissioning of America's Army, a custom-built first-person shooter game. Created by the MOVES institute at the Naval Postgraduate School, America's Army – Operations version is an Army Recruiting game, which includes basic training and an Army career game "soldiers." The game was launched in June, 2002. There are currently over 7.6 million registered users, with over 4.2 million having completed basic training, and over 2 million missions played per day. During the last four years, there have been over another 20 versions released.

In education, the first adopters were in the primary and secondary levels (K-12), where COTS games are still being used in many instances. The main subject areas covered have been; history, maths, science and language. In a recent study produced by NESTA Futurelab, they looked at how COTS games have been used to help children learn. "What was clear from the study was that a number of factors were significant in influencing the process by which games can be appropriated for use in schools. These included:

- the technical infrastructure of the school (including personnel and facilities)

- institutional and professional factors (including the organisation of time and space in the school, cultures of collaboration/knowledge sharing, traditions of 'best practice' in lesson planning, and classroom rituals)

• the extent to which games can be ‘disaggregated’ and appropriated to meet specific needs

• the individual teachers’ personal experience of games play, and their personal and professional identities as teachers

• the pervading cultural expectations of children’s attitudes to and expertise in playing computer games.

While games may have potential to support learning and while many teachers and pupils expressed enthusiasm in using games in lessons, it is clear that these factors need to be taken into account by teachers, and ideally by school leaders and games developers, before their potential can be fully realised.

The development of Serious Games in education is and will continue to be affected by similar factors as to those raised in Futurelab’s study, but the positive aspects of using custom games, as opposed to COTS is the pedological factors that can be built in along with the assessment tools.

The real question that still remains is when, not if, Serious Games will move into the mainstream. According to Prensky,

“The reason this will happen, and happen soon, is that learners will demand it, to the point that management, teachers and administrators can no longer resist. The workers of the games generations will no longer accept, attend, or do training that is boring. So we will have to, as businesses, schools and the military are already beginning to do in places, inject fun and games into training.”

Market Opportunity

In a study carried out by nmp, various sectors were identified as being the early adopters of Serious Games for training and educating, as well as defined areas of training and educating where Serious Games could be applied. These are as follows.

Within the healthcare sector, management training, CPD and IT skills were identified as areas for which latent demand existed for Serious Games – this assertion is further supported by the scheduling of specific Serious Games for healthcare conferences taking place in the USA and by evidence from the interviews that some healthcare trusts in the UK are already beginning to organise to procure Serious Games applications.

Demand was seen to be developing too for health and safety and patient information within the healthcare sector with initial professional training and hard skills training offering some market potential further at a later stage in the market development.

Within the education sector, latent demand was identified for distance learning in HE, for professional development programmes, for Graduate Teacher Programmes of Initial Teacher Training and for non-curriculum soft skills training within schools in areas such as careers advice and citizenship.

Developing demand from the education sector was identified within special education teaching, general teacher training and for IT skills training of students. The opportunity for widespread adoption of Serious Games within schools was limited by lack of access to PCs and due to the fact that in some cases teachers did not accept Serious Games as a valid or tested method of teaching, despite a body of academic research which demonstrates the effectiveness of Serious

Games methods. Within mainstream higher education Serious Games will face some challenges in dislodging traditional teaching and assessment methods.

Within the corporate sector, the initial areas for which Serious Games is expected to be applied include leadership, management and sales & marketing training. There is a specific requirement within call centres that is stimulated by a reliance on complex systems, i.e. a need to regulate quality within an industry that faces high turnover of staff.

Areas for which demand for Serious Games is likely to develop for the corporate segment include health and safety training, basic and application specific IT skills, professional skills training and crisis management. The corporate segment is less sensitive to notions of pedagogic validity than the formal education sector and organisations within this segment will be more inclined to move to a full switch-over to Serious Games over time.

Other areas of specific interest for Serious Games are in the provision of public information (including e-government), for informal learning in public places (museums, galleries, public libraries) and for mass market informal learning (including language learning and educational children's games).

Serious Games are identified as a next generation version of e-learning. The organisations involved in the research were at different stages of integrating e-learning into their training, teaching and learning strategies. At the time of interviewing none of the participating organisations had reached the stage where they had adopted an integrated Serious Games strategy.

2 The Industry

Industry players globally

In the US, the use of serious games has been evident for over ten years, but has grown significantly over the last few. One main contributing factor to this increase has been the financing of large scale projects for the military. These projects have been highlighted at the Serious Games Summit, the industry's largest event, hosted by game group CMP. In addition, research has been commissioned by a number of universities in the US, Canada, Sweden, Finland, New Zealand, Denmark and the UK, as well as a recent piece produced by Gartner Research.

The last two years has seen the formation of a growing list of interested parties including both public and private organisations, that have created forums and websites devoted to the cause of furthering the Serious Games movement:

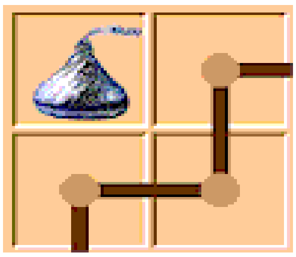
Social Impact Games – This website hosts the largest index of serious games and has been compiled by Marc Prensky, author of Digital Games-Based Learning (McGraw-Hill, 2001). He sights over 200 games along with a brief description, of which below a list of some of the better known organisations he mentions, along with a screenshot and brief description:

- **United Nations** – World Hunger: Food Force – A game about world hunger from the United Nations World Food programme, designed to educate young people about world hunger and the work of the agency.

- **Siemens** – Spinopolis:A Downtown Challenge – An advergame created by YaYa.

- **US Army** – America's Army – Recruitment and training games

- **Hershey** – An advergame to promote Hershey's products.



- **Lego** - Lego and Bionicle Games: A number of online games to support the brand and the sales of physical toys.

- **BT** – Better Business Game **-** A business simulation game from British Telecom about managing social and environmental issues in a business.

- **Chrysler** **-** Dodge Midnight Racers **-** Advergame produced by YaYa.

- **Telefonica** – A game developed for customers providing a multi-player experience on how their broadband products can be best utilised.

- **MIT** – American History:Revolution – A game to teach history developed by MIT

Organisations Supporting Serious Games

One of the key industry organisations is the Serious Games Initiative. It was the first organisation focusing on the serious games industry with its charter to, "help forge productive links between the electronic game industry and projects involving the use of games in education, training, health, and public policy." It was founded at the Woodrow Wilson Center for International Scholars in Washington, D.C. It's Directors are David Rejeski and Ben Sawyer, two leading authorities in the Serious Games Industry. The majority of their work has been focused on the developer community, in particular their partnership with CMP, who manage the Serious Games Summit events on the back of the Games Developers' Conferences around the world.

Serious Games Canada - Serious Games Canada concerns itself with the use of Computer/Video games for non-entertainment purposes. This would normally include, but is not limited to:

- Education (K-12, post-secondary)
- Training (corporate, military, sports)
- Health (overlap with above, plus clinical games)
- Advertising (product placement, general message games)
- Communications (E.G. religious, political messages)
- Social & Cultural (E.G. language and culture preservation)
- Assistance with Impairments (working with hearing, vision deficits)
- Disadvantaged groups (assistance for poorer countries, underrepresented societal groups)

Serious Games Interactive - Serious Games Interactive, located in Copenhagen, is a company started by, "people convinced that the next generation of computer games will throw the shackles of mindless entertainment. Computer games are ripe with educational potential that until now have been mocked by tedious edutainment." The core idea behind the company is close collaboration between game developers, subject experts, and educational game researchers to produce game titles based on an existing strong game engine.

Water Cooler Games – Described as, “a forum for the uses of videogames in advertising, politics, education, and other everyday activities, outside the sphere of entertainment. This includes new genres such as advergaming, newsgaming, political games, simulations and edutainment.” The website is edited by Ian Bogost and Gonzalo Frasca, both are researchers and designers of videogames with an agenda.

Lyon Game – Hosts of Serious Games Summit Europe with partners CMP.

Serious Games Japan – A spin-off of the SG Initiative run by Toru Fujimoto, who believes, “the big difference of serious games business between the US and Japan is that the huge game companies are willing to be the major players in Japan, which is unlikely in the US companies. Companies like Nintendo, Namco, Sega, Konami, and Square Enix are already the players in the serious games market in some sort.”

One major factor of the types of games being produced in the market is the type of organisation developing them. There are predominately three types of companies producing games:

- Game development companies that have diversified into the learning and development space
- Interactive media agencies that have been given briefs for and advergame, PR tool or internal communication piece
- E-learning companies that have developed more engaging applications of their original training content.

Jim Piggot, CEO of Team Play Learning Dynamics (TPLD) of Dundee, Scotland, has recently formed a partnership with Definitive Solutions Company (DSC) of Cincinnati, Ohio, an industry leader in corporate training solutions in the US to both develop and distribute their games to it considerable client base.

"This partnership will help both organisations become a leading player in the Serious Games market, utilising TPLD's serious games knowledge with DSC's extensive distribution channels."

Another recently created initiative created to support Serious Games is ANGILS. This is a combination of developers in industry, and representatives from companies and organisations interested in Serious Games. Its aim is to bring the developers and the market place closer together. But it requires a joining fee, which, in the majority of cases, is an issue for the majority of Serious Games developers, especially developers entering the market currently.

Industry forecasts

The potential market, according to research carried out by ITI Techmedia is believed to grow to approximately $700m by 2010. Currently, the elearning market is in excess of $80b worldwide.

"Enterprises should leverage the scalability and immersion characteristics of games to accelerate the time to competency and depth of competency. By 2011, gaming will emerge as a critical component in a majority of corporate learning solutions." (Gartner, March 2006)

The ETC (May 2006) stated that *"While the commercial future of serious games is uncertain, some see the sector growing rapidly as companies use the games to train their employees. We are seeing more companies come to market that do training through gaming environments,"* said Van Baker, an analyst with Gartner Inc. *"The big asset about games is it's so engaging and immersive. If you can take that experience to a learning environment, that's nothing but goodness."*

Annually, U.S. companies spend an estimated $60 billion on employee training, a portion of which could be shifted to video games. Ben Sawyer said government and nonprofit groups fund a large majority of serious games to the tune of about $50 million annually. He said that number could jump to $1 billion when companies start including video games in their training budgets."

At $300 million annually, simulation training makes up just 3% of the $10.3 billion US e-learning market. But by 2011, Brandon-Hall (2003) predicts that the US market for e-learning simulations will be $37 billion and account for 17% of e-learning spending.

Many in the industry believe that all of the current and growing interest is only making the expectations too high, but others believe it may help fuel more games being developed, *"Hype is a double-edged sword. On the one hand it exaggerates the relevance and power of serious games but on the other it provides us with a unique opportunity to reach a larger audience and prove that games can help people to grow in an alternative, more engaging way."* (Gonzalo Frasca, 2006)

John Purdy, CEO of Red Knight's, a start-up serious games company from Texas believes that the industry is due to grow considerably in the short and medium-term. Prior to setting up Red Knight, he was project manager for InSite Interactive, who produced the widely-publicised training games for Cisco. He says,

"The corporate market is ripe, it's just a matter of educating them of the benefits. I was so convinced, I set up my own serious games company."

At the recent Serious Games Summit in Washington DC, there were a number of presentations on the future of the industry. Many believe there are still several factors unclear as to when the industry will mature, but few disagree with respect to its potential. Howard Phillips of Microsoft laid out a number of factors, including more corporate case studies, interoperability of platforms and more concentration on ROI than look-and-feel of the games. Jerry Bush, of Cisco gave a strong case for concentrating on the demographics. With the games they produced, the audience was clearly defined as 18-35 yr old males. This was one reason the company chose a game as opposed to their traditional e-learning approach.

3 West Midlands Overview

Serious Games Potential

With a number of successful and high-profile games developers, the region has gained worldwide recognition within the leisure games market and is fast becoming known for its Serious Games development, particularly within the education sector.

The region recently hosted the International Serious Games Event, attended by organisations from around the world that included speakers from both public and private organisations that have benefited from the use of serious games, such as BP, Microsoft, NCR, Telefonica and Nokia.

Below are some examples of the various types of companies that are based here in the region working on serious games:

Aqua-Pacific – Listed as one of the top 100 games companies, Aqua-Pacific have built on that success in the serious games market. They recently have launched a best-selling golf-based game and have a number of educational products.

Cyberjenn – An interactive media agency, they define themselves as, “Exponents of innovative, corporate and educational creative solutions in audio, visual and interactive multimedia, CFK, virtual simulation and serious games.” They have worked in the tourism sector and, most recently won a contract to produce a game for the London Transport Museum.

Digital Native Academy – Previously known as the Learn Play Academy, their work has centred on the social services sector. Using both COTS and bespoke games, they have supported youth support groups, schools and businesses by harnessing the power of games to engage users with the objective being to learn.

Pixelearning - PIXEL is a games-based learning company which specialises in applying computer game/simulation approaches to business education, vocational and management skills development. They leverage proprietary technology, a well defined development methodology and significant experience to deliver highly effective learning solutions quickly and cost-effectively. They provide off-the-shelf and bespoke games, as well as an authoring tool entitled Learning Beans. There work has been predominately in education and corporate training.

TruSim - TruSim is the serious games division of Blitz Games, one of the world's largest independent developers of video games for entertainment consoles and the PC. It was founded with the aim of applying the company's leading edge technology and skills to produce engaging, innovative and validated training simulations and visualisation tools for the government, military, healthcare, corporate, first response and education markets. The majority of their work to date has been in the military and health sectors.

The Future of the West Midlands

The future for the West Midlands over the next 5-10 years in the area of serious games will, undoubtedly be linked to the overall growth of the industry, but due to the variety of companies already working in the space in the region, they will most likely be some ways ahead of the rest of the market.

With support from national, regional and local government, the West Midlands is fast becoming a centre of excellence for the development of serious games. With the emphasis on emerging technologies, along with the inherent need to diversify the region's workforce, serious games can play a large part of the continued growth of the region.

Several universities in the West Midlands have been active in the serious games sector; Warwick (Serious Games Microcluster project), Wolverhampton (Simulation and Modelling Conference), Birmingham (Human Factors and AI team) and Coventry (Diversify the Games project, International Serious Games Event and the recently announced Serious Games Institute). This variety of work within such a new area will set out the stall for the region to become internationally renowned for its work on serious games.

4 Conclusion

To conclude this report, it is obvious that there is a growing market for Serious Games and a lot of potential over the next 5 years. It is important though, that definitions of Serious Games are separate from those of e-learning, as the two are very different methods of learning.

With the increase in hours played users of games each week (male and female), and with the PC and games becoming the new form of entertainment – immersive, engaging and involving the participant, it is obvious that game should seriously be considered as a method to embed learning.

With the start of the Serious Games market over 10 years ago, in the US, and starting off within Military and Health (dangerous and life threatening situations) games are now being considered as a learning solution for more areas. These areas are, for example, introducing people to new topics and ideas, and allowing the learning and training to relate to life, and not just by text and talk. As Marc Prensky said, learners will start to demand it!

The opportunity for Serious Games lies initially in a few sectors such as healthcare, education, corporate and informal learning, as identified by nmp. Serious Games are already being recognised as the next generation of e-learning, being described as 'nothing but goodness!' from Gartner (March 2006). From the reactions of the typical user group, the time is now to be harnessing these new methods, if not, learning and training will be an effort gone to waste.

The market worth of Serious Games is predicted to be $700 million by 2010 while e-learning currently is worth $80 billion worldwide (ITI Techmedia). By 2011, Gartner highlighted that gaming will be a 'critical component' of corporate learning solutions. And there are many other figures extimated for the worth of the Serious Games market, but overall, it is clear that the market, and interest, is rising speedily – to remain competitive in today's market place, training is at the forefront of capability in a workforce today, if the training is effective, a company or organisation will achieve the overall goal of success. People are what make a company.

It is also clear from this report that there are now a number of companies operating in the space of Serious Games, and a number of organisations and websites set up to support the companies and the industry as a whole. The West Midlands is now becoming a central point, or ‘hub’ of serious games, with a number of companies starting in the area, and Universities carrying out research to support work in the area. Now all that remains is to match the skills of the developers with the issue and needs in industry – the market is ripe, now all that remains is to educate!

Follow Up

It was clear from the research carried out that a further more in depth study would be required in order to create a landscape of the companies developing Serious Games in the UK. This landscape should include the companies, what technologies they are using, which industries they focus on and only want to focus on, current and past clients, ‘dream’ client lists, products they have developed and for what purpose, companies who have used these products, and what the companies aspirations are for the next 5 years.

This in depth research would involve primary and secondary research but would lay out the plan of the UK market and what has not been covered to allow new companies coming through, the chance to fill the gaps in the landscape.

This research is a necessary solution in order to help companies become more commercial and find the ‘perfect’ clients to match the client issue to the developer skill set. The writers of this research will be identifying ways in which such research could be carried out.

Background on commissioning body

Digital Central is a new project that will be the key delivery project for Advantage West Midlands' Screen, Image and Sound Business Cluster. From November 2005 until March 2008 this project will develop an enterprise culture for cluster businesses that will help accelerate economic growth and increase employment through the promotion of innovative new ideas, the development of new market opportunities and the nurturing of a new generation of cluster entrepreneurs.

The project represents a major collaboration between the regional development agency, the private sector and higher education. It aims to be a driver for growth through the delivery of research, knowledge and innovation for an already growing sector.

Digital Central is a consortium project led by the University of Central England (UCE) with a mix of private and public sector partners. We are hosted by UCE at its Screen Media Lab premises in the Eastside regeneration area of Birmingham. The project consortium comprises: UCE Birmingham (Technology Innovation Centre and Screen Media Lab), Screen West Midlands (the regional Screen Agency), Coventry University, Keele University,Contact Knowledge Exchange, Maverick Television, Hi8us Midlands and Channel 4 Ideas Factory West Midlands.

Digital Central is tasked with delivering against all of the cluster's key strategic themes and to do so we are organising activity into three strands; networking, showcasing and innovation. We will have a particular focus on developing the music & radio industries and interactive media industries.

Partners of Digital Central:

Research supported by:

APPENDIX I - References

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APPENDIX II - Findings of Survey

The focus of this survey was on the existing state of the market for Serious Games as reported by developers. To this end, a number of firms agreed to take part in a state of the market survey concentrating on four broad categories; Sales, marketing, production and development.

These firms were drawn from local and national markets, though the majority of the firms are located within the West Midlands. Additionally, two firms, PIXELearning and Aqua Pacific Ltd. also agreed to supply firm details to act as a case study highlighting two companies from the local and national arena operating in the Serious Games sector. This report provides a snapshot of the Serious Games sector in the West Midlands, augmented by examples from the national and international sphere.

Background and definition

As mentioned in the body of the paper, estimates of the size of the serious games market are markedly apocryphal. Most are based on the assumption that the growth of the video-gaming industry will also see corresponding success in the Serious Games industry. However, not all Serious Games developers necessarily utilise an electronic medium to deliver their product. This point underpins the problematic nature of accurately defining what constitutes a Serious Games developer.

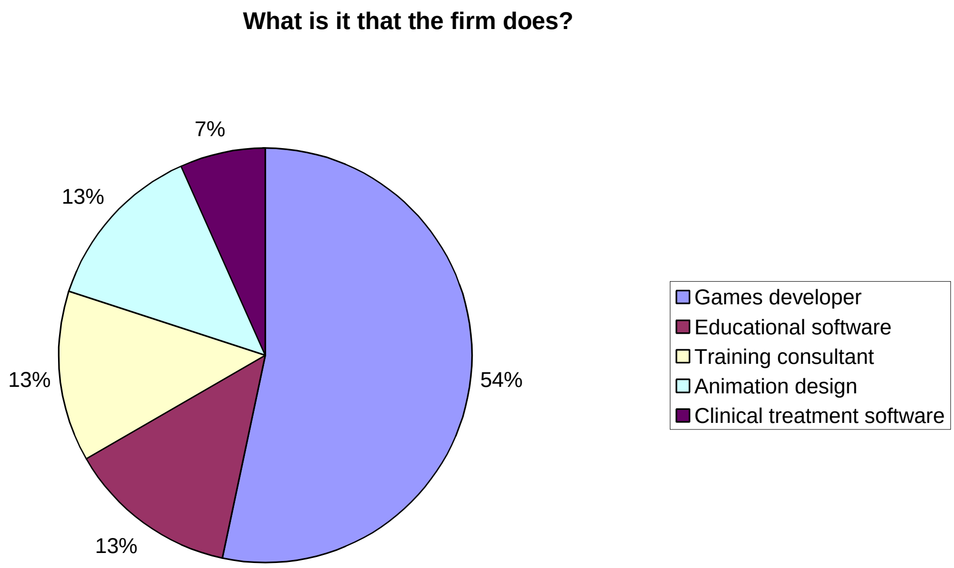
A broad definition of Serious Games as a gaming tool that delivers for non-entertainment purposes may appeal to some developers but expands the remit of Serious Games to the extent that it defies classification. In contrast, adopting a more detailed definition excludes companies producing products with serious content that don’t necessarily define their product as such. While such a point may appear academic, it remains important in the context of completing an accurate regional survey of a fledgling industry such as the Serious Games sector. For the purposes of this report, only companies that market their products or services as Serious Games have been approached and asked to contribute.

While the firm sample was necessarily small due to the under-developed nature of the sector, it represents a large proportion of the actual Serious Games sector regionally and nationally. Responses rates were high, with nearly three quarters of firms solicited responding. It is notable that the responses have been uniformly similar and the detail provided demonstrates the usefulness of the survey, and highlights some present and emerging problems for developers. The following sections correspond to the categories contained in the survey and contain the results extrapolated from survey responses.

Firms

One third of respondents to the survey were Managing directors of their firms, while a further fifth were Directors. Other respondents included Chief Executive Officers, Partners and Owners. The seniority of those responding comes as little surprise when the size of the firms involved is considered. Excluding the one example of a firm employing 40 full-time workers, the average firm size was seven persons. This would suggest that respondents fulfilled a variety of roles in their position within the firm. The majority of these companies were involved in games development as demonstrated by Graph 1 below:

Chart 1 Business activity



Over 54% of respondents described their firm as being involved in software development, with the remainder being involved in either public or private training development or e-learning. In keep with the newly emerging nature of the industry, only three firms were more than ten years old (the earliest a firm was established was 1984), with eight being the average number of years firms were in operation.

In terms of location eight of the fifteen respondents were located in the region of Warwickshire, with the majority of the remainder being concentrated in or around the Greater London area, as shown in the table below.

Table 2 Firm location

Where is the firm located?	Frequency
Birmingham	4
Coventry	2
Crawley	1
Henley-on-Thames	1
Leamington	1
Leicestershire	1
London	1
Oxford	1
Warwick	1
Worcestershire	1
Total	**15**

In terms of ownership, 66.7% of these companies were limited ventures, while 13.3% were owned by one person. The remainder were family-owned, partnerships or joint ventures. In terms of production, the bulk of firms were involved in Serious Games or Serious software.

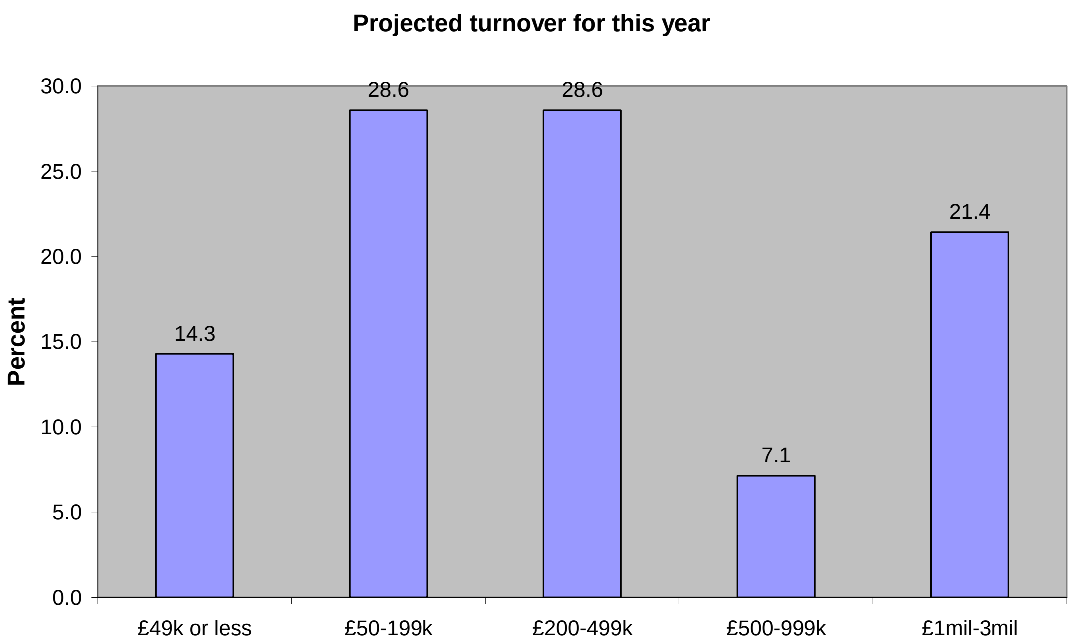
Table 3 Firm production

What is the main product of the firm?	Percent
Serious Games	33.3
Serious software	13.7
Computer gaming software	26.7
E-learning software	6.7
E-therapy	6.7
Training consultancy	6.7
University education	6.7

Sales

In the area of sales, firms were mostly operating on a small budget. 72% of firms were operating on a budget of less than £500,000, while 14% had a turnover under £50,000 (see Graph 2). No firms exceeded £3 million pounds per annum in turnover.

Chart 2 Firm turnover



While firm turnover remains relatively small, there has been a general trend toward improvement and growing profits over the past year. Over half of those responding had seen an increase in sales, with only 13.3 percent seeing a negative downturn. Over a quarter of respondents saw no change in **total sales** from last year.

Table 4 Annual sales

In the past twelve months have sales?	Percent
Greatly increased	13.3
Moderately increased	46.7
Stayed the same	26.7
Moderately decreased	
Greatly decreased	13.3
Total	**100**

This improvement in the past year would suggest that the market for these firms is growing, with the potential for further development. This growth over the past year maintains a trend set over the last three years of sales, as shown below

Table 5 Triennial sales

In the past three years have sales?	Percent
Greatly increased	20.0
Moderately increased	46.7
Stayed the same	20.0
Moderately decreased	6.7
Greatly decreased	6.7
Total	**100**

Over the last three years, two thirds of respondents saw a moderate or better increase in sales. A fifth of those responding stated there had been no change in sales, while 13.4% saw their sales moderately decrease or worse. However, while the majority of firms responding have enjoyed positive growth over the last number of years, the market for their serious game products has proved more variable.

Table 5 Annual sales of Serious Games

In the past twelve months have serious games sales	Percent
Greatly increased	14.3
Moderately increased	21.4
Stayed the same	42.9
Moderately decreased	14.3
Greatly decreased	7.1
Total	**100**

The majority of firms involved in the sale of serious games have found the market to be static for their products, though 35.7% did record a moderate increase or better in sales. However, offsetting this was the 21.4% who found the market for serious games had moderately decreased or greatly decreased. Looking back over three years of serious games sales, the picture is not that dissimilar, with some firms enjoying moderate success or better, but the majority finding the market for **serious games** unchanging.

Table 6 Triennial sales of serious games

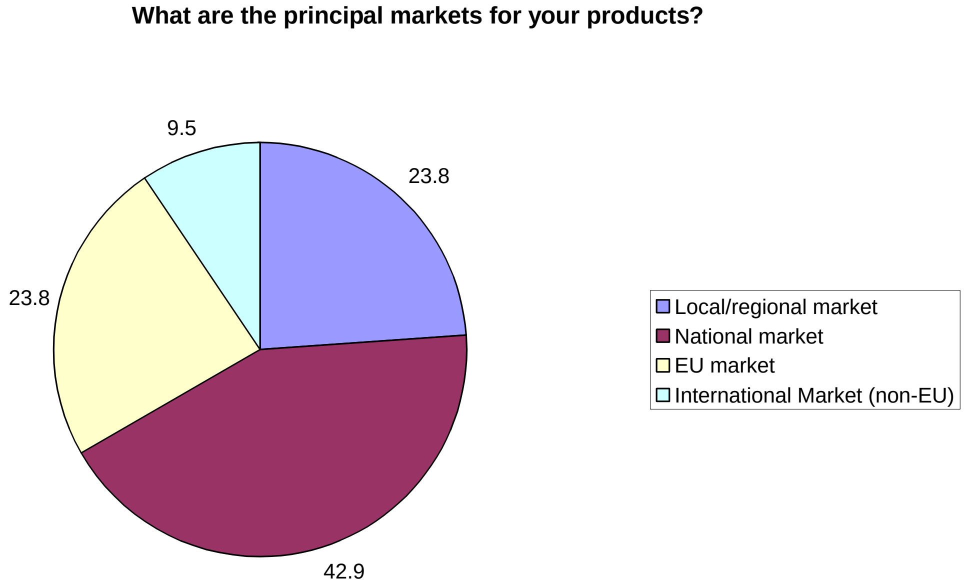
In the past three years have serious games sales	Percent
Greatly increased	21.4
Moderately increased	14.3
Stayed the same	50.0
Moderately decreased	
Greatly decreased	14.3
Total	**100**

Superficially at least, the market for serious games appears to be in a doldrums. Whether this is indicative of the limited nature of the market for serious games, or a failing on behalf of developers to effectively market their product is addressed in the following section.

Marketing

In response to the question of where the principal markets for companies lay, the majority of firms stated their business was mainly conducted at a local and national level. However, there was a significant amount of business conducted in both the EU and internationally. 93% of respondents stated that they were seeking new markets in addition to exploiting existing ones. The same number of respondents also stated their intention to develop new products for the serious games market. These plans included online serious games, serious games advertising, bespoke products for large organisations and sequels to existing software.

Chart 3 Principal markets for firms



Customers for serious games were mostly concentrated in the public and commercial sectors. 18.5% of respondents located their key customer base in the education sector, with the health, corporate and rail sector also being cited as important areas for product sales.

Table 7 Key sales sectors

In which sector are your key customers concentrated?	Percent
Commercial	25.9
Public	22.2
Education	18.5
Health	7.4
Corporate	7.4
Rail industry	7.4
Defence	3.7
Entertainment	3.7
Sports	3.7

In terms of the demographic of their customer base, respondents were somewhat vague. With the exception of children, golfers and adult learners, the majority of responses failed to precisely identify their target audience, either responding with wide age bands or referring to companies and corporations. However, over two thirds of respondents referred to their products as being aimed at niche markets. This suggests that a more accurate appraisal of the target audience would allow producers to better tailor their products toward a particular customer base.

Table 8 Customer demographic

What is the key demographic for your product?	Percent
11-50 year olds	6.7
18-60 year olds	6.7
18 year olds	6.7
5-30 year olds	6.7
Adult learners in work or seeking employment	6.7
Children	6.7
Companies	6.7
Finance/Retail	6.7
Golfers	6.7
Multinationals corporations	6.7

The need for firms to better market their products, as well as to become better acquainted with the demands of the market itself is an important theme arising from this research. While recent sales have been static 93% of respondents believed that the market for serious games was underdeveloped (though their evidence for such a conclusion was unspecified). 60% of respondents felt it was growing, while 40% saw the market for serious games as volatile. While firms were definitely of the opinion that the potential for serious games was great, the volatile and under-developed nature of the market possibly indicates that serious games companies need to invest greater time and effort in sales and marketing research and development.

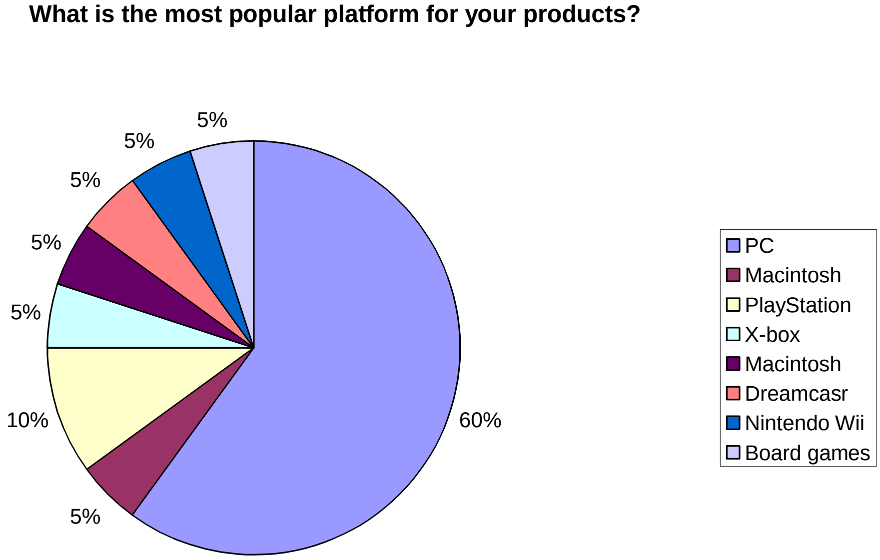
In contrast to this point, 86.7% of respondents found their strategies to find new customers to be moderately successful or better, with only 13.3% stating their strategies were very unsuccessful. However, when asked what these strategies were, the majority of respondents stated they were networking, attending exhibitions, cold-calling and using word of mouth. Some firms were more thorough in their approach. Those involved in the provision of E-learning software in particular spent time researching firms before approaching them. One e-learning provider noted “our key activity is to form sales partnerships with training/education providers who can provide our products and services alongside their own and/or represent sales”.

While the majority of firms had a definite marketing strategy, arguably there is room for some improvement in this area of business. This point is re-enforced when the volume of repeat business enjoyed by firms is considered. 61.5% of those responding received a quarter or less of repeat business, with a third of these receiving zero repeat business. Only 15.4% of those responding receiving more than half or more repeat business.

Production

The most popular platform for serious games products was the PC (60%), with the Playstation being the next most popular (10%). Other platforms mentioned were the X-box, Dreamcast, Nintendo Wii, Macintosh and traditional board games.

Chart 4 Platforms for Serious Games



The majority of these products developed for these platforms were customised, though some were off-the-shelf.

Table 9 Product development

Is your Serious Game development best described as?	Percent
Customised development	61.5
Off-the-shelf	23.1
MODs based	7.7
Mixture	7.7

Development of production technology, design technology and marketing technology has remained a low priority for firms over the last three years (see table 10). Only 6 respondents stated they had invested in improving these areas, with half of these investing in production processes. Only 16.7% felt the need to invest in marketing technology. One example of these improvements was included by respondents; a project management/code and asset control software that was introduced by one of the firms. 78.6% of these respondents felt that introducing these measures had been moderately successful or better, while the remainder felt it had no effect.

Table 10 Triennial serious games investment

Has your firm adopted any or all of the following ?	Frequency	Percent
Production process technology	3	50
Production design technology	2	33.3
Marketing technology	1	16.7

In part, the low priority placed on developing new technology for production and design by the majority of firms may be explained by the largely unchanging per unit labour costs of serious games. 73.3% of firms stated that costs had either remained the same or moderately decreased in the last three years. However, of the remaining minority, 20% had seen a great increase in costs (6.7% seeing a moderate increase). When asked whether they would continue to develop and sell serious games 70% of firms said yes.

Future development

The final section of the survey asks respondents to consider the challenges, opportunities and threats arising for the firms. In response to the question of key challenges facing their company, a third of respondents listed development costs as the biggest future challenge facing the firm. One fifth of respondents pointed to the difficulty of recruiting skilled staff (particularly in a permanent capacity) as their most serious challenge. Other challenges facing firms included competition, platform development and sales and Marketing (see Table 11).

Table 11 Challenges for firms

key challenges facing the company	Percent
Development costs	33.3
Recruitment	20
Competition	16.7
Platform development	10.0
Sales and marketing	10.0
Gaining acceptance for medium	6.7
Process completion	3.3

When asked to list upcoming opportunities that could be exploited by firms, the majority of contributors identified the growth of the niche market for serious games as being the most important prospect arising. The growth of the niche market was not just limited to the national and local sphere, with 10.7% of respondents seeing the Chinese market as a potential area for growth. 14.3% of contributors also noted the importance of the growth in broadband to the future success of their business. Other areas for development included the education sector, platform development and online gaming (see Table 12).

Table 12 Opportunities arising

Key opportunities for the company	Percent
Niche market growth	46.4
More broadband users	14.3
Chinese market	10.7
Education sales partnership	10.7
Platform development	7.1
Online gaming	7.1
System production	3.6

When asked to identify upcoming threats to the security and success of the business, again the possibility of increasing development costs was at the forefront, with 37.9% of companies identifying it as a key threat. 31% of respondents also expressed the concern that the market may not grow to its potential. 20.7% saw investment as potential difficulty in the future, while the remainder of respondents were concerned with Software piracy and competition from big firms. However, the threat of big firms competing in the a niche market was seen as unlikely by some contributors, stating that the nature of the market (niche, customised work for a volatile market) deterred bigger companies.

Table 13 Future threats

Major threats facing the company	Percent
Increasing development costs	37.9
Static market	31.0
Investment	20.7
Software piracy	6.9
Competition from big firms	3.4

When questioned as to how firms were going to nullify these threats, the most frequent responses included; improved networking, improved marketing solutions, product development, research and development, new control systems and raising capital.

Survey Conclusion

While the market for serious games remains in its infancy, there are some encouraging signs that suggest that its potential for growth may be realised within the near future. Most developers believe that the market for serious games will see improvement in the next year or so (having remained largely static so far) and encouragingly labour costs and development have remained relatively stable (though their opinion is based on optimistic appraisal rather than hard evidence). Though development is mostly niche and customised, this has the advantage of discouraging large-scale competition and allows smaller firms the opportunity to establish themselves as market leaders at this early stage.

If firms are to develop the market and expand sales especially through niche markets, arguably the necessity for improved marketing solutions could prove essential. Without an improvement in this area the possibility of fostering greater market demand and expanding sales may not occur. Other areas that need to be considered are the growing concerns over the possibility of increased development costs and recruitment. While the market offers the potential for success, imprudence could prove costly.