# D7.1 – Summary Report of Business Models

**RAGE – WP7 – D7.1**

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<tr>
<td>Document Author/s</td>
<td>Hollins, P., Yuan, L. (UOB), Santos, P. (INESC-ID), Becker, J. (FTK), Riestra, R. (INMARK)</td>
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<tr>
<td>PS</td>
<td>Pedro Santos</td>
<td>INESC-ID</td>
</tr>
<tr>
<td>PH</td>
<td>Paul Hollins</td>
<td>University of Bolton</td>
</tr>
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LIST OF ABBREVIATIONS

ADL – Advanced Distributed Learning  
APAC – Asia Pacific (Region)  
BECTA – British Educational Communication Technology Agency  
B2B – Business to Business  
B2C – Business to Consumer  
BM – Business Model  
CCP – Crowd Control Productions  
EA – Electronic Arts  
ECGBL – European Conference of Games Based Learning  
F2P – Free to Play  
CAGR – Compound Annual Growth  
GALA – Games and Learning Alliance  
LOL – League of Legends  
NES – Nintendo Entertainment System  
MMOG – Massive Multiplayer Online Game  
MOBA – Multiplayer Online Battle Arena  
NHS – National Health Service  
P2P – Pay to Play  
RAGE - Realising an Applied Gaming Ecosystem  
RTS – Real Time Strategy
EXECUTIVE SUMMARY

This report provides a comparative analysis of the existing and emergent Business models currently employed in the Entertainment digital game industry (referred to in this report as the Leisure industry) and the “serious”, or in the context of the RAGE project and this report, the Applied Games industry.

In conjunction with the accompanying WP 7.2 report providing a value chain analysis this report will inform the development of a business mode or models for the proposed RAGE ecosystem. The final proposed model(s) will support the wider aims and objectives of the RAGE project in stimulating the development of a sustainable, viable Applied Game development industry in Europe.

The research activity underpinning this report consisted of an extensive desk study, including a review of the existing literature across both the Leisure and Applied domains, informal discussions with the Game Development Industry and work in parallel with associated RAGE project work packages. Our discussions were focussed on the developer's expectations of technology and in particular, the proposed asset outputs of the RAGE project. We hosted business modelling workshop activities undertaken with the commercial partners engaged in the RAGE project. We engaged with and considered existing research initiatives in this domain, most notably the New Economic Models and Opportunities for Digital Games (NEMOG) project and on the outputs of previous European Commission funded projects including the Games and Learning Alliance, GALA network of excellence for Serious Games.

Using the Business Model Canvas as an underpinning framework the report presents comparative Business models across the Leisure and Applied industries. The report provides confirmation that the Leisure industry exhibits characteristics of a mature market, whilst recognising the impact of disruptive innovation occurring as a result of emergent digital and online distribution. These findings are entirely consistent with other industries experiencing disruption including the traditional book publishing and music industries. Conversely, the emergent Applied industry is characterised by two predominant and relatively stable business models. The “hands for hire” and a service model with little current evidence of disruption occurring. This situation may however change as new entrants to the market such as Leisure game developers and larger educational content publishers emerge. The Applied game industry in Europe is currently fragmented, dominated by small clusters of Small to Medium size Enterprises (SME) in countries such as the United Kingdom, the Netherlands and Germany.

Although hampered by the limited availability of existing research data pertaining to the applied games industry in Europe, current research, relating to the market in the United States of America and Asia Pacific regions indicates a high level of expectation of significant demand and growth for Applied Games. This growth is expected to extend beyond the boundaries of the established sectors such as Military and Health, with Business and professional studies identified as potentially key growth sectors.

In Europe, where the market is less well established, the level of expectation is equally high, a view endorsed by recent Games monitor research (2015) of the Dutch market for Applied Games; highlighting high expectation of growth expected in the Education and Health sectors. This report is intended to inform the RAGE project in engaging with stakeholder communities and in developing a sustainable business model for the Ecosystem. It will be of interest to both the Leisure and Applied game industries in helping them to understand and define the challenges of conducting business in rapidly changing digital markets and to researchers involved in study within this and related domains.
1 INTRODUCTION

This report provides an analysis of the business models relating to the digital game development industries. For the purpose of the report we consider the industry as two quite distinct segments; the Leisure and Applied digital games industries. This reflects existing research indicating relative levels of maturity of the Leisure game industry and immaturity in the Applied (or Serious) games industry. Our three research questions are:

- What are the business models applied within the Leisure Game industry?
- What are the business models applied within the Applied Game industry?
- Is there evidence of the convergence of business models across the two industries?

We employ the Business Model Canvas as our primary analysis framework, a model which allows us to describe in detail the relevant components applied to the games industry. In doing so we recognise that the term “business model” is not a term widely understood or used in the Games industries. “A business model describes the rationale of how an organization creates, delivers, and captures value” (Osterwalder, Pigneur et al., 2010).

Chapter 1 of this report provides a brief history of the evolution of the games industry followed by a description of the main actors and of the industry landscape. Chapter 2 provides a literature review of business models applied to the two industries. In Chapter 3 we describe the components of the Business Model Canvas applied to the games industries and finally in Chapter 4 we describe and present examples of both Industries Business Models.

1.1 A history of the Business Models Applied in the Digital Games Industry

The first recognisable Business Model employed within the Videogame industry was “coin-up”, a model inherited from the first electro-mechanical pinball machines. The industry consisted of providing games machines, to bars and amusement arcades and locate them in their establishments. (Marthino et al, 2014)

In parallel, game consoles were introduced into the home, with model akin to that of white goods or appliances. The introduction of the generic cartridge video game console resulted in the decoupling of the hardware and software businesses (Goumagias et al, 2014). Activision, the first independent video game developer and distributor, pioneered a new business when launching a series of multi-million selling console games in the early 1980s for the game console Atari 2600.

The early 1980s witnessed the emergence of the personal computer (PC) as a gaming platform, developers targeted a predominantly teenage demographic (Marthino et al, 2014) and a proliferation of game studios emerged at that time. With the advent of the IBM-compatible PC market dominance and the NES Console in the mid to late 80s what we now regard as the established Value Chain and Business models for the Leisure industry began to take hold. These business models were predominant, until the emergence of the internet, mobile platforms and of digital distribution. The main characteristic of the established model for consoles was and remains the licencing. This was a concept introduced by Nintendo in the mid 1980s with Nintendo Entertainment System (NES) as a response quality concerns over releases for previous consoles. The licensing model provided quality assurance to retailers, distributors and consumers prior to publication and distribution (Ryan, 2011). Consoles were on the whole, proprietary systems, controlled exclusively by the hardware manufacturers (Wolf, 2008). Research by Mason (Mason, 2008) suggested that a supplementary, almost subversive, business model operated in parallel, that of “pirate tolerance” in order to develop emergent markets in India and Africa. (Or to gain market share in other mature markets)
A second model emerged in the 1980s for PC games, where competition between hardware manufacturers guaranteed rapid innovation and continuous improvement of product. The cost of entry to this market was much lower (Rabin, 2005), without licencing costs and the threat of piracy contributing to competition. Later in the decade early internet companies, including CompuServe and GEnie, pioneered online multiplayer games, charging hourly rates of between $3 and $12 (Koster 2002) a model further developed in the 1990’s by AOL’s Neverwinter Nights and Ultima Online.

In 1993 innovative developer Id Software, launched the game Doom and opted for a digital distribution model. Players were able to download the first part of the game for free, and then pay to download the remaining parts. At the time limited bandwidth was a major restriction for this type of distribution. Improved bandwidth, secure payment methods and increasing consumer confidence in the internet as a mechanism for distribution has led to the emergence of the “Free-to-Play” (FTP) model. The FTP model emerged in the late 1990s and early 2000s, with a series of Massive Multiplayer Online games (MMO) such as Run-escape text-based dungeons, and casual games (Grillipoulos, 2012). The business model was underpinned by advertising as its main revenue source. The FTP model has continued to expand with a (sub)model of micro-payments recently emerging and is now largely referred to as the “Freemium” model.

1.2 Roles in the Digital Game Industry

In this section we define the traditional roles found in the Leisure game industry. A caveat disruption caused by technological advances including improved access to and cheaper broadband and development tools have in some cases eliminated in particular some of the defined intermediate roles.

The Leisure Digital Games Industry

- **The Developer** or Game Studio: The organization the develops games with core competencies in game design, programming and art. Smaller studios have historically outsourced specialist tasks such as motion capture, sound, or the game engine. Examples: Firefly Studios, Riot Games, BIP Media.

- **The Publisher**: A publisher provides funding to developers and assumes a role in marketing and distributing the final product [Kerr 2006]. Many developers act in a dual role as publishers due, in part, to the lower costs and easier point of entry afforded by digital distribution. A number of larger publishers have also built or acquired their own internal development capacity. Examples: Activision-Blizzard, Paradox Entertainment, Ubisoft.

- **The Console Manufacturer / Platform holder**: The (Hardware) platform holder provides the hardware on which the game will operate (excluding PC, which is an open platform). The holder exercised Control over quality, determining which games can be sold for its platform, through licensing. Examples: Apple, Sony, Microsoft.

- **The Game Engine or Middleware Developer**: Specializes in developing and licensing game development tools and technologies for Developers such as game engines. Example: Crytek, Criterion, Unity.

- **The Distributor**: Distribution is in many cases handled by subsidiaries of either the platform holder publishers. There are a small number national distributors, that may also distribute media (DVD movies, music CDs) or toys. There are also companies specialized in digital distribution. Example: Creative Distribution, Ltd (physical); Valve (digital), Steam (digital).
● **Consumer**: The purchaser of the game product.

Comparatively the Applied Digital Game Industry has a less extensive palette of roles:

- **The Developer or Game Studio**: Develops the applied games on commission and/or a “hands for hire” fee basis. There are clear distinctions between developers between the Leisure and Applied sectors. Example: PlayGen, Virtualware, TPLD, Serious Games Interactive, GameLearn.

- **The Commissioning Agency**: Fund the development of the applied games directly, for example, private companies, government agencies, research project, charity association or crowd (source) funding. Example: BECTA, ADL, NHS (UK).

- **Educational Publisher**: Traditional educational publishers of printed text books, e-textbooks and educational content, including e-learning courses and materials. Example: Pearson, Research Mechanics (RM), McGrawHill.

- **Educational Institutions/corporate training departments**: these represent and accommodate the end-users. Pupils/students/trainees.

### 2. LITERATURE REVIEW

In this chapter we discuss and reflect on the existing research literature relating to both the proposed methodological framework (The Business Model Canvas) in the context of the domain space (Leisure and Applied Games).

#### 2.1 Business Model Canvas

In this report we employ the Business Model Canvas as a framework to analyse game industry business models. The Business Model Canvas (Osterwalder et al., 2010) describes a business model using nine basic building blocks, covering four areas of business: Customers, offer, infrastructure and financial aspects. The nine building blocks are as detailed in Table 1 below:

<table>
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<th>Building Blocks</th>
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<tr>
<td>Customer segments</td>
<td>For whom are we creating value? Who are most important customers?</td>
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<tr>
<td>Value Propositions</td>
<td>What value do we deliver to the customer? Which one of our customer’s problems are we helping to solve? What bundles of products and services are we offering to each Customer Segment? Which customer needs are we satisfying?</td>
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<tr>
<td>Channels</td>
<td>Through which channels do our customer segments want to be reached? How are we reaching them now? How are our channels integrated? Which ones are most cost-efficient? How are we integrating them with customers routines?</td>
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<tr>
<td>Customer Relationships</td>
<td>What type of relationship does each of our Customer Segments expect us to establish and maintain with them? Which ones have we established? How are they integrated with the rest of our business model? How costly are they?</td>
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2.2 Games, Market Segments and Business Models

In this section we discuss and reflect upon market segments and business models. A number of authors have described videogame Business Models (BM), as they have evolved. The games industry is innovative and an industry where technological innovation is immediate and disruption of business models and constant re-invention of established business models the “norm”.

2.2.1 Market Segments

Over the years a number of frameworks have been applied to consider market segmentation. Williams (2002) divided the games industry into three market segments; consoles, handhelds and PC, which were described in terms of market share, competition and product. Kerr (2006) divided the games industry into four segments, considering market concentration, the revenue model, degree of openness in the hardware system and the characteristics of the software production process as the distinguishing characteristics. The segments are:

- Games developed for both handheld and console platforms, characterized by
  - Oligopoly with three companies operating as hardware manufacturers, software publishers and game developers: Nintendo, Sony and Microsoft Games
  - Games sold as physical media on retail
  - Small number of competing and non-compatible technological systems, which are upgraded every four/five years
    - Hardware cycles
    - Exclusive content
    - Multi-sided Platform
- Offline and multiplayer/networked PC games (excl MMOGs)
  - Open Market, low barriers to entry
  - Games mostly sold as boxed CDs through retail
- MMOGs and other online games.
  - Strongly vertically integrated
  - Expensive to develop
  - Open underlying technologies (PC & internet)

Table 1: Business Model Canvas (Osterwalder & Pigneur, 2010)
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- BM based on Retail sales + Monthly subscription
- In game Advertising revenues.

- Mini or casual games for platforms like i-TV, mobile phones, PDAs and the Internet
  - Shorter development cycles and lower production costs
  - Numerous players and a mixture of open and proprietary technologies
  - Revenue Models
    - pay per download
    - pay per play
    - advertising
    - In game purchases
  - Developer’s share revenue, from 20% up to 90% (Japan)
  - Advergames (free games paid by advertiser)

Currently, there are some observable changes to the above segmentation and characterization (De Prato et al., 2014). In the Console segment, digital distribution is gaining significance, and secondary business models have appeared, such as “episodic content” and FTP. This segment is characterised by a high entry barrier for digital distribution, due to complex approval processes. The PC segment is less significant (with some exceptions including the market in Germany), and applies innovative new business models including crowdfunding. Smartphone and Tablets game developer’s business models are characterised by shorter development cycles, exclusive digital distribution, business models dominated by retail, episodic content, free to play and advertising. This segment has low entry barriers due the type of games and lighter approval processes (Rayna & Striukova, 2014). Social network games can be categorised as both a class of game and a segment. The predominant business model being FTP and advertising (De Prato et al., 2014; Facebook, 2015a). This segment has a low entry barrier. Finally, MMOG have largely migrated to free to play models on which we will provide more detail later in this report.

2.2.2 Other Contributions

Berg (2010) details the Business model relating to Activision-Blizzard’s World of Warcraft. Heitmann & Tidten (2011) draws inferences from the changes in the music business models correlating those changes with those of the game industry. Further they provide a short ontology of Business models to support the developments of the industry. Their three main conclusions identified the need to centralise the game experience, a shift towards online distribution channels and the development of a collective sense of identity by the target communities. Lee (2013) analyses numerous Business Models and Strategies employed by the videogame industry, focusing on case studies of Activision-Blizzard and Electronic Arts. He suggests the aggressive reach for global markets, the diversification of the platforms beyond console devices and the shift to more casual and social games with FTP models as common trends in the business development strategies of both companies. His main conclusions are that there is a continuous evolution and re-invention of business models in the games industry. Davidivici-Nora (2014) compares free to play and pay to play using an interdisciplinary approach based on microeconomics and on business models literature to provide insights into the components and the economic architecture of the business models. Goumagias et al. (2014) present an interesting evolutionary approach to the games industry business models history. Rayna & Striukova, (2014) present a comparison between what they call two business model paradigms: the ‘old’ retail business model that they suggest prevailed from the early 1980s to the late 2000s, and the ‘new’ business model where many small publishers cater to different platforms through a variety of channels.

We can infer from this that arguably the ‘old’ ‘few to few’ retail business model was not as dominant as is often perceived, we also identify a concern regarding the consistency of data and statistics. For example, ESA has only included data from digital sales since 2011 in its annual report (ESA, 2010, 2011), however the first statistics reported in 2011 corresponding to 2009 indicated sales in the USA of 5.4 Billion Dollars (out of a total of 16 Billion) relating to subscriptions, digital full games, digital add-on content, mobile apps, social network gaming,
and other physical delivery. The data, (predicated on consumer spending) ignores other significant sources of revenue, such as advertising and in play purchases.

2.3 The Applied Games Industry Market

The Applied game industry is fragmented and available data on business models and the industry itself is limited. The Applied Games Industry market, globally, is currently experiencing increasing interest and rapid growth though much of this growth, both in demand and supply is in North American and Asia Pacific (APAC)markets with the military and health sectors dominant in the USA. We can consider this growth in markets:

- Vertical Market
- Market by Application
- Market by Platform
- Market by User
- Market by Region
- Market by Funding

Applied Games have been categorised in to market segments and (supporting) agency which (Sawyer & Smith, 2008) provide a Taxonomy for Serious/ Applied games.

![Figure 1: Serious Games Taxonomy (Sawyer & Smith, 2008).](image)

2.3.1 Applied Games Market segments

Alvarez et al. (2012) describe three main segments:

- A Business market (B2B) – for example, training products (corporate, defence) or professional health products.
- A direct to Consumer market (B2C), such as educational and wellness products.
- A Business to Consumer business, market (B2B2C), providing platforms and products for other organisations to supply a consumer market (public health, military recruitment).

Research undertaken by Markets and Markets (2015) suggests that the serious (Applied) game market is expected to grow at $5.448.82 Million by 2020, Compound Annual Growth (CAGR) of 16.38% between 2015 and 2020. The education segment accounts for the major share of the market. This segment accounted for a market share of about 18% in 2014 and is expected to grow at a CAGR of 17.62% between 2015 and 2020. The corporate segment is expected to be the highest growing industry vertical market during the forecast period and is projected to grow at a CAGR of 18.37% between 2015 and 2020.

The Asia Pacific Region (APAC) is expected to be the fastest-growing Applied game market at a CAGR of 18.06% between 2015 and 2020. Within APAC, China accounted for a major market share of about 40% in 2014. The growing interest of in Applied games and the increasing emphasis on the development of serious games are propelling the growth of the market in the APAC region. The major players involved in the development of serious game market include IBM Corp. (U.S.), Cisco Systems Inc. (U.S.), Microsoft Corp. (U.S.), Nintendo Co. Ltd. (Japan), BreakAway Games (U.S.), and Serious Game International (U.K.) among others.

M2 Research (2015) estimates that the total market for video games, video game rentals, subscriptions, digital downloads, casual games, social games, mobile games and downloadable content will be in excess of $50 billion (not including hardware sales).

![Gamification Vendor Survey 2011 Vertical Market Segments](image)

Figure 2: Gamification Vendor Survey 2011 Vertical Market Segments

When considering Applied Games, we considered the contentious notion of gamification which can be defined as the adoption of applying game mechanics in more non-traditional industries.
has grown exponentially. As Figure 3 suggests, the market for gamification has broadened rapidly, as the process has spread from customer and media brands to the enterprise, healthcare and educational markets. The market had exceeded $200 million in 2012 (more than double the 2011 total) and is predicted to increase to $2.8 billion in 2016 (M2 Research 2015). The basic tools and techniques of game design are being employed in marketing, brand-building, employee reward programs, education and training, and many other areas. Several companies, including Seriosity, Bunchball, and Gigya, are well established and have impressive client rosters, including ABC, NBC, CBS, NASA, Microsoft, Chrysler, Cnet, Sprint, and many others. These market segments can be defined as Entertainment, Retail, Media & Publishing, Enterprise, Education and Healthcare/wellness. Specific data on the European Applied Game Industry is, at the time of writing, limited. Growth of the industry is highlighted and discussed within the GALA report by Garcia Sanchez et al. (2014). Optimism for growth, anecdotally, seems to be echoed among member states. Gamesmonitor (2015) produced extensive primary research into the Dutch Games Industry. Findings included a doubling of the number of Applied Games industry businesses over the relatively short time period of three years 2012 to 2015 with more than 50% of all games companies self-declaring the production of Applied games within their product portfolio with three keys areas expected to experience significant growth Education, Healthcare and Government. An open question remains: should this growth be realised whilst existing Applied Games Industry business models apply, or will growth in these areas significantly disrupt established existing (European) models?

2.3.2 Applied Games End users (Players)
Alvarez et al. (2012) suggests that although Applied Games are aimed at all generations, those under 25 represent the most important target market. It is useful to understand the end users by age group:

- Under 15: the presence of an adult or suitable framework is often required if Applied games are to be used effectively by this group, though this is a highly game literate audience (sic), an increasingly exposed to use of games in education.
- Between 15 and 24: this group expects the highest quality in terms of video games (sic), with both big budget titles (AAA) and high quality mobile and social as a benchmark.
- Over 24: within the 25-55 age group, the amount of time spent playing videogames gradually reduces with age. Above 55 however, the potential gaming audience starts to grow again, for two key reasons: people in this group have more free time available, and individual and social game playing is core activity of older people: it is also a way to stimulate intergenerational bonding, and games can be used explicitly to support wellness and rehabilitation. It should be noted that this situation is rapidly changing, for example the average age of players in the USA is now in 2016 is 35 years old.

2.3.3 Applied Games Market Actors
In the USA, the military and government are the two largest Applied game markets. The European market is less mature than that of the United States, and is principally driven by the UK, Scandinavia, Germany, the Netherlands and France. Political will has recently increased in Europe to help develop the market and there are a number of local and regional (cluster) initiatives aimed at accelerating progress (discussed in more detail in final section). Though the publisher/developer business model may not be widely supported in Europe, the order-based model seems to show increasing development in the spheres of e-learning, industrial training, and “advergaming”. Alvarez and Michaud (2008) suggested in their overview of the Digital Serious Games Actors public sector broadcasters have greater involvement than large
entertainment market videogame publishers. The overview however omits actors including health product companies, who have interests in game-based products for behaviour change in many areas of health and wellness. Further analysis Alvarez, (2012) suggests the Applied games industry is a sector populated by four groups of main actors who share a common interest in investing classified as follows:

- Traditional software sector players: with a classic value chain composed of a developer, a publisher, a distributor and a vendor. In the serious gaming sector, it is generally a single player that handles all four of these functions. This organization could change and shift to a situation where publishers specialize in healthcare or training or some other area. There are very few regular video game companies that are involved in serious games, so most of these companies are "pure" serious game players.
- Promoters and investors from the private, research and public sector that provide supply-side investment to develop capacity, products, tools and evidence to kick-start the nascent market. These include universities, public authorities, public and private research funders, schools or continuing education establishments, companies that manage their own in-house training, etc. They are contributing their expertise and/or monetary resources to serious games and are therefore the driving forces behind the sector's current momentum. For researchers, this sector is opening up a sizeable field of investigation that is capable of creating more direct gateways to businesses. University research therefore combines technological issues with concrete applications, with the support of private sector companies as part of collaborative R&D projects. In some cases, these projects are supported by existing national schemes (the Small Business Act in the United States, ANR projects in France, for instance) or more recent dedicated programmes.
- Intermediate players, and especially marketing agencies and media companies, who are likely to either produce or commission a serious game. They are involved in the development side by becoming a serious game publisher in a particular segment, especially information, communication, training and teaching or instruction. Intermediate players, notably ISPs and consumer electronics manufacturers, are in a position to preinstall applications on the devices they sell or put into users' homes.
- Other media companies – Media companies are increasingly commissioning 360-degree programming, with TV, online and other interactive such as games. Aware from pure entertainment programming this can include the commissioning of games. In particular, this can include public sector broadcasters, such as BBC and Channel 4 in UK with a mandate to produce public-interest media in a whole range of education and public-interest topics, and are commissioning interactive material as part of the move away from pure television and radio.

### 2.3.4 Applied Games Business Models

Alvarez et al. (2012) identify three modes of business for Applied Games (Serious Games):

- The order-based model (Hands for Hire) is one where a client contracts a business of some kind (though not a private individual) to design and develop an Applied game. This is then used exclusively by the client.
- The licence-based model is where titles produced by a publisher, company, independent, association or public or private institution (though not a private individual) are made available for a fee. The application is either a ready-to-use serious game (customized or non-customized), a piece of development software to produce an Applied game, or Applied game integrated within another application or product.
- The consulting/training or Service model is where a public or private institution’s designers/developers are trained in all the different stages of serious game and gaming development on-site. This can involve not only the development of a special-purpose game, but also the development of practices in which it can be used most effectively.
These will often be done in partnerships with other public, research and private organisations.

3. BUSINESS MODELS CANVAS BUILDING BLOCKS

Using the Business model canvas in this chapter we describe the Games Industry business models.

3.1 Customer Segments

There have been a number of approaches to considering customer segmentation in video games. Studies (ISFE 2012, ESA 2015) provide data on player demographics in Europe, and in the USA. The average age of the gamers is 35 years old, consisting of 55% males and 45% females.

This type of characterisation is not, particular useful in developing Business Model. Games often appeal to specific subgroups of the gamer population, and are designed with distance player profiles in mind. A player profile is characterised by the motivational characteristics needs and preferences, interests, expectations, fears and dreams of the player (Martinho et al, 2014). Whilst there are numerous psychological models, in this report we focus on industry player models and classifications.

3.1.1 Hardcore-cool-casual classification

Electronic Arts (2015) categorised their players into 3 groups. “Hardcore gamers” were characterised as experienced players, with knowledge of both the different genre and in language. They read about games and consume specialist publications and videos. Playing is an integral part of their lifestyle, they organize their lives and friendships around it. Challenge is their main motivation for playing. They tolerate complex controls. and like to test games before buying. Hardcore gamers are a relatively small percentage of the population. The second group are “cool gamers”. Cool gamers have hardcore friends. They know and have experience with games, but most of their knowledge comes from listening to their hardcore friends. Their choice of games is influenced by their friends, or the top selling/advertised games. The third group defined are “casual gamers”. They are not knowledgeable about game conventions and language. Games are not an integral part of their lifestyle, they do not read or talk about them. They play at their convenience and If they think a game is too hard or challenging they stop playing. They Usually play just one game at a time. This classification demonstrates games must have different difficulty levels to please the different types of players.

3.1.2 The “Zynga” model

Named after the developer Zynga. Dickey (2011) divided Zynga customers using four dimensions: Play Frequency, Socialness, Spending Profile and Lifetime. Play frequency is how often they play; Socialness is how viral or willing to share they are; Spending profile is how often do they pay for an in-game item; and Lifetime represents how long have they been playing a certain game, or how long will they play it.

3.2 Value Propositions

The Value propositions of the Leisure industry are focussed around offering entertainment experience to players.

3.3 Channels (Leisure Games)

There are two established distribution channels for Leisure games: Packaged (boxed) media via the traditional retail store, and electronic or digital distribution via the internet.
3.3.1 Packaged Media

Distributing games via packaged media, incurs considerable cost with a long value chain: The consumer purchases the game from the retailer, who purchases from the distributor, who purchases from the publisher, that funded the manufacture of the physical goods. This channel covers all phases:

1. Awareness: The game is exposed in the store, and special product placement or promotion material can be arranged to attract potential clients. The user can physically manipulate the box, and sometimes even experience a demo of the game.
2. Evaluation: The retailer can advise and influence customers about the products. Important for impulse buying.
3. Purchase & Delivery: Immediate at the store, which results in immediate satisfaction of the customer desires.
4. After-sales: If there is any issue with the game, usually the replacement is immediate. For general questions about game installation and compatibility, the store can also help. This channel does not deal with other types of user support.

Distributing packaged media can be distributed via an online store (e.g. Amazon) this changes the customer experience in the following ways:

1. Awareness: The game is available through search with a few featured games appearing by default.
2. Evaluation: The customer is able to read previous buyers feedback and ratings. Important for impulse buying.
3. Purchase: Using Credit Card or PayPal;
4. Delivery: By the mail or special delivery firm; with the potential of lost packages, delayed deliveries, theft, or special import duties can affect user decision to buy.
5. After-sales: If there is any physical problem with the game, the customer must send the package back at their own expense. support is problematic with the customer reliant on user forums or the publisher on-line presence for support.

3.3.2 Electronic or Digital Distribution

Electronic distribution involves delivering the game via the internet. From the customer’s perspective the game is downloaded directly to their machine. The advantage of this model is that the marginal costs are negligible and there is no requirement to produce physical media product or logistics.

The advantages being to the publisher being:

- Users are identified, thus reducing piracy;
- Users platform characteristics are recorded;
- Game usage can also be recorded;

For the consumer, the advantages are:

- “buy once, play everywhere”: When changing machines, or device the games library is persistent
- games always have the latest patches applied in the background, thus giving a much smoother user experience.

Electronic distribution raises the issue of awareness; platforms are flooded with new games constantly. For the casual customer this means connecting to the platform to be aware of a game, it must be near the top of downloads, top of reviews, be featured by the platform, or to have been advertised. Control of the distribution platform is critical with acquisition of market intelligence and the revenue it can extract (usually 30%-50% of the sales value). In closed systems such as consoles and Apple iOS devices the system builder controls the distribution platform. For the PC, Steam is the market leader in response the large publishers are now developing their own exclusive platforms. The iOS App Store and Google Play account for over 90% of the worldwide mobile games revenue (SuperData, 2014a). On the other hand, revenue from downloadable content is highly concentrated: the top 2% of digital console publishers earn almost half of all downloadable content revenue and less than 1% of mobile publishers earn 80% (SuperData Research, 2015b). Electronic Distribution is targeted as a strategic priority for
the large publishers, as the percentage of total sales via digital channels increases. In 2013-2014, the statistics were 47% for Electronic Arts (EA), 44% for Activision/Blizzard, 24% for Take-Two Interactive, 19% for Ubisoft and 10% for Square Enix (Superdata Research, 2015b). Both Activision and EA have focussed their attention on digital distribution as their prime business model. ISOFT, in its 2014 Annual report, indicated that the size of the videogame market in 2013 was €17.6 billion for Physical (boxed) game sales and Digital (Boxed) and €27.1 billion for online sales, which is a clear indication of the current dominance of the electronic distribution channel.

3.3.3 Browser Based
Browser-based games have the advantage that they can be played (usually) without additional software download or installation. While this distribution channel has traditionally been used for simple low quality graphics single- or multi- player games, new technologies such as HTML5 and WebGL allow now for improved graphics and gameplay and simplify across platform development such as Android and iOS.

3.3.4 Social Network Games
Social networks are an important electronic distribution sub-channel for some games, mainly the so-called “Social Network Games”. Online social interaction increases every year, with Facebook claiming 968 million Daily Active Users (DAU) and 1490 million Monthly Active Users (MAU) in June of 2015 (Facebook, 2015b). The ten largest games using Facebook as a distribution channel/platform have between 10 million and 50 million DAU. There is a projected fall in access to social networks using personal computers and an increase in access using mobile devices. Social Network games are predominantly F2P games. Awareness is linked to the networks platform the game can leverage the player’s social network to increase participation.

3.3.5 Other distribution channels In-App purchases
Additional channels of distribution and revenue generation include In-App purchases, bundle promotions and bundle, Original Equipment Manufacture (OEM).

3.4 Channels (Applied games)
The distribution of Applied Games is highly targeted and not as widespread as leisure games. Leisure game providers have established channels their business models which are not necessarily conducive to selling applied games. The lack of marketing effort is identified as one of the key challenges for scaling up an applied game. Mayo (2009) summarised some of the marketing approaches used to distribute educational/serious games specifically within schools and categorised these as direct sales to teachers (or business to consumer in marketing terms) direct to district (or business to business in marketing terms) direct to students (or business to consumer), bundled with teacher training (or business to business) or via traditional textbook publishers or hardware suppliers. Alvarez et al. (2012) identified the following delivery models in the digital serious games market:
- Free-of-charge distribution: essentially based on web marketing, this approach employs all the various marketing strategies used online.
- Semi-free-of-charge distribution: Using the freemium model, characterized by bonus products, demoware, shareware and trialware, and virtual communities.
- Commercial distribution: made up of electronic and physical sales, as well as use in restricted areas.

3.5 Customer Relationships
The Leisure Game industry invests heavily in developing and maintaining customer relationships recognising that in a connected age relationships are crucial to the long term success of their business.
3.5.1 **Franchises and License-based Games**

Licenced games and franchise products are an established way in which the Leisure Industry maintains relationships with its customers. Activision Blizzard (2015b) defines a franchise as a brand that:

1) Has a history of audience success and profitability;
2) Is globally appealing;
3) Attracts a large and engaged community capable of generating operating profit over a long period of time, and,
4) Most importantly, has a clear pathway for innovation, inspiration and creativity.

Successful game releases can emerge as franchises for example console games such as Call of Duty, Need for Speed or Assassins Creed. A title published in a franchise has an established player leveraged on previous releases. Consumers have brand awareness and anticipate new version releases.

Licensed-based games benefit from some of the awareness and advantages as franchises. The increased convergence of cultural artefacts is considered a good thing, broadening the market by providing new themes, narratives and characters (Kerr, 2006). Recently, a reverse trend has emerged, where successful games Intellectual Property (IP) has been licensed to other media formats (e.g., film industry) Laura Croft, Tomb Raider being a case in point.

3.5.2 **Email newsletters**

Most Leisure games companies distribute email to players registered with them. Content varies, from new expansions announcements and promotions for retail games, to online game-related news and events.

3.5.3 **Player Forums**

Player forums provide communication between players and the Games company, and is an important element in developing player communities. By monitoring forums, the company can assess player sentiment reactions to its value propositions and adjust its strategy accordingly. An extreme case is Eve Online, where players elect representatives to the Council of Stellar Management (Óskarsson, 2009), to represent their views to CCP’s staff. This council had an important role during several episodes where relations between large sections of the player base and CCP deteriorated (Parkin, 2015).

3.5.4 **Tournaments and live events**

Tournaments and live events serve to attract new players and build loyalty with existing ones. E-sports have been gaining worldwide attention, starting in Korea and driven by broadband availability. Recently, aggressive promotion has led companies like Valve and Activision-Blizzard to invest significantly in prizes to create and attract professional teams. Live events can attract a large following in the internet. For example, 27M viewers watched the 2014 League of Legends world championship (Superdata Research, 2015b). Live events without competition as their main attraction are used to nurture the community, increasing loyalty, retention and conversion. Notable examples are the annual Eve Fanfest, organized by Icelandic MMORPG developer CCP since 2004, or the more recent Citizen Con, organized by RSI Industries, producer of the crowd-funded upcoming title “Star Citizen”.

3.5.5 **Gaming Video content**

From videos posted by game companies to promote upcoming releases, to clips or montages of gameplay made by players with the purpose of teaching, for humour or just share the experience, video content related to gaming has attained a huge viewership, almost half a Billion viewers - over 486 Million people watching in 2015 and in the process emerging as a $3.8 Billion Industry in itself (SuperData Research, 2015b). The emergence of easy-to-use video platforms like YouTube and Twitch has popularized video production to create and maintain customer relationships.
3.5.6 Gaming Analytics
Interest in gathering data and analytics from player behaviour is increasing as is applying analytics to increase revenues. The developer Zynga analysed player behaviour in one of their games Fishville and learned that 66% of players just fed their fish everyday. They used this information to develop a micro transaction where people were offered to buy superfood “Your fish will love you for it” and then created fish that could only be fed by superfood (Dickey, 2011).

3.5.7 Participation in Social Networks
Increasingly game companies are supplementing core marketing activities with active participation in online social networks. This participation can involve signposting to online content, marketing offers or stimulating response and feedback from gaming communities to proposed features or developments within games.

3.6 Revenue Streams
Game companies rely on several potential revenue streams. The revenue streams that work depend heavily on the type of game, players type and their number. People will be willing to pay for many possible propositions, such as the ones described in (Dickey, 2011):

- Fun: to have fun playing the game (or increase the fun by avoiding what they consider chores)
- Vanity/ Rarity: for limited items only a few exist, or are very difficult to obtain;
- Exclusive Features: for certain features of the gameplay only available for a fee;
- Competition: to earn a competitive advantage;
- Social Value: by wanting their friends to play and being able to better helping them;
- Convenience: to speed up painful activities like searching and repetitive clicking;
- Chance: Casino effect
- Decoration / Expression: to express themselves
- Identity: via connection to the avatar
- Stat progress: for progress or temporary power in a game, specially a competitive one
- Story: to advance the story
- Primacy: to be the first;
- Obligation: to fulfil obligations like Tamagoshi-style pet care

SuperData Research (2014a) describes what motivates players to spend money in what is called “in-App” purchases and as we referred to it earlier the “Freemium model”, that is, purchases made directly inside an application for smartphone and tablet users. Detailed below are the revenue streams available in games.

3.6.1 Retail Sales
Revenue is generated when the game is bought by consumers. Content updates can be provided for free. A pre-launch edition (pre-order) is usually cheaper and may include some in-game bonus. The objective of the offer is to stimulate early purchase. There are also “Exclusive”, “Collectors” or “Premium” Editions at graded price points, offering extra in-game content or game memorabilia (miniatures, art books soundtracks).

3.6.2 Usage fees
Revenue is generated from players paying for the time they spend playing the game and when players buy time (hours) of play or lives. This is based on the original arcade revenue (coin-up). This pay-as-you-play approach can be attractive to more casual players.

3.6.3 Subscription fees
This revenue stream is generated by selling continuous access to an online game. The player pays a fixed amount of money per month, and this money provides access to the gameworld via internet and play the game. This type of revenue emerged with the MMOs of the late 1990s.
3.6.4 **Meta-game services**
Metagame services include server changes, avatar (re-)customization or re-specification and is primarily used in MMOs.

3.6.5 **In-game cosmetic and experience add ons.**
Revenue is developed through selling cosmetic improvements and additional in game experiences that do not effect the gameplay. These may include items such as customised paint, experiences may include additional tournaments or interactions.

3.6.6 **Selling in-game gameplay/progress items**
This revenue category includes items and services that affect the gameplay and/or progression of the players in the game. These can be Quest unlocks, consumables or energy, statistical boosts, seasonal content, limited time/edition content, soft currency, or collectibles. When a game offers these incentives it is described as a “Pay to Win” (P2W) game. Conceptually the idea behind this subset of items was to emulate in the digital realm the success of physical products like Magic: The Gathering and Pokemon Collectible card games.

3.6.7 **Tournament and live event fees and sponsorships**
Revenues in eSports largely derive from advertising and corporate sponsorship. Revenue is significant in Asia estimated to be $621 million for 2015 and the European market estimated at $72 million (Superdata, 2015a).

3.6.8 **Advertising and Sponsorship**
Advertising and sponsorship can be a significant source of revenue though in many games in game advertising can reduce player immersion with the notable exception of sports simulations where branding can be integral to the game.

3.6.9 **Merchandise and peripherals**
From figurines to t-shirts, mousepads, art, peripherals can be sold to players. For example, Riot Games sells posters depicting their champions for $15, and statuettes which cost up to $250. The Cloud Imperium Games sells Star Citizen Mugs, clothing, mousepads, playing cards, character and ship models.

3.6.10 **Gaming-related video streaming**
While most game-related video streaming (game reviews, gameplay videos, game developer’s interviews, etc.) is done by third parties some game companies develop their own channels; producing trailers and gameplay videos, or live-event coverage. Revenue is derived from sponsors and advertising and is directly controlled by the video platform.

3.6.11 **Crowdfunding and Early Access**
Crowdfunding is a combination of preorder-funding, tiered pricing, through a community engagement (crowdsourcing). Conceptually interested parties commit themselves to backing a project, conditional on achieving a pre-determined financial goal. The dominant Crowdfunding platform for video games development is Kickstarter with The PC being the primary target platform. Crowdfunding emerged in 2009.
Early Access, or paid-alpha is another source of revenue for game companies. In this case, the company sells the game in the early stages of development, in order to fund further development of the product. Players buying early access and are engaged in feedback and Quality Assurance processes and able to influence the game’s development. A pioneer of Early Access was the game Minecraft, with development funded through early sales. Minecraft sold around 800 000 copies of its Alpha at $9.95 each allowing the creators to fully develop their game.
3.7 **Key Resources**

3.7.1 **Human Resources**

Human resources are an essential to any game studio. Game companies strive to and often feature in “best places to work” listings. For example, in a recent survey of large companies (1000+ employees), Riot Games was #13 and Activision Blizzard was #96 and on Fortune’s “100 Best Companies to Work For List” 2015 list. Insomniac Games was ranked at #10 and #12 in the Best Small Workplaces 2014 and 2015, respectively.

3.7.2 **Intellectual Property**

Intellectual Property (IP) is considered the lifeblood of the games industry (Greenspan et al, 2014). IP rights are associated both with the tools used to develop games and the content included in a game. The different types of IP are mapped onto the game business in the following way (Table 2):

<table>
<thead>
<tr>
<th>Copyright</th>
<th>Art; Code; Characters; Story; Music; Box design; Website design;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trademark</td>
<td>Company name and logo; Game title and subtitle; Game characters;</td>
</tr>
<tr>
<td>Trade Secret</td>
<td>In-house development tools; Developer, Middleware and Publisher contacts; Deal terms; Pricing information; Customer contacts;</td>
</tr>
<tr>
<td>Patent</td>
<td>Hardware technical solutions; Inventive gameplay or game design elements; Technical innovations such as software, networking or database design;</td>
</tr>
</tbody>
</table>

Table 2 Intellectual Property  Source: (Greenspan et al, 2014)

Copyright safeguards the creative and artistic expression in software (the code), the artwork and the sound (and music) of a game. To reinforce protection, characters are also trademarked, as are game or series’ titles. Patents are applied to hardware technical solutions, inventive gameplay or game design elements and technical innovations such as software, networking or database design.

3.8 **Key Activities**

The key activities of the games industries are the design, development, technical & user support, marketing and in many case distribution (channels) of digital games. These activities are described in detail in section 1.2 of this report and relate directly to defined roles. It is worth noting that as digital disruption continues to impact on the Leisure industry activities will change in response. As highlighted in this report organisations will increasingly be required undertake multiple activities as value chains are reduced by online and digital distribution channels. Conversely; in the Applied Industry, where the impact of disruptive digital technologies has yet to fully come to bear, the industry is less mature with shorter value chains organisations already undertake multiple activities. Applied Games companies are often design, technical, production, distribution and marketing organisations combined and consequently the distance between end-users (players) is much less.

3.9 **Key Partners**

The key partners for the Leisure and Applied games industries are derived from the functional roles as detailed in the earlier section (1.2) of this report. For the Leisure games industries, the value chain consists (historically) of Developers, Publishers, Platform Holders, Middleware Developers and the consumer. Digital and online distribution has had the effect of blurring these
established partnerships. For the Applied games industry, the Developer, commissioning Agency, Educational publishers and Education provider are the key partnerships.

3.10 Cost Structure
Cost structure in the Leisure industry is very company-dependent but can be broken down into four key elements as follows (DFC, 2010): The Development costs, Marketing and user acquisition, delivery/distribution and server and maintenance costs.

4. BUSINESS MODELS
As Peterson (2014) argues, with the disruptive challenges to the established retail models coupled with greater availability of games via digital online distribution comes greater flexibility in the choice of business model for the developer. The digital distribution model provides increased flexibility in retail pricing for promotion or time-bound product to stimulate demand for games. In this chapter we will identify and discuss the business models employed by the Leisure Games industry.

4.1 Retail
With the established retail business model players purchase a game and with that purchase is an implicit commitment. A variety of editions can be made available. A pre-launch edition is usually less expensive and includes an incentive or bonus. There may in addition be a “Exclusive”, “Collectors” or “Premium” Editions at different points, offering extra content or memorabilia. This model can be divided into several sub-models. The first being the established retail business model, where publishers pay a studio to develop a product. The model’s key characteristics define the Publisher as both as the client and partner. In this model there is significant distance between the players and the studio. A studio using this model usually earns a royalty based revenue of a % based value generated by the sale of its game.

A variant business model is the self-publishing retail model, where the studio assumes the publisher’s role. Here the clients are the players. Revenue comes directly from the retail sales of the game and related merchandising. For studios, self-publishing is significantly enabled by digital distribution. This model of distribution has disrupted the traditional channel to markets and a significantly higher revenue stream derives from the generated sales, and offers distinct advantages being:

- There is no inventory, production costs or delays;
- The distribution and retail revenue is generated by the studio.
- Piracy to a great extent;
- Allows a deeper relationship with the end users (B2C).

With the advent of Electronic Distribution via platforms like Steam or the App Stores of Google or Apple, games can now be priced at any price point. On the other hand, there could remain a niche for the premium editions that include physical items for distribution through traditional channels.

4.2 Subscription-based
The subscription-based model had its origins in persistent universes and MMO’s Subscription models historically were combined with retail models. With the advent of electronic distribution, the game is now usually available initially as a Freemium product with revenue derived from players once committed to the game. This model has many advantages from the game company point-of-view:

- A predictable Revenue stream;
- No piracy, as the users must connect and authenticate themselves to company servers in order to play;
● Closer to the players who are more engaged in the game;
● It is much easier to retain existing established subscribers than to acquire new players or recruit via games sales and or expansion packs.

The value proposition offered to the player in a subscription-based model is in the supply of frequent content additions and updates. A variant of the subscription-only business model is the “Pay to Play”. In this variant, the players buy play time with money, which is tradable inside the game, at an auction house, for in-game currency. An example of a company and game using this variant is CCP with Eve Online (CCP, 2015). The variant introduces a multi-side aspect to the business model, as it manages to cater to both players with time and little money to play and players with money but not much time or liking to grinding, thus potentially increasing the player base. It is also a step into the free-to-play model with the caveat that, in principle, the play time was bought with real money (not necessarily the player using it). It has an additional advantage of giving a legal way for players to buy in-game currency. Blizzard has recently introduced a similar system for its World of Warcraft game (Blizzard, 2015).

Albeit its characteristics, it seems CCP is one of the few successes applying this model. Other companies have tried to introduce it into their games (e.g. Kronos by Sony Online Entertainment for Everquest, C.R.E.E.D. by NCSOFT for Wildstar (Handrahan, 2013)), but have abandoned the subscription business model, and moved to a free-to-play business model (NCSOFT, 2015). It is conceivable this model is only applicable to those games with an established player base.

The “metered Pay to Play” business model is where players buy time (hours) of play. This pay-as-you-play approach can be attractive to casual players. Its origins lie in Compuserve’s Islands of Kesmai (Koster, 2002). The model is common in some Asian countries, namely China, where World of Warcraft uses it, but is not widely applied in Western markets.

4.3 Free to play (F2P)
Free to play is characterised by providing access for the player without financial commitment. Facebook was the early innovator in the free-to-play model with a platform broad demographic reach and easy viral marketing catapulted Zynga and other social game companies into rapid growth (Peterson, 2014). On mobile, free-to-play increase effectiveness when Apple introduced in-App purchases. The F2P model can be characterised as:

● Active Users: Users that play the game on a regular basis. The most important statistics when judging the size of a gaming community is the Monthly Active Users (MAU) the game has. This number can be very large. King.com’s Candy Crush Saga had over 200 Million MAU in 2013-2014 (Superdata, 2014a).
● Paying Users: Users that made a purchase in the time period considered.
● Conversion Rate (C): the ratio between Paying Users and Active Users. Conversion rates can vary from around 1% for social network games or mobile games to around 10% for client-based MMOs. It also depends on the target country. For instance, conversion rates for mobile games varied in 2013-014 from 2.2% in Russia to 5.1% in the US market (Superdata, 2014a).
● Average Revenue per Paying User (ARPPU): How much does a Paying User spend on the game per month on average? For instance, in 2013-2014, Brazilian paying mobile game players spent an average of $12.22 per month, while U.K. players spent $26.23. King.com attained an ARPPU of $16.26 for Candy Crush saga on iOS, but only $9.72 for Android users (Superdata, 2014a).
● Tenure or Lifetime: The amount of months a player keeps playing before abandoning the game.
The monthly revenue of a F2P game can thus be calculated by the formula Revenue = MAU x C x ARPPU. With an increase in one of the metrics linearly affecting the revenue (for instance, doubling the conversion rate, keeping the number of players and the ARPPU unchanged, would double the revenue). The Lifetime Value of Paying User (LVPU) is given by LVPU = ARPPU x Lifetime and should be greater than the cost of acquisition of the paying player, for the game to be profitable. It must be noted that, as only 1% to 10% of all players convert into a paying player and most players will never make a purchase, acquisition and maintenance costs should be as small as possible.

In the Free to Play (F2P) business model, it is critical that the gameplay is designed to support the continuous monetization of the game. Techniques can be designed based on the game and possible revenue streams. For instance, Dickey (2011) described one as Grind Vs Spam Vs Pay. In order to complete an item collection to get a reward, a player is given the choice of either grinding for it for many hours, or ask friends for it, or paying for it. Game Analytics are used to continually monitor player behaviour and to make adjustments to the gameplay on a regular basis to improve virality (acquisition), retention and monetization (Davidivici-Nora, 2014).

5. BUSINESS MODEL CANVAS EXAMPLES
In this section we present exemplars of existing digital games business models in the Applied and leisure game industries.

5.1 An example of a Leisure Industry Model.
League of Legends (LoL) is a PC Multiplayer Online Battle Arena (MOBA) game, inspired by a popular mod for Blizzards Warcraft III Real Time Strategy (RTS) game. In LoL, players control a Champion with unique abilities that, in a team and must battle against a team of other players or an Artificial Intelligence controlled team. Framed in the Business Model canvas:

1. Customer Segments
   • LoL has a base of 64 million players globally, 90% Male and 60% with college education.

2. Value Proposition
   • In LoL you have to defend your team’s base and attack the other team to win the match, which lasts 30-40 minutes on average. There are four different game modes and each game mode includes a variety of intermediate objectives that give players and teams advantages in achieving the victory. The player controlled champions are chosen or assigned every match, and have a set of unique abilities. Champions begin every match at a low level and then gain experience over the course of the match to achieve a maximum level of 18. Experience and gold are gained during the match by killing enemy minions, players and structures. The gold can then be spent throughout the match to buy in-game items that further improve the champion’s abilities.
   • The earnings of a game do not carry over to the next match. But player experience (influence points) is earned by playing matches. Player accounts begin at level one and go up to a maximum level of 30. Progress unlocks other maps and game modes not available to new players, as well as additional abilities to be used in matches.
   • Constant updates and new content.

3. Channels
   • Internet.
   • Large scale gaming events.
   • Invitations by existing players to their friends.

4. Customer Relationships
   • Large and active gaming community.
   • Who use Social Media.
   • E-Sports Tournaments with millions of dollars in prize money.

5. Revenue Streams
   • The game is free to play, but not ‘pay to win’.
• There is a dual currency: Players buy Riot Points (RP) with money and earn Influence Points (IP) through playing.
• Both currencies can be used to buy in-game items, with two exceptions: IP cannot buy skins which are cosmetic, and RP cannot buy Runes, which boost the champion in-match.

6. Key Resources
• Seven offices, spread around the world
• Around 1000 employees with hands-on experience
• Robust technology platform

7. Key Activities
• Platform maintenance.
• Develop new content.
• Quality Assurance.
• Community Support.
• Tournament Organization.

8. Key Partners
• Tecent (Parent Company and distribution in China).

9. Cost Structure
• Tech infrastructure maintenance.
• Human resources.
• Promotion.

5.2 Examples of Existing Applied Industry models

5.2.1 Customers/Users and demand markets analysis
The emerging market for supply of expertise and products for serious gaming is fragmented and business models and interest uncertain. An additional, and fundamental difficulty, is that the demand side is not developed except in a few domains. While intermediary organisations like IT and telecoms companies or media commissioners are spending on digital games as part of marketing and communication strategies, other end user organisations only just start to be aware and have the interest to commission services. While in a few specific areas serious gaming may gain rapid traction, in many sectors there remains a number of years of experimentation, relationship and market building.

Alvarez et al. (2012) note that games are being developed in the sectors of such as agriculture, culture, energy, social services, environmental protection, and training, specific sectors not appreciated by Sawyer and Smith, but then focus on defence, healthcare, formal education, corporate training, and information and communication as the key markets.

Serious games are generally not sold to end users, but commissioned or supported by intermediaries. The biggest serious game clients at present are the American military and government, which have financed the most significant productions and are developing the industry as a whole. Other backers include political parties, businesses, public and private institutions and publishing houses in the US, the games industry, through the Entertainment Software Association Foundation also fund serious games, as part of Corporate Social Responsibility activities, and certainly also to try to improve the image of digital games in the eyes of politicians, the public, and potential regulators.

5.2.2 Considerations for developing business models in applied game industry
To develop business models for applied games one has to take into consideration the following issues
● Stakeholders: involved in the value chain of the applied games development and deployment, as well as key stakeholders that provide added value to the final product like technology or content provider.
● Markets: applied games can be applied in a wide variety of areas which have different structure and possibilities.
● Delivery Channel: what are the different distribution channels that can be used in the applied games sector.
● Funding: That will provide the economic resources for the development and deployment of the applied games.
● Platform: There are different platforms that can be used for SGs/APs, from board games to video games consoles, to web and mobile apps, with different technology applied.
● License: applied games need to have a license that will protect the IPR of the owner of the game and return profits to them.
● Customer: they have the need of applied games in their businesses for different purposes that define the requirements.

The value chain in the area of digital serious games is made up of the following three major groups:

● Developers: produce the content of serious games, or tailor them. Currently, in the USA and Europe, these tend to be SMEs or very small enterprises/freelancers and are generally serious game "pure players". They do not usually have a video game background, but have worked in the promotion, development or publishing of professional software. They can also come from the animation, and general media production industry, eLearning or even pharmaceuticals.
● Publishers: cover the costs of publishing, marketing and packaging serious games, both for physical and electronic sales. This group also includes developers/publishers that produce their own titles internally. There is currently no serious game “pure player” publishers due to the diversity of applications. Intermediaries who play the role of publishers can be established players in eLearning and education publishing, and healthcare systems and services.
● Distributors and Procurement: digital serious games often do not follow traditional retailer-based distribution models. The principal customer of the game may act as distributor to final users: The American army and NSA for example distribute certain products directly to the public. Most titles are sold and distributed via the internet. Distribution in many sectors in the area of serious games is shaped by public and private procurement processes that distance the end user organisations from the process, making the procurement agencies the key distributing agents.

5.2.3 Example of business models for applied games
The goal of the Natural History Education Pilot is to demonstrate the creative re-use of Europeana resources by developing viable applications, in the form of (serious) games, with a clear focus on the field of natural history education. The National Museum in Prague is the largest publicly funded museum in the Czech Republic commissioned the" Museum Adventure game". The game is a valuable learning tool for museum visitors and users to virtually explore the collections, and result in increasing the profile of the museums.

The game was developed by Exozet Games, a company that specialises in delivering pioneering online and mobile applications, having realised more than two hundred gaming projects. The game is a valuable exercise on how to collaborate with cultural institutions and to make innovative use of cultural heritage content. In other words, it is an opportunity to explore a new market.

The following business model canvas was developed for the “Museum Adventure Game”:

1. Customer Segments
• Museum visitors (children, families).
• Teachers and students.
• Museums.
• Educational institutions.
• Game developers.
• Technology providers.

2. Value Proposition
• Offers museum visitors, children and parents (informal education) and teachers (formal education) an application that is both fun and entertaining, socially engaging, as well as educational in a way that they can learn something about natural history.
• Offers museums an attractive game application via which visitors can experience their collections and exhibitions in a new way (digitally) and stimulate them to visit the museum.
• Offers public educational institutions an attractive game application that educates in natural history themes.
• Offers game developers the opportunity to participate in an effort to deliver successful gaming applications for the museum sector that have a chance of being adopted by museum visitors (reaching new markets).
• Offers technology providers a chance to promote their software and hardware solutions to relevant customer segments.

3. Channels
• App Store (also for dissemination)
• Europeana and museum (online) PR
• Museum space for direct offline engagement
• Social media
• Business sector networking

4. Customer Relationships
• Direct and personal
• Fun and entertaining
• Educational

5. Revenue Streams
• There is a basic version of the game that can be downloaded for free; additional items, the full version of the game and extra levels can be purchased (freemium model).
• Adaptation for other museums/institutions (consulting and projects)
• Museum ticket sales
• Public–private partnerships with tech companies
• Governmental/public funding
• Philanthropic funding
• Corporate sponsorships (e.g., via sponsoring hardware)
• Crowdfunding
• Advertising
• Selling audiences to businesses

6. Key Resources
• Museum experts/professionals (co-developing the stories) and network of museums
• Game developers/programmers
• Project management / organisation
• Tech infrastructure
• Content delivered by content providers (museums, galleries etc.)

7. Key Activities
• Operation / project management
• Exploitation
• Expansion/scalability
• Maintain contact with museum experts
• Marketing and promotion
8. Key Partners

- Europeana
- Europeana Creative consortium
- Libraries, natural history museums, archives
- Technical library and tool providers
- Web developers
- Apple (App Store)
- Music and sound studio

9. Cost Structure

- Tech infrastructure maintenance
- Taxes/fees
- Overheads
- Sound and music production
- Software/licences
- Human resources
- Promotion

6. CONVERGENCE OF THE LEISURE AND APPLIED GAME INDUSTRIES

There is some evidence beginning to emerge of convergence of these two quite distinct Industries, this could have implications for future business models across both domains. In 2011 MinecraftEDu a classroom ready version of Minecraft with accompanying educational resources was launched, in 2012 Valve Games released educational materials to support its Portal 2 and recently during the 2015 Games for Change Festival Rovio Entertainment presented on the collaboration between Angry Birds and NASA. This represents a step change in approach from Leisure Game Developers who have historically dismissed the potential of Applied Games in terms of revenue. Kuato Studios is a case in point in describing their products as “the Learnification of games as opposed to the gamification of Learning” In summary Leisure games developers are beginning to recognised the educational value of their existing games and associated Intellectual property. This may present business opportunities for the RAGE project assets, principally designed to add pedagogic authenticity and value, to be added to existing leisure games this in turn may present business opportunities for the ecosystem and Leisure Game developers.

7. CONCLUSIONS

In some respects, our research has confirmed the initial assumptions detailed in the RAGE project outline; There are a number of clear distinctions between the Leisure and Applied industries and their respective levels of maturity are quite different. In the introduction we posed three fundamental research questions:

- What are the business models applied within the Leisure Game industry?

The Leisure Industry has multiple well defined and sophisticated business models that have emerged over the course of the industries development. The Industry has the potential to drive revenue from a variety of different channels and sources. These models have emerged organically as the industry has grown over the last three decades. Digital distribution and the opportunities to stimulate a variety of revenue sources has fuelled competitiveness within the sector and Business have been quick to develop their business models in response to emergent new technologies and consumer demands. Digital distribution has been the predominant disruption to business models in the sector.

- What are the business models applied within the Applied Game industry?
Our research was inconclusive in determining that growth and the associated business models of the Applied industry will follow a similar trajectory to that of the Leisure industry. There is substantial, anecdotal evidence of optimism for growth amongst European based companies. In Europe the Industry has yet to generate the levels of revenue of other global regions in particular and as highlighted in the report in the USA and Asia Pacific regions. Consistent with other research into the Applied and or Serious Games industry the predominant business models remain the “Hands for Hire” or “Service” models. Commissioning is predominantly through agencies such as the government, military and health sectors. There is limited evidence of any impact of the (digital) disruption to markets or the adoption of associated models that the Leisure game industry (as indicated above) has experienced over, in particular, the last decade. As interest in the domain from the more established and mature traditional educational content industry publishers across Europe is expected increases, new business models will no doubt emerge.

This lack of disruptive or emergent business models may be due to the limited scope to monetise Applied games particularly in education where the purpose and ethical issues may override opportunities to develop new value propositions. There is scope to reduce production costs by using external resources and assets and this bodes well for the take up and sustainability of the RAGE ecosystem. Further as organisations strive to improve measurable learning outcomes the requirement for assets that provide this kind of functionality to developers will be in demand. As indicated in the accompanying Value Chain Analysis document 7.2 the market in Europe is more fragmented than other global regions and is dominated by SME and this has both a positive and a negative impact. Positive in that the industry is agile and quick to respond to demand and market changes and negative in that the industry could be under resourced. The proposed RAGE ecosystem could support the industry in both aspects, underpinning innovation through the provision of value producing assets and addressing resourcing issues through demonstrating production efficiencies to be gained through the use of assets.

- Is there evidence of the convergence of business models across the two industries?

As indicated in the final paragraph of this report there is now evidence emerging of some convergence between these two distinct domains and this could result in potential new business opportunities and change business models for both Industries. For the Leisure Industry existing Intellectual Property could be exploited in the Applied sector by adding pedagogic functionality of the type provided by many of the RAGE project assets and for the Applied Industry opportunities may emerge for the development of their own IPR for re-purpose and reuse in multiple applications and scenarios for a variety of pedagogic situations and clients.

This convergent space is clearly one to be further examined in more detail during the stakeholder consultation process planned for the next phase of the RAGE project and the project will continue to undertake explanatory research. It is possible that Applied Games may require entirely new economic or business models to be successfully monetised and experience the growth and potential indicated in this report.
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i https://robertsspaceindustries.com/pledge MERCHANDISE

ii Sony Online Entertainment was sold in February 2015 to private equity group Columbus Nova for an undisclosed amount, and was renamed Daybreak Game Company (Forbes, 2015).