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Introduction

According to Wasserman (2011) the growth of the internet has transformed the software industry in a wide variety of ways. These include the creation of new business opportunities as well as significant impacts across software business processes such as software development, distribution and product support. This chapter examines one significant sub-sector of the software industry, the computer (or video) games industry, and focuses on the impact on games development companies of the opportunities created by developments in internet and mobile technologies.

The computer games industry has grown rapidly since the first games were developed in the 1960s. In this chapter we define the computer games industry to include games played on a computer (PC games) as well as those played on a games console (such as Playstation or Xbox), or on a hand-held device. The industry has grown into a multi-billion dollar global business comparable in scale to the global film industry (Johns, 2005). We will illustrate how the internet has altered computer games production networks and how the associated new business models, adopted by games development businesses, introduce the potential for significantly increased rewards. However, these opportunities do not come without associated risks. Utilizing evidence from the games development cluster in Dundee, Scotland, the chapter illustrates that these new business models, if they are to succeed, require businesses to understand, evaluate and manage the associated risk exposure. Ultimately, this involves the

acquisition of key management competencies in order to manage exposure to market and price-related risks, which were previously borne by other stakeholders in the games production network.

Games production networks and changing business models

The computer games industry in the UK has experienced remarkable growth over the past decade. However, the games industry is undergoing an important transition as many games development studios begin to move away from the old work-for-hire (WFH) based business models to strategies geared towards creating and exploiting their own intellectual property (IP). These new and emerging business models are largely a result of the opportunities (and threats) associated with the internet and other mobile technologies. A report by IFF Research (2008) undertaken for the Skills for Business Network in the UK highlighted the key changes in the games industry in the mid-2000s. These are the emergence of digital downloads (either to a PC or console) as a means of distributing the product to the customer, and the development of user-generated content platforms and online communities.

The first of these has had a significant impact on the way businesses in the games development sector operate and are structured. The digital download route to market represents an opportunity for businesses of all sizes. Investment in new skills, and for smaller businesses the acquisition of critical hardware, are seen as necessary pre-requisites to the exploitation of these opportunities. The second trend is a newer development and most businesses in the sector are beginning to explore and, in many cases, exploit its potential. Due to the uncertainties associated with the scale and dynamics of these opportunities, games developers are not yet able to quantify fully the growth associated with these two

developments. Even the largest employers that are at the forefront of the sector's online offerings consider the extent of the impact of recent developments to be unpredictable (IFF Research, 2008). While the new business models have the potential to offer significantly greater rewards, there are associated risks for the businesses. The current study utilizes data derived from a series of interviews with key stakeholders, as well as a range of secondary data sources, to identify how the business models are changing and to assess what the games developers need to do to make these new, higher risk business models work.

The traditional computer games developer business model: work-for-hire

Prior to the proliferation of the internet the games industry the standard business model for games developers was similar to that illustrated in Figure 1. According to Stolz (2008), a video game typically becomes attractive to consumers due to the variety and the originality of the game software, even if it is true that hardware innovations are also relevant to innovative game development. Due to the mutual dependence of hardware (for instance Sony, Nintendo and Microsoft) and software producers, their relationship has been described as symbiotic (Johns, 2004). Game software is typically produced by game software publishers (some of which can also be hardware manufacturers) or specialized, independent software firms. The independents develop and produce game software on their own and sell their products to the hardware producers, usually on a WFH basis. Besides these, there are also smaller software houses which, due to resource and capacity constraints, tend only to develop the software and then to transfer production and marketing to the publishers. The traditional industry model is presented in Figure 1 below.

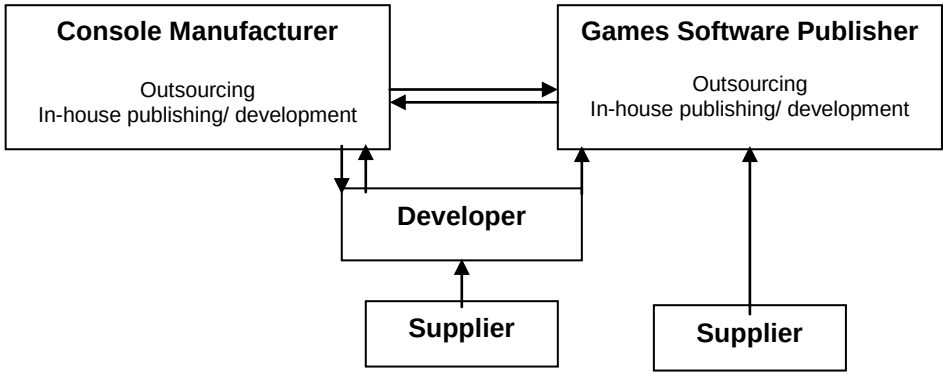

Figure 1: Business-to-business relationships within the traditional games industry model (based on Stolz, 2008)

Figure 1 illustrates a critical aspect of the traditional games production network – that the games developers do not have direct access to distribution networks or consumer markets. In the traditional model either the publishers or the console manufacturers themselves will contract the developer to produce a game. The main implication of the WFH model for the developer is that revenues are often fixed irrespective of the success or otherwise of the product in the market place. From a risk management perspective the removal of the uncertainties over cash-flows associated with the sales of the product effectively removes market risk for the developer, while other sources of risk, faced by any business, remain (for instance credit risk and operational risk). The WFH model therefore helps to reduce the portfolio (combined) risks for the games developer. The down-side for the developer is the associated reduction in potential returns.

The impact of internet and mobile technologies

The internet and other technological developments (such as mobile technologies) have created significant opportunities in the computer games industry. The observation by Barnes

(2002) suggesting that the internet and related technologies are developing into the communication system of choice across a wide range of business sectors, has proved to be correct. Similarly, the convergence of internet and wireless technologies has extended the proliferation of these business opportunities, particularly in business-to-consumer markets. These opportunities are increasingly being realized in the computer games industry.

New on-line gaming portals and communities are emerging and represent key opportunities for games developers. Perhaps the best known of these is currently the Apple App Store, although a number of other portals such as STEAM (an on-line version of X-Box from Microsoft), Greenhouse and, potentially, an on-line gaming portal available via Google also represent new and developing opportunities for computer games developers. However, these internet and mobile-technology based opportunities present challenges for games businesses in that, as they move towards the IP-based model, they will have to think more and more about selling the product. A number of businesses have recognized this and have identified weaknesses in capabilities such as on-line marketing.

The new internet-based games developer business model: intellectual property model

The development and proliferation of internet and mobile-based technologies has led to the emergence of a wealth of opportunities for games developers. These opportunities stem largely from the new marketing and distribution channels that these technologies open up for them. The games sector is facing fundamental issues associated with the ambitions of many of the games companies to move away from their current WFH based business models towards an IP-focused model. For many games companies in the UK their business model

has tended to concentrate on generating revenues by undertaking work contracted by large publishers (such as EA Games for example) and/or for large platform developers (such as Sony and Microsoft). This business model is relatively low risk, but is also associated with lower returns (see Figure 1). Some in the industry have begun to move away from this approach towards a strategic business model whereby they not only develop games (and other digital) content but now also maintain ownership of the IP. This approach, while opening up the potential for significantly greater rewards, brings with it inherent risks and uncertainty which have the potential to wipe out cashflows accumulated over many years of operation – termed war-chests in the sector – and may put the survival of the business in jeopardy. In addition, in order to fully exploit the opportunities associated with the new business model, businesses will need to acquire different sets of skills, at all levels of the organization. In particular, on-going changes in the consumer market for games are, as outlined above, offering new opportunities for content developers to sell direct (or via a gate-keeper) to consumers on-line (see Figure 2 below).

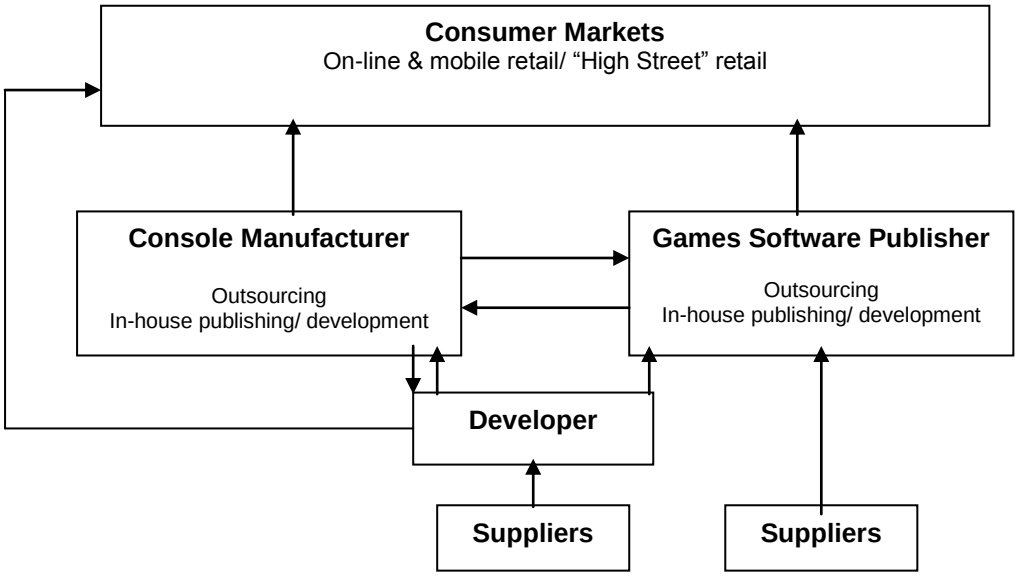

Figure 2: Changing relationships and business models within the games industry

The new business models, made possible by the increasing proliferation of the internet and mobile technologies, are based on a range of emerging opportunities such as:

- SMEs being able to deliver a product directly to the consumer without the need for a publisher;
- extending the life span of 'on shelf' games through digital add-ons;
- utilization of community forums and social networking sites to manage the marketing process;
- increased potential for tracking consumer behaviour and improving the conversion rate of users visiting a web site;
- increased potential for monitoring the user response to elements of a product (for instance beta testing);
- unlocking new market demographics, such as: female gamers as a result of short session, casual gaming; and, under-18s through the development of store-bought points or subscriptions;
- new revenue streams opening up through being able to release re-branded packs digitally, and;
- the rise of advergames (and their potential for obtaining marketing information).

Enterprise risk management in IP-based business models

As discussed above, the internet and associated mobile technology booms have presented games developers with an array of opportunities. These opportunities, however, are associated with a change in the risk exposure of the businesses themselves. As a result of this,

for the new business models to succeed the games developers must be in a position to understand, evaluate and manage these new sources of risk. The Casualty Actuarial Society (2003) identifies four main types of risks in the context of enterprise risk management, namely: hazard, financial, operational and strategic risks, as summarized in Table 1.

Table 1: Types of Risk (Source: adapted from CAS (2003)).

Hazard Risks
• Fire and property damage
• Weather and other natural perils
• Theft, crime, personal injury
• Business interruption
• Disease and accident
• Liability claims
Financial Risks
• Asset prices, foreign exchange, input/ commodity prices, interest rates
• Liquidity and cashflow
• Credit
• Hedging/ basis risk
Operational Risks
• Business operations
• Leadership and empowerment
• Information technology
• Regulatory information requirements
Strategic Risks
• Reputation
• Competition
• Regulatory and political
• Social and demographic trends
• Access to capital
• Market demand and customer wants

The above list of risk types identifies the main categories of risk and examples of the typical sources of risk in each. The approach to Enterprise Risk Management (ERM) principles adopted by CAS (2003), however, does not attempt to provide an exhaustive list of risks nor does it engage in debates about which category of risk each specific source of risk might best be associated. Instead, the ERM approach emphasizes the need to consider enterprise risks

from a portfolio perspective. Specifically, CAS (2003) states that the portfolio view of enterprise risk involves an understanding that portfolio risk is not just the sum of the individual risk elements as it involves an understanding of each individual risk as well as the interaction between risks. Furthermore, the risk associated with the entire organization (portfolio risk) is relevant to the critical decisions of the enterprise.

In light of the ERM approach, it would appear at least sensible, and potentially critical, for games developers to understand the impact on portfolio risk associated with the shift from the WFH model to the IP-based model. While each games developer would have to undertake the analysis and management of their risk portfolio on an individual basis we can draw some generic conclusions on risk exposure associated with the shift in business model. Based on the list of risks presented above and the foregoing analysis it is reasonable to assume that the enterprise portfolio risk associated with a games developer moving to the new business model potentially alters risk exposures across a range of factors.

Risk as opportunity

The implication of the above is that a change in strategy to follow an IP-based business model will result in significantly increased portfolio risk exposure for the developer. Many games developers have been very successful and have grown significantly by following the WFH model. However, the CAS (2003) view of enterprise risk provides one generic rationale for opting to take on the higher risk IP-based strategy, namely, risk as opportunity.

CAS (2003) identifies a shift in attitudes toward risk across organizations generally. Historically organizations may have tended to emphasise the downside of risk and therefore to adopt a predominantly defensive attitude, viewing risks as situations to be minimized or,

even better, avoided. More recently organizations have recognised the notion of up-side risks and the potential value-creating opportunities associated with certain types of risk. This attitude change has, over time, led to the development of increasing sophistication in organisational capacities to identify, assess and manage the risks they face as well as increased access to information about risk. This has led many organizations actively to seek out risks as they become more familiar with the nature of the risks they face and confident in their ability to manage them.

This shift in risk attitudes identified by CAS (2003) at least in part provides a rationale for games developers moving to the IP-based business model. One other factor that is likely to contribute towards a desire among games developers to adopt the new business model is that the IP-based model places far greater emphasis on creativity and freedom of expression in games development. This is likely to have been more constrained by the contractual terms of reference set out by the client under the traditional WFH model. This art rather than profit attitude towards games development appears to be common across games development enterprises. Many developers see the development of a game not as a product to be sold but more as an artistic creation and something that they would personally enjoy playing and that they want to share with like-minded games-players – rather than something which is a way to make profit.

Risk implications of the emerging business models

Game development is risky and the commercial success of a game under development is uncertain (Banks *et al*, 2002). Even where revenue streams are generated by commercial games developed to the specifications of clients (for instance publishers or console

manufacturers) via the WFH business model the commercial and financial constraints for small studios are significant. The route to growth for many ambitious games developers involves the creation and eventual exploitation of their own products with sovereignty over this IP work (Hotho and Champion, 2010).

As illustrated in Table 2, the consequence of a shift away from the WFH model to the IP-based model involves a change in the specific risks involved and hence the portfolio risk exposure of the games developer. Firstly, the IP-based model involves the allocation of resources to higher value IP creation through explorative innovation. Secondly, the investment of funds into IP creation involves significant resources and games developers following this approach often need to seek external financing, often via the venture capital route. Finally, and perhaps most critically, the move to the IP-based model exposes the games developer to new risks associated with cashflow uncertainties. In the WFH model the games developer would not be exposed to risks associated with the product demand and their cashflows would be fixed via the contractual agreement with the publisher or the console manufacturer. The shift to the IP-based model assumes that the games developer will, facilitated by the proliferation of internet and mobile technologies, attempt to sell their products direct to the market. This fundamental shift in the business model exposes the games developer directly to product cashflow uncertainties and risks associated with pricing and sales.

Shifting to the IP-based model requires shifts in business strategy and operations that involve either experimentation with flexible organizational forms, changes in workforce skills and scale, a decisions on whether to undertake a total shift from the old to the new business model, or structural arrangements designed to enable both explorative (IP-based)

and routine (WFH) activities simultaneously. These structural and organizational demands reflect the tensions between exploration and exploitation. Computer games developers face the innovator's dilemma of having to strike a balance between exploration and exploitation (Edwards *et al*, 2005; Nooteboom, 2000), but this challenge is exacerbated in an industry with a fast-paced, creativity and technology-driven, innovation imperative. This conflict is reflected in the differing portfolio risk associated with the alternative games developer business models. A games developer adopting the WFH business model will attempt to build a portfolio of regular and guaranteed work for a stable set of clients, but in so doing will sacrifice the ability to act dynamically and flexibly to exploit market opportunities as they emerge (Tushman and O'Reilly, 1996). The ability of the organisation to engage in both exploitation and exploration is viewed as being of particular importance for the games industry (Raisch, 2008; Raisch *et al.*, 2009). The ability to manage successfully the transition from an organization focused on the ability to develop products to order to an organisation with the capability to both develop and market innovative products is at the heart of the enterprise risk management issue discussed in this chapter. How to develop such dynamic capability and how to manage it has not yet been addressed in this industry sector (Hotho and Champion, 2010).

Table 2 Examples of differential enterprise risk exposure variation between WFH and IP-based games developer business models (Source: CAS(2003) and author's own analysis)

Potential New Risk Exposure	**Examples of Differential Risk Exposure with Shift in Business Model**
Hazard Risks	
Theft, crime	• risk of counterfeiting/ IP theft
Financial Risks	
Foreign exchange	• exposure to foreign exchange risk if overseas sales
Liquidity and	• exposure to cashflow risks as revenues generated via sales only

cashflow	• exposure to liquidity problems as up-front investment funds required for product development
Credit	• remove exposure to counter-party risk as by-passing publisher/ console manufacturer and going straight to market • exposure to financial distress and credit default risk as a result of increased debt levels if investment financed via borrowing
Operational Risks	
Business operations	• introduction of new ways of working and enterprise culture change to encourage innovation and creativity • new skills and competencies required in terms of product development
Leadership and empowerment	• managerial capabilities and experience • management of change and corporate culture transformation
Information technology	• product demand dependent on popularity of technology platform • impact on relationship with former client and subsequent access to information on technological developments (e.g. in console design and compatibility issues)
Strategic Risks	
Reputation	• product quality directly attributed to developer by consumer rather than publisher/ console manufacturer • poor investment returns and/or financial distress
Competition	• loss of traditional WFH clients to rivals • direct competition with publishers, console manufacturers and other IP-based games developers
Social and demographic trends	• need to address changing customer base/ profile/ fashions etc. • importance of access to and effective interpretation of market information
Access to capital	• strategy may become dependent on external capital • access to capital markets may mean dilution/ loss of managerial control
Market demand and customer wants	• price/ unit sales volatility and hence cashflow uncertainty • importance of access to and effective interpretation of market information

The Dundee computer games industry

This section of examines the relevance of the foregoing analysis for games developers in the context of a specific location. The case of Dundee's computer games industry is adopted here as it represents a microcosm of the issues raised in the foregoing analysis and illustrates the dilemmas faced by games developers across the global games development sector. The following case material has been developed from a range of sources including on-line blogs (for instance Gamesblog), newspaper articles (including articles available from *The Guardian* on-line) as well as previous research undertaken by McGregor, White and Farley (2010).

The City of Dundee, and the games and technology companies based there have played a significant role in the history of computer games development. Personal computing became popular in Dundee in the early 1980s, the reason for this is, at least in part, due to the manufacture of the Sinclair ZX series of home computers at the Timex factory in Dundee. The shortage of readily available software for Spectrum resulted in a boom in simple games programmed in living rooms and bedrooms across the city. One of these young pioneers set up his first company DMA Design and released its first game, *Menace*, in 1988. By 1997 DMA had launched *Lemmings* and *Grand Theft Auto* selling more than 70 million units and making DMA one of the most successful developers in the world. The success of DMA placed Dundee on the world stage and studios sprung up around the city, the constant stream of talented programmers and artists graduating from local universities ensured that Dundee's games development companies have thrived (McGregor et *al.,* 2010; 2011).

The first generation of games development studios in Dundee were responsible for the production of some of the most successful titles and franchises in the history of the medium. While Vis Studios enjoyed success with the *State of Emergency* series, DMA created *Lemmings* and probably the most notorious games franchise, *Grand Theft Auto*. Following generations of studios including Visual Sciences, Cohort, 4J,Realtime Worlds and Ruffian established new business and production models working for global publishers like Electronic Arts, Sony and Microsoft amongst others. The major departure from the WFH development model was led by Denki in 2000. The company was set up to be a design-driven development studio, focused on the creation of digital toys and games. Denki's intention was to develop games for a variety of smaller platforms, including the Game Boy Advance, which

the company saw as opening the games market up to a new, more casual audience. In 2005 Dynamo Games published *Championship Manager* for mobile phone and spawned a new generation of developers in the City focused on games development for mobile phones and handheld consoles.

The case of Realtime Worlds

By 2010 Realtime Worlds (RTW), founded by *Grand Theft Auto* creator Dave Jones, had grown to become the largest games development company in Scotland, employing over 300 people based in their Dundee studios. The company's rapid growth was based on the development of IP. RTW, having already demonstrated significant potential (for instance in producing the hit title *Crackdown*) and having an experienced management team, secured over $100 million of venture capital funding. RTW was the giant of the Dundee games community, the lynchpin amid a thriving cluster of development studios, many of which were off-shoots of Jones' original company, DMA Design. However, by August 2010 the developer had become insolvent and had entered into administration (broadly equivalent to Chapter 11 status in the US), following an initial restructuring announcement in June of that year. This restructuring announcement came a few weeks after the launch of its massively multiplayer online game (MMOG) *APB*. How did this happen to RTW? According to Stuart's posting on Gamesblog/*The Guardian* (2010) '*APB* was going to be the *Grand Theft Auto* of the 21st century – a freeform cops 'n' robbers shootfest, taking place in a massively multiplayer universe where player characters were infinitely customisable.' The strategy for RTW was high risk in that they were putting if not all, then certainly a lot of eggs in one

basket – with the success of a single key product representing a critical factor in the future success of the business. So what went wrong?

An analysis of various games-based blogs, Twitter feeds as well as more traditional media coverage, indicates that the main contributing factor was that the product, *APB*, was not good enough. Stuart (2010) notes '[w]hen APB was released on 29th June 2010, it was clear the game was nowhere near ready. The shooting mechanism didn't work, the vehicle handling was sluggish, the match-making system was hopelessly inaccurate…the game wasn't good enough.' An ex-RTW employee observes (Stuart, 2010):

> We were getting the data every week and we could see what the sales were like. It was very clear to us a number of weeks ago that the game was not selling in the quantities that the projections told us it would. Couple that with the feedback we were getting on the forums and add in the reviews … it wasn't painting a great picture. And it became clear that APB was not sustainable given the revenues it was generating. But because of the reviews, the rumours, the disappointing beta tests, there weren't enough players. That was the killer. And you've just got to ask again, how did this happen?'

And Gamespot (2012) notes:

> there were issues that APB just wasn't fun enough, but it was believed that (as had happened with Crackdown) things would fall into place right before launch. As such, capital reserves were spent to the point that RTW had little in the bank when APB launched on 29 June 2010 and attracted around 130,000 players. Things didn't fall into place and sales fell short of expectations.

There is no doubting the calibre of the *APB* team. Lead designer EJ Moreland came in from Sony Online Entertainment where he worked on *Everquest II*; before that, he was a designer on the formative *Ultima Online* franchise. Brian Ulrich, the company's director of

development, came from EA Sports. As for the rest, within two days of the administration announcement, the likes of Sega, Blitz and Activision were flying up to Dundee to set up recruitment events. This was a talented, respected outfit. Another part of the problem, it seems, was the money. There was simply too much of it, and no one had come up with a plan on how to spend it effectively. 'Having too much money is as much a curse for start-ups as having too little,' says Nicholas Lovell of business blog Gamesbrief (2010). Lovell further notes:

> Instead of identifying clear market opportunities, focusing resources and worrying about delivery, too much money gives you the licence to meander, experiment and play, and the absence of direction can be masked by the money for a very long time. This clearly happened in the case of RTW. The company meandered … with no clear sense of direction. That makes sense on a Facebook game with a budget of US$300,000, or the original budgets of Lemmings and Grand Theft Auto, but not anymore.

A former RTW employee explains (Stuart, 2010):

> There wasn't enough discipline […] We got all this money, and it made us relax, when really it should have focused our attention on making sure we had a really good approach to managing the project, to ensuring the design was exactly what it needed to be, to focus on testing early on, and just proving that we were doing the right thing, rather than taking the old 'it'll be done when it's done' attitude.

There are many question marks over the demise of this in games developer terms massive company. Why was there not a strict development structure in place? Why were the problems within *APB* not spotted earlier and dealt with properly? How could the whole issue of latency, especially with an action game running predominantly on the server rather than client side, not have been adequately predicted? How could this happen? In the end, it would

appear to be a story of hubris and mismanagement, of artistic vision clashing with the realities of the need to make *APB* a commercial success. As a lot of reviews pointed out, it is likely that *APB* would have been a hugely successful game back in 2006. However, by 2010, smaller companies with greater agility were doing more interesting, coherent things in the MMOG sector.

The case of RTW illustrates some aspects of the changing portfolio risk exposure associated with the shift towards the IP-based model. In this case RTW were heavily reliant on the success of a single product in the market place, and directly reliant on cashflows arising from sales of that product. For a variety of reasons, the product simply did not perform as expected. Had RTW adopted a WFH model to the development of *APB* there would have been far more certainty associated with cash-flows arising from the project. The contributing factors appear to stem from a conflict within RTW between the way things had been done in the past and how things needed to change. This change ultimately required a complete cultural transformation within RTW and it was this transition in strategic and operational approaches which proved too difficult to achieve. From a risk management perspective it appears that RTW recognized the need to address a new set of risk exposures and took action to deal with these, for example by bringing in expertise from outside the business. However, RTW failed to identify and manage effectively the significant changes in portfolio risk brought about by the new business model, or more specifically in this case, the rapid expansion associated with the IP-based model.

The case of Cohort Studios

In contrast to the IP-based approach adopted by RTW, Cohort Studios, formed in 2006 following the demise of Visual Science, has until recently been focused on undertaking WFH for a single client, Sony. The company employs over 50 people in their Dundee studio. On the back of the Sony WFH, which accounted for about 95 per cent of total turnover in 2010, Cohort have expanded rapidly in recent years (recruiting around 20 graduates in the past three or four years. Despite the success to date, Cohort's Managing Director, Lol Scragg, explains that their future strategy will involve a gradual shift from WFH projects towards self-publishing titles (i.e. the IP-based model):'Ideally we would want to be 100 per cent IP-based but the main barrier is finance. We need WFH for cashflow so our aim is to move gradually towards self-publishing. In 2011, for example, we will be looking for 80 per cent WFH and 20 per cent IP.'

The Cohort Studios approach involves a more measured and gradual transition from the WFH model to the IP-based model. The implication is that, not only would the more gradual shift lead to greater cashflow certainty than an immediate shift to a 100 per cent IP-based model but it would also allow the enterprise to evolve culturally in a more organic way. This minimizes the potential culture shock for both managers and employees associated with the new business model and promotes the opportunity for a period of organizational learning which means that risks, if they materialise, are less likely to lead to the failure of the enterprise. The gradual shift in business model allows the business to take the consequences, learn from the experience as an organization, and adjust its strategic and/ or operational approach appropriately, without exposing itself to unacceptable portfolio risk levels that have potential solvency implications.

Conclusions: lessons from enterprise risk management

The implications of the foregoing analysis suggest that the development and proliferation of internet and mobile technologies has represented a significant opportunity for computer games developers, and is likely to continue to do so. In order to exploit these opportunities games developers are moving from a WFH based business model towards an IP-based model. This shift, while representing the potential for significantly enhanced returns, exposes the enterprise to new and different sources of risk and overall is likely to significantly increase portfolio risk exposure for the business.

These risks emerge in a variety of ways and relate to issues associated with a change in the traditional value chain relationships within the games production network, including: cashflow uncertainty and marketing/ distribution channels; financing and access to capital; managerial competencies and skills; and corporate culture changes, amongst others. It is evident that the shift to the new IP-based business model acts to significantly alter the risk-return profile of the games developer. It is clear from the views and actions of games development firms themselves that there is a strong desire to move towards an IP-based model. It is also evident that, for this shift to succeed, businesses need to be aware of their changing risk exposure as well as how to manage these differential risks effectively. The pace of transition from the WFH model to the new model, following an internet and/ or mobile technology based distribution channel strategy, needs to be carefully considered by the games development business managers. The concept of enterprise risk management can help businesses recognize the risk exposure implications and provides the tools for undertaking the systematic evaluation of alternative business models. However, the experience of businesses like RTW in Dundee should not discourage games developers from attempting to exploit

their own IP and the risks presented by the new business model should be embraced as an opportunity. But success will only flow from those enterprises that identify, assess and manage the inherent risks effectively.

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