Canada's Entertainment Software Industry

The Opportunities and Challenges of a Growing Industry

Prepared for:
Entertainment Software Association of Canada

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INNOVATION POLICY ECONOMICS

Acknowledgements

Forward

In November 2007, when ESAC published its first white paper, "Entertainment Software: The Industry in Canada," Canada's entertainment software industry was basically an unknown quantity. There was no aggregate data on the size of the industry in this country, no overall job numbers or economic impact statistics to provide a snapshot of just how significant the industry was to Canada's economy. The best information that was available either lumped entertainment software in with other forms of content or with other forms of technology. However, as the association for video game publishers and distributors in Canada, it was clear to us that entertainment software was a significant and growing industry in its own right, one which merited further study and analysis.

ESAC's 2007 white paper, authored by Hickling Arthurs Low, attempted to do just that. The first study of its kind in Canada determined who the key players were and where they were located. Further, it looked at the contribution made by the industry to the Canadian economy. But as a survey of existing data collected by provincial governments, trade associations and other interested parties, that study was only the starting point.

In 2008, ESAC commissioned a second study – this time involving original research, surveys and interviews. We wanted to find out conclusively how many jobs the industry had created in Canada and measure its direct economic impact. Furthermore, through the research process, we asked the industry what made Canada an attractive place to do business and conversely, what its principal challenges were. Had government policy been influential in its success? Did our governments need to do more to create an environment that would foster the continued growth of a world class entertainment software industry?

The 247 companies identified through this research reflect the industry's three main players: the developers who provide the intellectual property of game design; the middleware companies that provide the tools by which the design is created and delivered; and the publishers, the financiers of many projects and the conduit who bring products to market. Together, they directly employ 14,000 Canadians. As one of the top three countries globally in terms of video game development, most of these jobs are in the developer space. Canadians are making a major contribution to some of the most popular entertainment software on the market, software that is being enjoyed by gamers in Canada and around the globe.

For the first time, through this study, we have information on the incredible value of the industry to the Canadian economy: $1.7 billion in direct economic activity, and, further, retail sales of $2.2 billion last year alone.

It is important to note, however, that this research was conducted in the Summer of 2008, before the global economic slowdown. Even so, the industry posted record sales in the last quarter of

2008. While it may appear the entertainment software industry is recession-proof, with increasing sales levels year after year, many challenges exist for the industry in the current economy. Overall sales figures are greatly bolstered by the high sales revenues of select companies among ESAC's membership. Worldwide, as in virtually every other industry, many companies are reducing their workforces, scaling back planned projects, and since the research of this paper, two companies have closed shop in Canada.

But promising news does exist, attesting to the long term investment of many multinational companies operating in Canada. Ubisoft Canada recently acquired the development studio Action Pants in BC, Electronic Arts is expanding its Bioware studio to Montreal, and middleware company Babel Media is expanding its operations in Montreal. These companies show a continued commitment to doing business in Canada, based on the key factors that have enabled them to do well to this point. As is discussed in this white paper, a highly skilled and creative workforce, supportive government policies, and robust and growing cluster hubs all contribute to making Canada an attractive place to do business.

But some key challenges persist. Industry leaders in Canada cite access to financing and the high risk nature of the industry's ventures as inhibitors of growth. Ongoing access to talent is also critical to their success. As the trade association for the publisher community, ESAC also strives to work with governments at all levels to create an environment in Canada where these substantial investments are protected through robust intellectual property legislation and adequate anti-piracy enforcement.

To address these needs and solidify Canada's future as a leader in this high value, high growth industry, continued support and directed policies are needed by government; further, a willingness on the part of governments to learn about this unique industry. We hope that this paper provides information that will aid governments in continuing to support the industry, while understanding its distinct qualities and challenges.

Entertainment Software Association of Canada

March 2009

Executive Summary

In a year marked by economic turmoil, Canada's entertainment software industry is one of the country's most promising knowledge-based industries. This first national survey report of the entertainment software industry shows a growing industry with 247 active establishments directly employing over 14,000 people. This activity generates more than $1.7 billion in annual revenues.

This report reveals an industry that is highly export-oriented, highly competitive and knowledge-intensive. The industry's ability to take advantage of the global opportunities in entertainment software rests primarily on two factors: talent, and government policy that continues to maintain a supportive business environment for entertainment software firms. Together, these factors underpin Canada's current and future competitive advantage. Indeed, Canada's long standing commitment to investing in higher education results in a highly skilled talent pool that is essential to the development of both the tools and creativity behind our most original and exportable IP. Provincial government support, including tax incentives, has also been critical to the success and growth of the industry.

This study also reveals just how highly concentrated the industry is in a few urban areas. Industry clustering appears to be a key attribute of the industry's performance, reflecting the need for companies to draw on deep talent pools which exist in the major centres, and retain a young, talented and creative workforce with a quality of life that larger cities can offer. This study identifies three primary and seven secondary clusters across eight provinces in Canada. Together, these clusters represent 94% of total employment.

To maintain this competitive advantage in talent, however, Canada must continue to strengthen its training programs. New training programs established in collaboration with post secondary institutions and industry in British Columbia and Quebec reveal a demand for skills that are as much technical as creative. Educational institutions elsewhere in Canada should also be looking to support this trend by creating more programs that bring together hard programming skills with softer artistic and creative skills. This has been particularly important for secondary clusters which have a smaller and less diversified labour pool.

But talent alone is not sufficient to sustain the industry's growth. With jurisdictions around the world competing to attract the highly skilled, high paying jobs and investment that the sector provides, governments must understand the high risk nature of this business, and see where their investments will best support and attract innovation. With top titles costing many millions of dollars to produce, and many years of development time, game design and production is a high cost venture that will need strong support by government through the economic slowdown, and beyond.

Canada's industry leaders, though, are optimistic about the industry's future growth. When surveyed in Summer 2008, this study found that firms in this highly export-oriented industry expected growth to continue apace at 29% per year. Even today, in a difficult economic climate, this growth rate is buoyed by strong global demand for entertainment software as an economical form of economical entertainment. Growth is further driven by the broadening of the casual games market on multiple platforms – fun and simple games that have a direct appeal to people of all ages and that are accessible on different formats.

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1.   Introduction

This study was commissioned by the Entertainment Software Association of Canada to generate information about the industry's size, growth potential, geographic distribution, and future trends and challenges. Its purpose is to develop a better understanding of an industry that has been given considerable media attention, but very little analysis as an industry unto its own.

Indeed, the entertainment software industry has typically been captured as part of broader studies of the information and communications technology (ICT) and, or, interactive digital media (IDM) sectors. As a result, there has been little national data produced for an industry that has a distinct industrial organization from that of other sub-segments that comprise the ICT and IDM sectors, such as software development, web-design or microelectronics. As is noted in the 2007 ESAC White Paper, *Entertainment Software: The Industry in Canada*, the structure of the entertainment software industry is influenced strongly by the importance of the large publishing companies that own the intellectual property of entertainment software and who finance new products created not only internally, but also externally outsourced to third party game developers. The dominance of the publishers creates an industry structure that is different from the rest of the ICT and IDM sectors and, as the White Paper showed, is critical to understanding the industry's current success and future challenges in Canada. For this reason, and the fact that the industry depends on a workforce with highly specialized programming skills, it is important to have statistics that focus explicitly on entertainment software as a sector in its own right.

Method and Scope

The data from this study is drawn from three sources: a survey, in-depth interviews, and a database of companies that has been compiled explicitly for this study. This data was collected by HAL from June 2008 through October 2008. This database comprises establishments that are directly involved in the production of entertainment software, or whose products and services directly support the production of entertainment software. Every entry has been validated by HAL to ensure that the company is active and focused on entertainment software markets.

Given the industry's highly uneven distribution across Canada, this study explores the clustering dimension as a key factor to understanding its success. The survey and interviews explored key clustering concepts, such as the importance of local labour markets. Establishments and corresponding employment have been mapped by postal code to gain insight into the industry's concentration within urban regions. Subsidiary establishments, based in a different location from their national headquarters, have been identified as separate entities to ensure a proper depiction of employment distribution.

2. Industry Facts & Figures

Employment and Revenue

Canada's entertainment software industry comprises approximately 247 establishments located in eight provinces. These establishments include 241 active firms and six subsidiary studios that together employ over 14,000 people.

Most of this employment - upwards of 80% - is based in British Columbia and Quebec (Figure 2). Ontario accounts for only 14% of employment despite having the greatest number of firms - 36% of the national total compared to 28% and 21% for BC and Quebec respectively.

QUICK FACTS	
Total employment:	14,043
Estimated revenue:	$1.7 B
Number of establishments:	247
Average employment per firm	57
Past annual growth:	23%
Expected annual growth:	29%

Figure 1: Employment Levels in Canada's Entertainment Software Industry, by Province
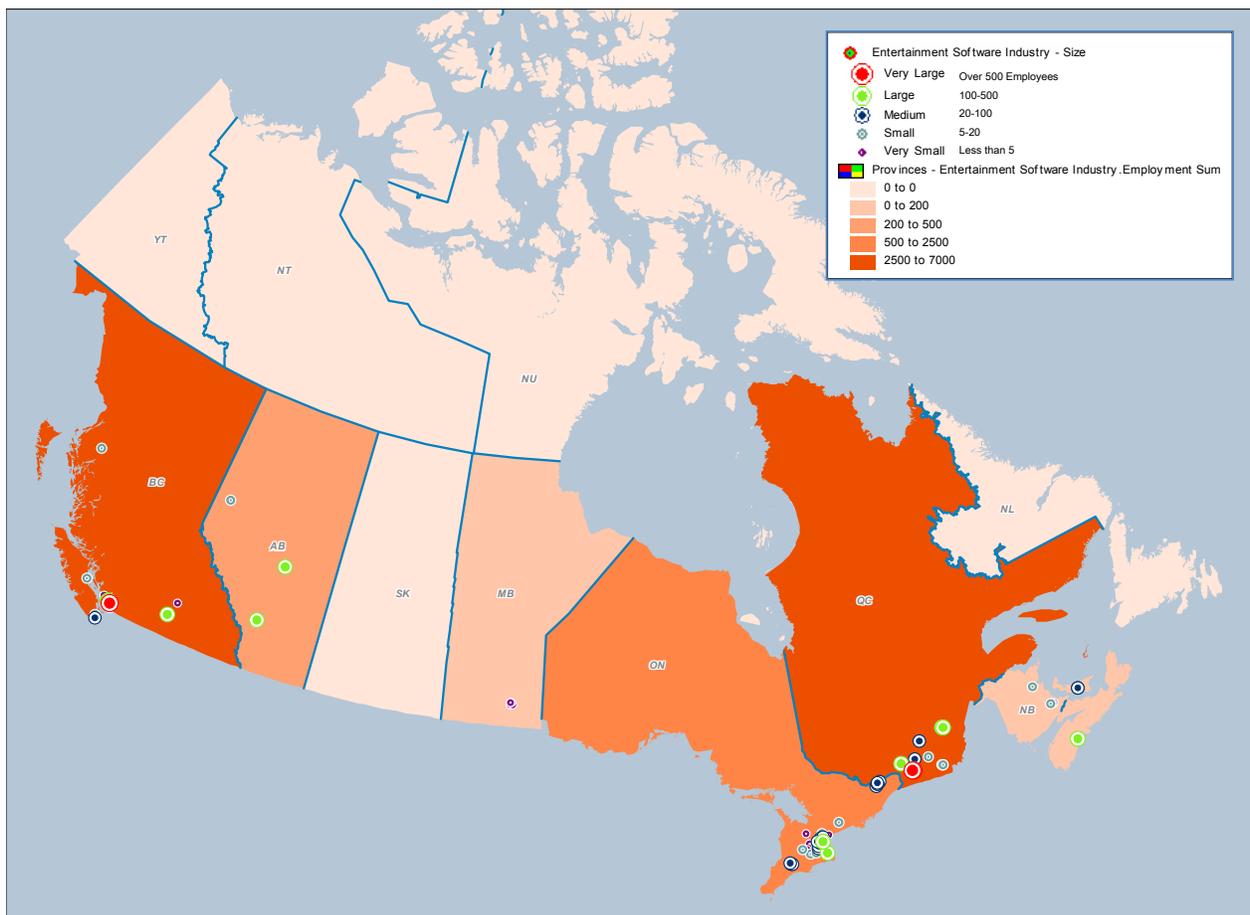
In terms of total revenues, the establishments are estimated to generate over $1.7 billion in total direct economic activity in Canada.

Figure 1 also identifies five categories of establishments based on size. The 'Very Large' establishments have employment levels of over 500. Three such establishments exist in Canada, each of which are game development studios owned by the two largest multinational entertainment software companies operating in Canada: Electronic Arts of California, and Ubisoft of France. 'Large' establishments, with between 100 and 500 employees, account for the largest portion of employment in Canada. There are 31 establishments in this category, accounting for 42% of total national employment. Another 53 establishments are identified as 'Medium' sized with 20 to 100 employees. 'Small' firms (5 to 20 employees) and 'Very Small' firms (1 to 5 employees) are the most numerous in the sector, with a total of 84 and 76 firms, respectively. They represent 7% of national employment (Figure 3).

This study further distinguishes between the three main sub-segments of the industry: video game production, middleware, and game services. **Video game production** includes: major publishers, most of whom develop games in-house and finance external game development; third party game developers who develop games under contract with publishers; independents who develop and market their own games; and console manufacturers, most of whom typically have only sales and marketing personnel in Canada. The **middleware** category includes firms that make the tools, applications and software for game developers. The third category, **game services**, comprises firms that directly support the entertainment software industry by, for example, offering custom advice to players of on-line games.

As Figure 4 illustrates, the game production sub-segment, which includes 185 firms, accounts for the majority of employment (85%), followed by

Figure 2: Employment by Province

Total Employment [% of national total]

- BC 44%
- Quebec 37%
- Ontario 14%
- Alberta 3%
- Nova Scotia 1%
- PEI 0.6%
- Manitoba 0.2%
- New Brunswick 0.1%
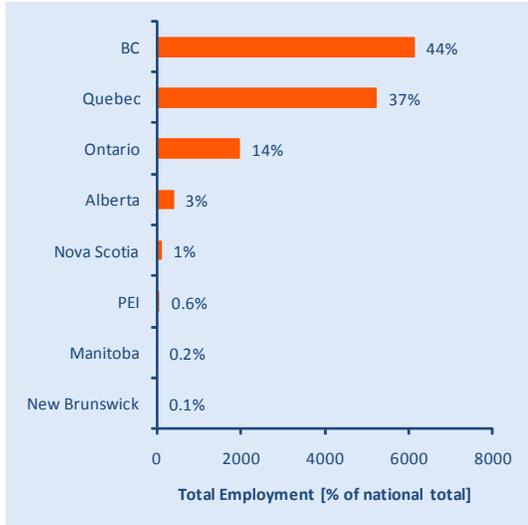
Figure 3: Employment by Firm Size

Employment by Size of Establishment [Average Employment]

- Very Small [2.6]
- Small [10.2]
- Medium [43.6]
- Large [190.3]
- Very Large [1595]

Figure 4: Employment by Sub-Segment

- Game Services 1%
- Game Ware 14%
- Game Production 85%
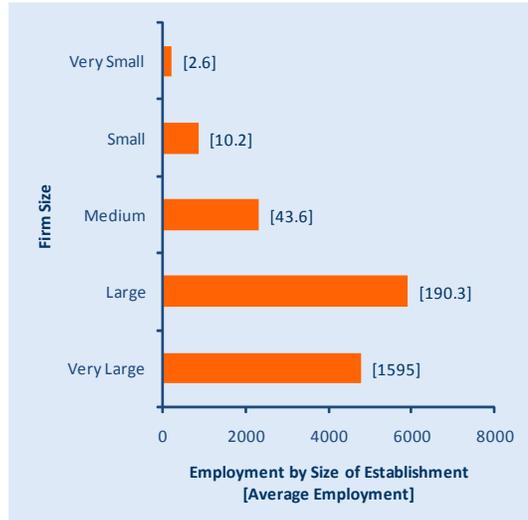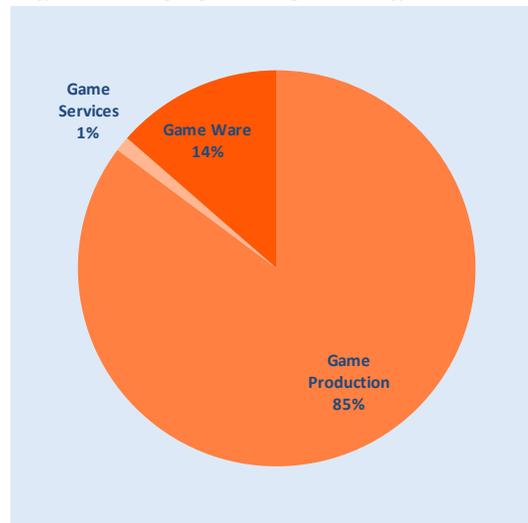
middleware firms (46) which account for another 14% of total employment.

Growth

One of the most notable facts about the industry is its growth, both in employment and in number of establishments. Nationally, estimates of annual growth, based on future employment expectations over the next three years, is 29%. This builds on a 23% annual growth rate of the past three years. By province, British Columbia leads with growth rate expectations of 32%, followed by Alberta and Ontario at 31% (Figure 5).

Industry growth is driven by start-ups that are often led by ex-employees of established companies, multinational publishers expanding their capacity in Canada, as well as independents that are expanding, or are themselves establishing new studios. PEI-based Other Ocean Interactive, for example, has recently announced an expansion into St. John's Newfoundland, where it will add another 62 employees. Firms established for between 5 and 10 years account for the majority of employment (Figure 6).

As Figure 7 indicates, the game production sub-segment will be the most significant contributor to this growth. In addition to having the largest employment, it is anticipating the highest annual growth rate among the three industry sub-segments.
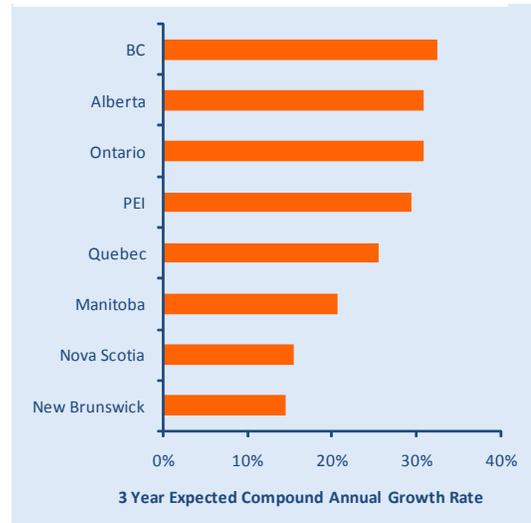
Figure 5: Growth by Province

3 Year Expected Compound Annual Growth Rate

Figure 6: Age of Firms and Employment
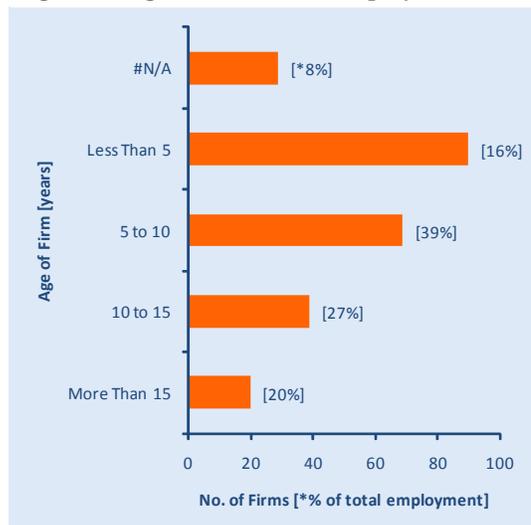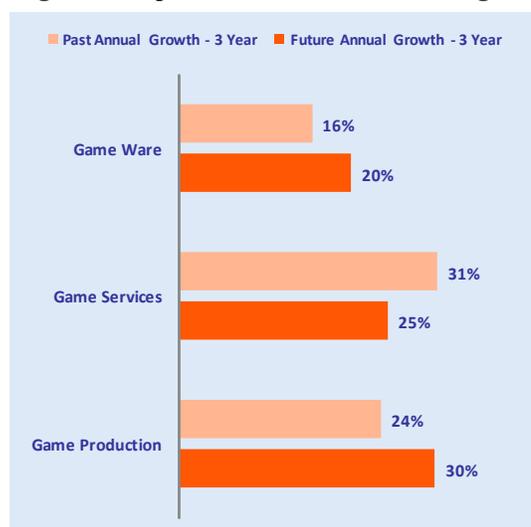

No. of Firms [*% of total employment]

**Figure 7: Expected Growth Rate, Sub-Segment**

Exports

Canada's success in the entertainment software industry stems in part from the industry's evolution into a global production network of large game publishers and console manufacturers that have relied on third-party game developers to develop innovative titles.[1] Canada is very well represented in this global production network, having captured a significant portion of the game development activity due in part to major investments by multinational publishers. Electronic Arts (EA), Ubisoft, Take 2 Interactive, Disney Interactive Studios, Activision Blizzard and THQ all have invested in their own Canadian studio capacity over the last decade.

Figure 8: Percent of Revenue from Exports

Canada's contribution to the global production network is reflected in high export rates among surveyed companies: over 50% of firms rely on foreign sales for 90 to 100 percent of their revenues. Much of this revenue comes from customers in the United States, from where 76% of survey respondents report earning revenue.
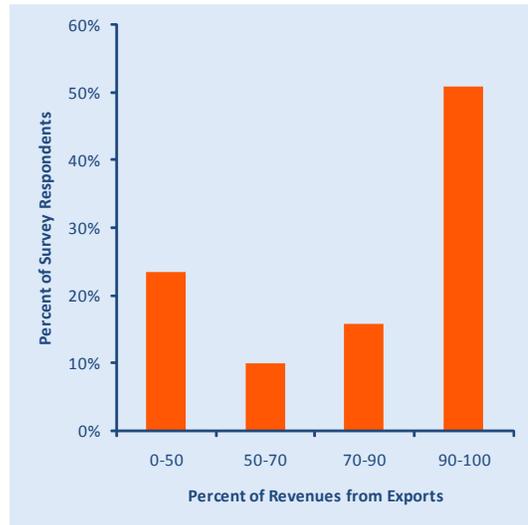
Retail Sales

Retail sales numbers continue to increase each year in Canada, fuelled by interest from a broader demographic of players and new platforms for playing games, such as mobile phones. In 2008, combined sales of software and hardware products grew by 33% from the year prior, reaching a record breaking $2.2 billion.[2] The software segment alone, which includes console and portable game software, accounted for 50% of these sales, representing an increase of 51% from 2007.

According to estimates by PricewaterhouseCoopers in its Global Entertainment and Media Outlook 2008-2012, growth in retail sales is expected to continue in Canada, but at a slower average annual growth of 9.2% through to 2012.

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[1] See Hickling Arthurs Low 2007. "Entertainment Software: The Industry in Canada". Prepared for the Entertainment Software Association of Canada.
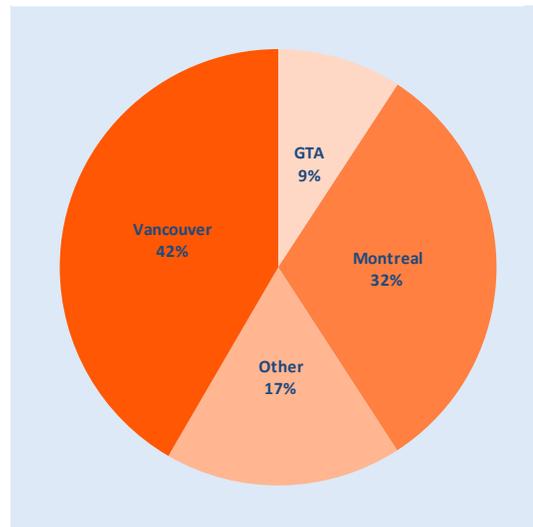
[2] The NPD Group, Inc, January 30 2009, 'Canadian video game sales surge despite market fallout'. http://www.npd.com/press/releases/press_090130.html

3. Geography of the Entertainment Software Industry in Canada

Primary Clusters

Geographically, much of Canada's entertainment software industry is remarkably concentrated in three urban regions: Vancouver, Montreal and the Greater Toronto Area (Figure 9). All the more notable is the degree of concentration within these regions. In Vancouver, for example, the majority of the province's companies are located within a few blocks from one another in downtown Vancouver. This degree of co-location suggests that the industry exhibits distinctive clustering tendencies similar to other innovation intensive science and technology based clusters from which the concept of an 'industry cluster' was developed.[3]

The reasons why firms cluster are now widely documented: innovation performance among clustering firms can be enhanced as a result of benefits that stem from being in close proximity to market leaders, from being able to access a pool of highly skilled and talented employees, and from the learning and knowledge sharing that comes from being in a community where social interactions can take place inside and outside of office hours.[4] These clustering dynamics are likely playing an important role in the high innovation levels exhibited by the entertainment software industry. In fact, half of survey respondents report being very innovative, generating all their revenue from new products and services introduced in the last three years.

There are, however, some important differences between traditional technology-based clusters and the game developers which comprise the bulk of the entertainment software industry. Foremost among these differences is the nature of the innovation process itself. The essence of innovation in a science and technology cluster is that new products or processes are brought to market drawing primarily on scientific, technological inputs. In contrast, innovation in the

Figure 9: Employment in Primary Clusters, % of Total

GTA 9%
Vancouver 42%
Montreal 32%
Other 17%

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[3] Defining characteristics of a cluster are that firms are linked through market- and non market-mediated interactions; that interlinked firms are geographically proximate to one another; and that there is a mix of supporting organizations which develop specialized skills and experience of value to the cluster.

[4] See D. Wolfe "Clusters Old and New: The Transition to a Knowledge Economy in Canada's Regions" McGill Queen's University Press 2003. for a review of clusters in Canada and their benefits.

entertainment software industry is primarily non-technological, fuelled by the generation of content which is then brought to market as a new video game, for example. Within this innovation process, there is a reliance on design and creative talent that forms a primary input into the cluster. Among firms interviewed, ideas from within the company are highly valued in the innovation process. Developing, attracting and retaining such talent is critical to innovation, as are the social and institutional aspects that support this talent pool development.

Locating in a region with a high quality of life is also considered to be important, especially for attracting and retaining talent from outside the region. As might be expected, survey respondents from the largest clusters rated local life style the highest: 4.3 and 3.7, on a scale of 1-poor to 5-excellent, in Vancouver and Montreal respectively.

Secondary Clusters

Though the primary clusters of Vancouver, Montreal, and the Greater Toronto Area dominate the entertainment software industry, there are signs of emerging centres in several smaller cities that are attracting attention from the industry. Several of these secondary clusters have attracted investment from major publishers by way of acquisitions. For example, Activision (now Activision Blizzard) acquired Beenox in Quebec City in 2005, while in 2007, Electronic Arts acquired Edmonton's Bioware.

This study identifies seven secondary clusters that are showing strong growth potential. These clusters are: Quebec City, Edmonton, Calgary, Charlottetown, Winnipeg, Ottawa and London. Though these secondary clusters are populated by

Figure 10: Firm Distribution in Primary and Secondary Clusters

a greater percentage of very small firms, they are also anchored by a relatively healthy number of medium and large firms (but no very large firms) that give these secondary clusters important visibility and recognition in the regional economy (See Figure 10).
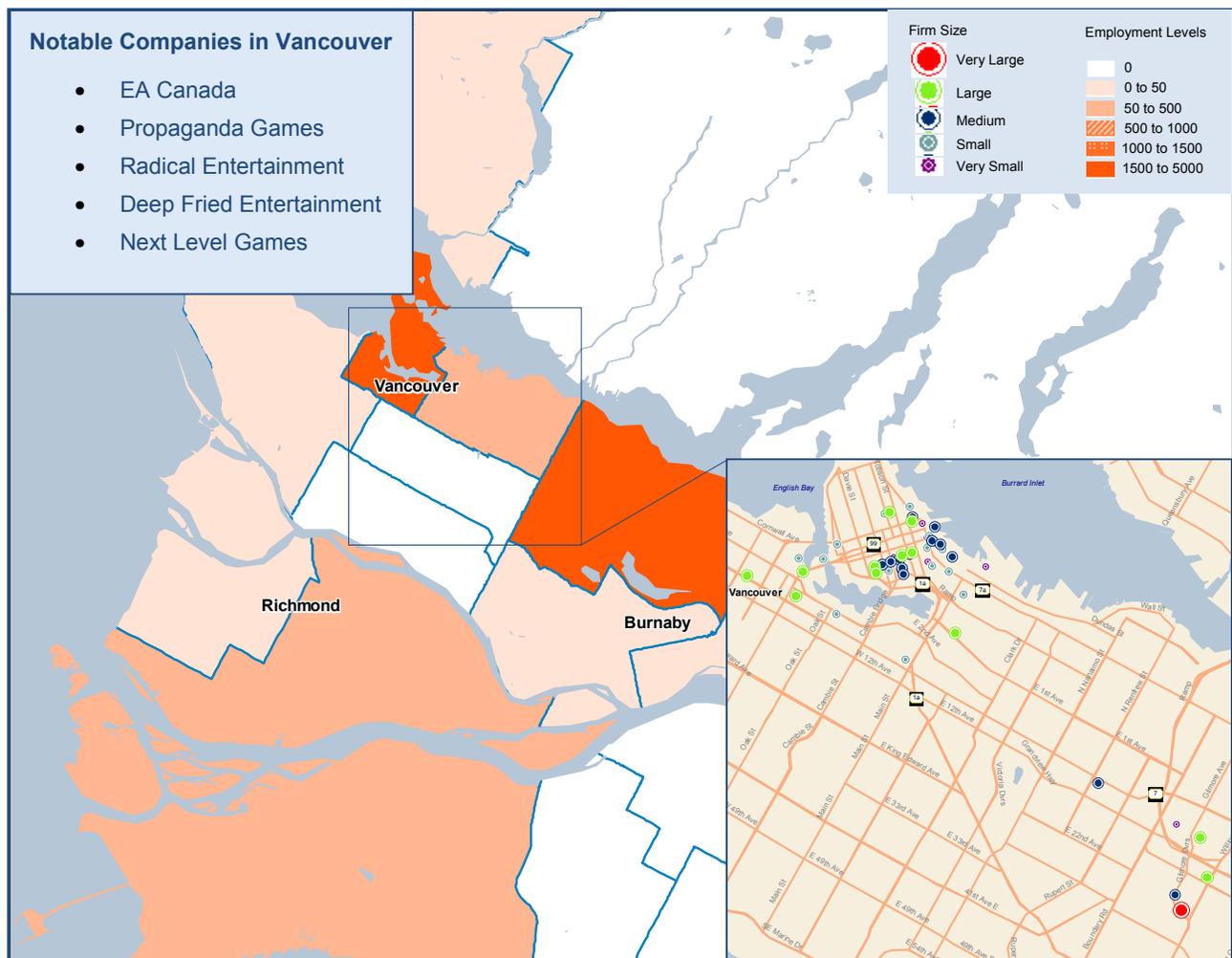
4. Primary and Secondary Clusters

Vancouver Region

Vancouver continues to maintain the largest and most dynamic cluster of entertainment software firms in Canada. Having established a foothold in the industry in 1991 after Electronic Arts of California acquired Vancouver's Distinctive Software, the city has maintained its pre-eminence in Canada ever since. Over the course of EA Canada's growth to its current size of several thousand employees, the company has seen several of its

QUICK FACTS	
Number of firms:	61
Total employment:	5842
Average employment per firm	96
Past annual growth (3 years):	14%
Expected annual growth (3 years):	23%

Figure 11: Firms and Employment Levels, Entertainment Software - Vancouver

Notable Companies in Vancouver

- EA Canada
- Propaganda Games
- Radical Entertainment
- Deep Fried Entertainment
- Next Level Games

Firm Size: Very Large, Large, Medium, Small, Very Small

Employment Levels: 0, 0 to 50, 50 to 500, 500 to 1000, 1000 to 1500, 1500 to 5000

employees leave to establish their own companies, which have since become major game studios in their own right. Radical Entertainment, Relic Entertainment, Propaganda Games and the more recent Jet Black Games all have ties to EA Canada. Several of these studios have themselves continued this growth dynamic, with their own employees leaving to create new studios. Rockstar Vancouver (previously Barking Dog studio), for example, was founded by former Radical Entertainment employees and has since seen its own employees leave to start companies. This dynamic has been critical to the ongoing revitalization and expansion of the cluster.

The Vancouver cluster also benefits from its proximity to the movie industry of California, whose entertainment products are increasingly integrated into video games. In fact, companies increasingly see themselves as part of a west coast corridor of creativity that includes game development, film, and animation, and which stretches from Vancouver, to Seattle, to Portland to San Francisco Bay Area, to Santa Monica, and San Diego. This is considered a big advantage for talent attraction, as well as for cross-over opportunities that arise from related creative sectors.

Results from the survey indicate that Vancouver companies are among the most innovative, relying more on new products for revenue generation. An average of 72% of revenue is generated from products and services introduced in the last three years, the highest level of the three primary clusters. Its most critical resource, the talent pool, appears to be under strain given current growth rates. Among the three primary clusters, Vancouver companies scored 'access to qualified employees' the lowest (3.6 on a scale of 1-poor to 5-excellent). This result was reflected in a second question that found Vancouver companies also depended more on employees from outside the cluster compared to Montreal and the GTA. Only 59% of employees were reported to have come from within their cluster compared to 93% for the GTA and 73% for Montreal.

Vancouver also fares less well in government support. The British Columbia Digital Animation or Visual Effects Tax Credit, which allows for a deduction of 15% of BC labour expenditures, is now among the lowest in Canada, a reality that is reflected among Vancouver-based survey respondents who gave government programs and policies the lowest score (2.6). Several companies noted that expanding or relocating outside of Vancouver was a real possibility in the future.

Montreal Region

Montreal's beginnings in the entertainment software industry stem from the success of Softimage whose 3D animation software gained a reputation from its use in the Hollywood film *Jurassic Park*. The company, which was established in 1986 and has since been purchased by Microsoft in 1994 and later by Avid in 1998, has maintained its core development capabilities in Montreal, helping anchor a talent pool skilled in 3D animation and digital arts.

QUICK FACTS	
Number of firms:	43
Total employment:	4442
Average employment per firm:	103
Past annual growth (3 years):	32%
Expected annual growth (3 years):	26%

Its reputation was further enhanced with the arrival of France-based Ubisoft in1997, which gave Montreal an international profile and a strong foothold in the Canadian video game industry. The Montreal area has since attracted Electronic Arts (EA Mobile), Eidos, and Babel Media.

Ubisoft's arrival also marked a turning point in government recognition of the industry as

Figure 12: Firms and Employment Levels, Entertainment Software - Montreal
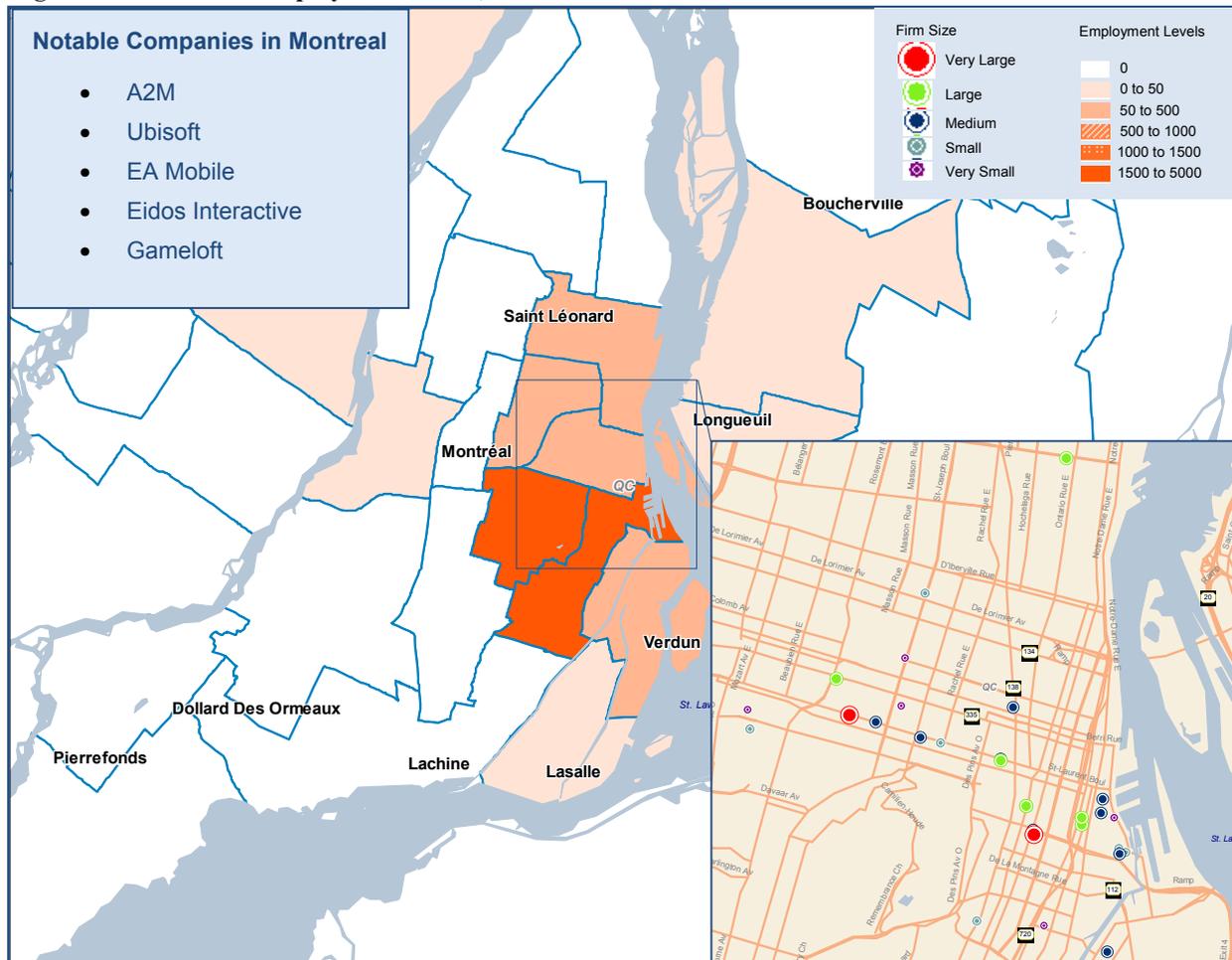
strategic, one with strong growth potential and high-wage employment. Though Montreal as a location for entertainment software development had many strengths, not the least of which was an established labour pool in animation, it was the provincial government's commitment to supporting the industry with a labour tax credit of upwards of 37% introduced in 1996, which is widely cited as securing Ubisoft's move in 1997 (see Section 4: Government Support). Witnessing such success prompted many other provinces across Canada to follow Quebec's lead with their own incentives, the effect of which is a highly competitive business environment across much of Canada for the industry.

Montreal benefits from being able to offer a lifestyle that is conducive to attracting and retaining a young and talented workforce. Among survey respondents, Montreal is second only to Vancouver in their perception of local life style, but ahead of Vancouver in terms of access to a highly qualified workforce. Indeed, surveyed firms based in Montreal report that an average of 73% of employees are hired from within their region, compared to 59% for Vancouver.

As a cluster, Montreal's entertainment software has the largest average firm size, a reflection of the fact that it is home to the majority of large (12) and very large (2) firms in Canada. Vancouver, in contrast, derives its strength more from medium- and small-sized firms which are found to rely more on their newest products for their revenues (73% on average) than do large and very large firms (37% on average). These differences account for the finding that, overall, Montreal-based companies generate the lowest percentage of revenue from their newest products (introduced in the last three years), compared to either Vancouver or the GTA (61% versus 72% and 93% respectively). Montreal's large firms, however, offer more stability and are likely to maintain Montreal's international reputation, especially with the provincial government's recent commitment to new training initiatives.

Greater Toronto Area

The GTA cluster is characterized by having the largest number of small to very small firms among the three primary clusters in Canada. In fact, the region's entertainment software cluster has less than a third of the employment of Vancouver or Montreal despite having the greatest number of firms. Nor does the cluster benefit from any large multinational publisher acting as an anchor to the cluster and drawing in talent and spawning the

QUICK FACTS	
Number of firms:	65
Total employment:	1,293
Average employment per firm	20
Past annual growth (3 years):	27%
Expected annual growth (3 years):	25%

development of new companies. Remarkably, several of the most prominent firms in Ontario are located outside the GTA, including Silicon Knights (St. Catherines) and Digital Extremes (London).

Yet for all this apparent weakness, the GTA cluster is well-positioned to take advantage of emerging opportunities in the industry. In keeping with its status as Canada's premier location

Figure 13: Firms and Employment Levels, Entertainment Software - GTA Toronto Area
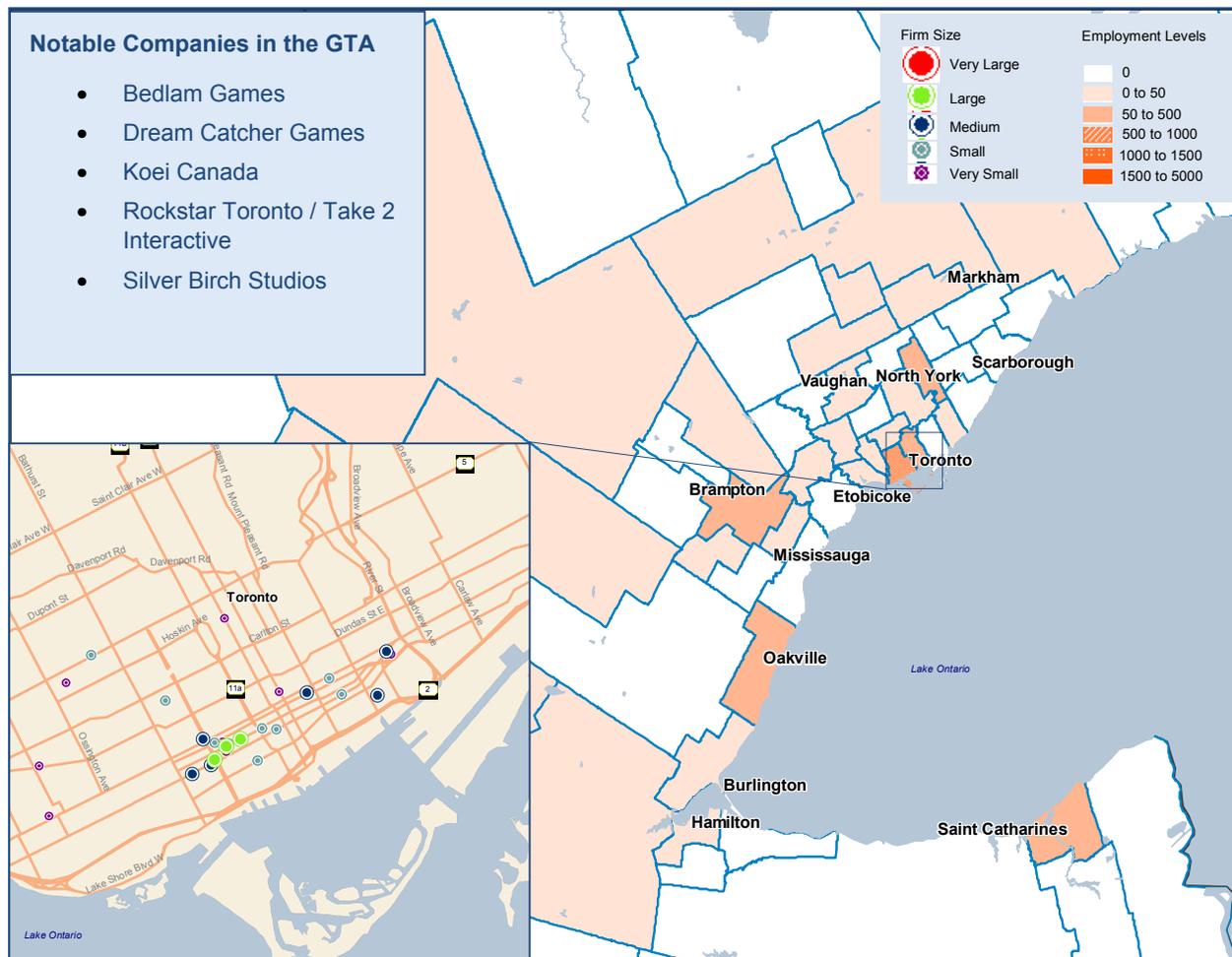
for national headquarters of national and multinational companies, the GTA benefits from the presence of the major console manufacturers, including Microsoft Canada, Sony Computer Entertainment Canada and Nintendo of Canada.

The GTA cluster also benefits from a diversified cultural content sector that includes film and TV, music and multimedia. Corus Entertainment, one of Canada's largest media companies, has recently moved into the industry, making video games from their vast IP holdings of children's entertainment. Similarly, Microforum International, which was founded in 1984 as a manufacturer of media content, has also moved into the industry, and has been developing mobile games since 2002.

Another factor that benefits the GTA is the depth and breadth of its labour pool. This has become an important source of talent not only for its own cluster, but also for the other primary and secondary clusters across Canada whose firms recognize the quality of the region's educational institutions. This is reflected in the survey results, which find that GTA companies rely on the local labour market for 85% of their employees, the highest level among the primary clusters. This finding is consistent in the ratings of 'access to qualified personnel', which are also the highest among clusters at 4.1 in the GTA and 4.2 for the province overall, on a scale of 1 (poor) to 5 (excellent).

Firms in the GTA cluster are also notable for having successfully pursued alternative sources of financing to that of the publisher – a third party developer model. Benefiting from its proximity to Canada's finance cluster, several companies have been able to attract venture capital, which remains a rarity in this industry as a whole. Indeed, survey respondents generally viewed access to capital favourably, with a score of 4 on a scale of 1 (poor) to 5 (excellent). This is in marked contrast to Vancouver, whose respondents gave an average score of 2, and Montreal, a score of 2.7. Interest and attention to the issue of financing games may also be a factor in explaining this discrepancy. The industry association representing the digital media sector in Ontario, Interactive Ontario, held its second annual video game financing forum in October 2008, bringing together game developers, innovators, investors and industry leaders.

Finally, the GTA's entertainment software sector also stands to benefit from the support and attention of the Ontario government. Though a latecomer to extending the kind of support given in Quebec, Ontario has improved its overall labour tax credit to 25% and has enhanced its grant support for content development with the new Next Generation of Jobs Fund (See Section 4: Government Policy). These steps have been acknowledged by surveyed firms who rate government policies and programs the most favourably among the three primary clusters.

Secondary Clusters

Secondary clusters have been loosely identified as having more than three companies in the entertainment software industry and with total employment of 100 or more. By these criteria there are seven secondary clusters across Canada.

Quebec City, Quebec

Quebec City is the largest of the secondary clusters with five companies and employment of over 600. Its largest studio is Beenox, a developer of several popular console games including Guitar Hero and James Bond. Quebec City is also home to Ubisoft, which established a new production unit in the region in 2005, and Sarbakan, a developer of casual games.

Ottawa, Ontario

Ottawa is home to nine companies with employment levels close to 300. Despite this concentration, Ottawa has relatively little recognition as a centre for entertainment software. Its largest company, Fuel Industries, specializes in 'advergaming', using video games for advertising products and services.

Figure 14: Employment Levels, Entertainment Software - Quebec City and Ottawa
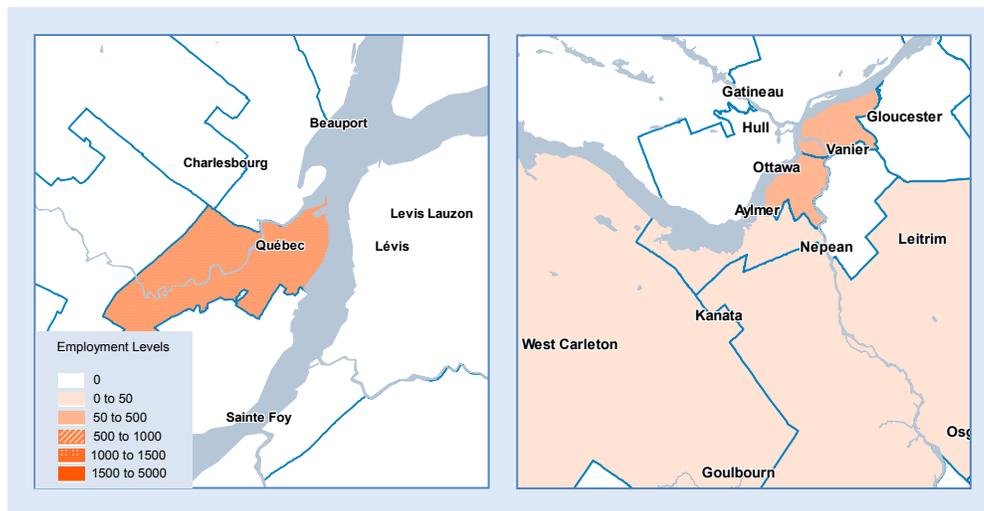
Edmonton, Alberta

Edmonton gained its reputation from the very successful Bioware, a game developer established in 1995 that became internationally recognized from its role playing games, and in particular as the developer of 'Mass Effect'. In 2008, Bioware was acquired by EA, becoming its fourth studio in Canada. There are five other companies that make their home in Edmonton, all in the category of 'very small' (1 to 5 employees).

Calgary, Alberta

The Calgary cluster comprises seven companies with an estimated employment of over 170. The largest is Chartwell Technologies, a middleware firm that is a leading developer and supplier of Internet gaming software systems to the online and mobile gaming industry.
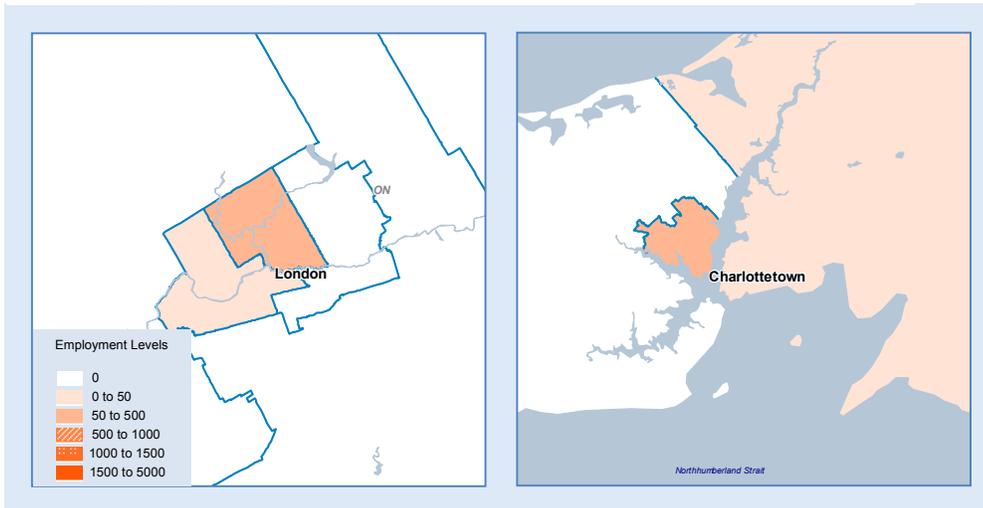
Figure 15: Employment Levels, Entertainment Software - Edmonton and Calgary
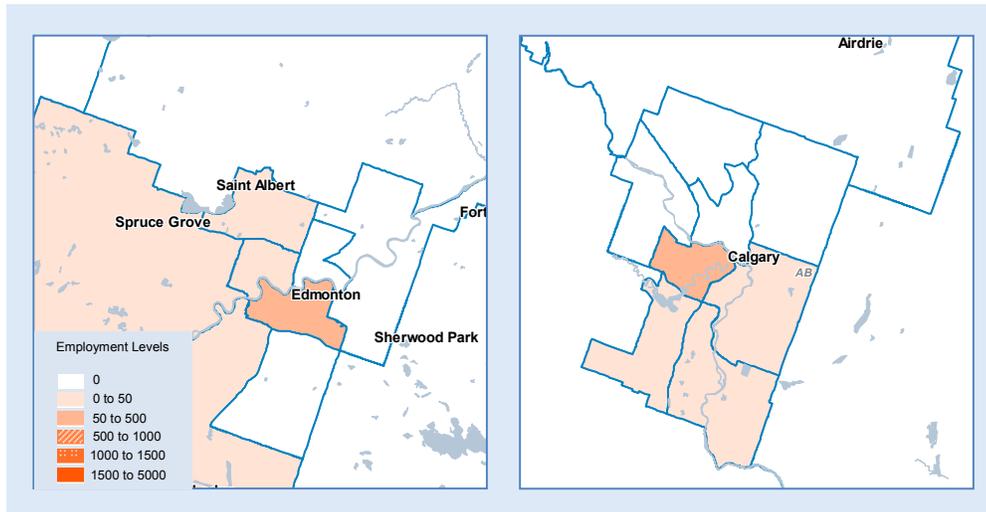
London, Ontario

London is home to six companies, half of which are medium-sized. Its most notable company is Digital Extremes, a developer of console games including most recently 'Bioshock' and 'Dark Sector'.

Figure 16: Employment Levels, Entertainment Software - London and Charlottetown

Charlottetown, Prince Edward Island

Charlottetown is very much an emerging secondary cluster that has strong support from the provincial government and whose university has begun to offer a video game programming specialization and a digital art program. There are currently five companies in this cluster with the largest, Other Ocean Interactive, growing rapidly and expanding into St. John's Newfoundland.

Winnipeg, Manitoba

Winnipeg is the smallest cluster, with nine companies all in the category of 'very small'. The cluster benefits from the most generous tax credit in the country, a 40% refundable income tax credit for eligible labour costs introduced in 2008.

Figure 17: Employment Levels, Entertainment Software -Winnipeg

Winnipeg

Employment Levels

- 0
- 0 to 50
- 50 to 500
- 500 to 1000
- 1000 to 1500
- 1500 to 5000
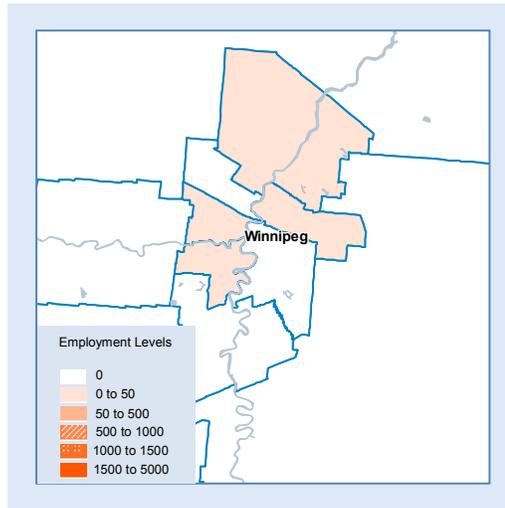
5.   Securing the Future

Opportunities

One of the key drivers of growth in the entertainment software industry continues to be the broadening of the gaming market that has come with the development of casual games and innovative gaming platforms. Casual games, with their emphasis on fun and simplicity, together with the high degree of physical interactivity offered by Nintendo's Wii, have significantly expanded the demographic well beyond the traditional 'core-gamer' stereotype of the young male. Wii's popularity among seniors, for example, has been widely reported over the past year with numerous stories profiling Wii bowling tournaments in retirement residencies and nursing homes.

This trend has coincided with growth in the number of platforms for which games are developed. The market for entertainment software, which a few years ago catered predominantly to four or five popular platforms, has now expanded to accommodate twice as many, including consoles, handhelds, PCs and mobile phones.[5]

For Canadian developers, these new markets have opened up a significant number of new game development opportunities. Many of these opportunities can be pursued at considerably less cost than traditional console games, which can have budgets in excess of $25 million. These opportunities are a mixed blessing for third party developers, who generally aspire to develop large scale console games for publishers. With the trend among larger publishers to develop more of their high-cost games in-house, competition has increased among third party developers for what few large budget games are now outsourced. The smaller, lower cost opportunities have therefore become increasingly important to the growth prospects of the independent developers in Canada.

Content Development

One further trend benefitting the Canadian industry has been the strengthening of ties between game development and movie production. The proximity of Canada, and notably Vancouver, to Hollywood has encouraged cross-over in animation, with some companies straddling this divide effectively, and others establishing cooperative links with Hollywood studios for content development of their games. In July 2008, Ubisoft announced its acquisition of Montreal based Hybride Technologies, a visual effects company specializing in film and TV. In a public statement, Ubisoft explained its purchase: "the future of our industry depends on our ability to create brands that captivate audiences and to extend those brands to other forms of entertainment," and "the acquisition of Hybride falls directly into [this] strategy that has already

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[5] See Electronic Arts, Annual Report 2008.

led us to open a digital creation studio in Montreal and to acquire the Tom Clancy brand for video games and ancillary products."

Canada's Advantage

The industry's ability to take advantage of the global opportunities in entertainment software rests primarily on two factors: government policy that continues to maintain a supportive business environment for entertainment software firms and talent. Together, these factors underpin Canada's current and future competitive advantage.

Government Support

The impact of government policy and support is widely cited as being a very significant, if not critical factor, to past and future success in Canada. And though Vancouver's reputation grew organically and largely without any direct assistance from government, the growth trajectory for Quebec, and Canada's success in achieving a critical mass and international reputation in game development, is almost universally attributed to prescient and timely policies by the provincial government to offer attractive labour tax credits that brought Ubisoft to Montreal in 1997.

Figure 18: Provincial Government Support for Entertainment Software Industry. 2008

Province	Program	Description	Year Introduced
British Columbia	BC digital animation or visual effects tax credit	15% of BC labour expenditures directly attributable to digital animation or visual effects activities.	2003
Manitoba	Interactive Digital Media Tax Credit	40% refundable income tax credit for of eligible labour costs paid to Manitobans up to a max. of $500,000.	2008
Nova Scotia	Nova Scotia Digital Media Tax Credit	35 percent of eligible Nova Scotia labour expenditures or 17.5% percent of total expenditures made in Nova Scotia A 5 percent geographic area bonus on labour expenditures (2.5 per cent bonus on total expenditures) is available for products developed outside the Halifax Regional Municipality	2007
Ontario	Interactive Digital Media Tax Credit	25% of eligible Ontario labour expenditures and eligible marketing and distribution expenses	1999, Enhanced in 2006
	Next Generation of Jobs Fund	Non-entitlement grant program supporting up to 25% of total eligible costs under the following conditions: a minimum total proposal size of $25M over 5 years and a minimum contribution of 30% total project costs by participating industry partners.	2008
Prince Edward Island	PEI Innovation and Development Tax Credit (IDTC)	35% refundable income tax credit of approved labour costs factored up by 50% to cover project overhead	2004
	Specialty Labour Tax Credit	17% refundable tax credit for certified specialized workers brought into province to to meet specific demands in key sectors.	

Quebec	Refundable Tax Credit for the Production of Multimedia Titles Credit	*Category 1 Titles (Produced for general public)*
		    30% of eligible labour expenditure
		    French premium of 7.5% for French titles
		Category 2 Titles (Other)
		    26.25% of the eligible labour expenditure
			1996

This degree of support and attention from the Quebec government has become a reference point for several provinces, as well as other countries seeking to develop their own entertainment software industries. Ontario, Manitoba, and Prince Edward Island have all recently developed their own support programs to foster the development of the industry (Figure 18). Ontario's new support program, in the form of its $1.5 billion Next Generation of Jobs fund, prompted Tiga, the national trade association that represents UK games developers, to ask its government to follow Canada's lead despite current economic challenges: "The credit crunch, turmoil in the financial markets and declining economic activity constrain a government's fiscal room to manoeuvre; but constraint is not the same as paralysis. Just as the Ontario administration is supporting its games developers in the midst of difficult economic conditions, so the UK government should back its video games industry".[6]

Talent

As effective as government incentives may be in fostering the development of the industry, incentives on their own are inadequate in the absence of a talented and highly skilled workforce. As is acknowledged by leading multinational publishers in Canada, access to talent is the foremost consideration for major entertainment software publishers who are planning to expand their operations in new locations. Without talent, studios are unable to stay at the forefront of game development, regardless of how cost effective their studio may be. Canada is generally viewed as being very strong on talent, a factor that has acted as a competitive buffer from rapidly changing business costs associated with the fluctuating value of the Canadian dollar. These views from the interviews were consistent with responses to the survey, which found that over 70% of respondents felt access to qualified personnel to be very good to excellent.

Underscoring the importance of specialized training have been recent investments by Canada's major publishers, EA and Ubisoft, both of whom have been active in their collaborations with government and the higher education sector to establish new programs and training facilities. In 2005, Ubisoft announced the creation of the 'Ubisoft Campus' in Montreal, which now offers a series of college and university level training programs in the key video game development fields in collaboration with Cégep de Matane and the Université de Sherbrooke. Similarly in 2007, Electronic Arts announced a $1 million grant to the Masters of Digital Media program (MDM) at the Great Northern Way Campus, a school which opened in Vancouver in the Fall of 2007 and which was established in collaboration with the province's four leading educational institutions: University of British Columbia, Simon Fraser University, British Columbia Institute of Technology and the Emily Carr Institute of Art and Design. Ontario has also recently recognized the importance of this trend: The Ontario College of Art and Design under the Digital Future Initiatives program is developing such a program that brings together knowledge in art and design to emerging digital forms and technologies.

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[6] Game Daily, October 06 2008. Tiga Requests Government Support of U.K. Games Industry,
http://www.gamedaily.com/articles/news/tiga-requests-government-support-of-uk-games-industry/?biz=1

Industry Challenges

There are a number of challenges facing the entertainment software industry in Canada as it adapts to new technologies, global competition and an expanding global market. This study identifies three such challenges, all of which are affecting companies across Canada: outsourcing, financing of content creation, and the industry's own volatility that is reflected in the high degree of firm entrants and exits.

Outsourcing

Development of the more traditional games for the lucrative console market is changing in several important ways. In addition to becoming more complex, new games are requiring more art content, which is driving up costs and providing the incentive to outsource art and animation to lower cost regions outside Canada. Both China and India are viewed as increasingly significant players in the art and animation markets. Several Canadian companies have already shifted their art work to these emerging regions. However, in light of fluctuating world currencies, the long term impact of this trend remains to be seen.

Generally though, competition from emerging lower cost regions is not expected to impact upon Canadian near term competitiveness. In addition to the fact that the global industry continues to expand, entertainment software, as several game production companies noted, is a product that appeals to a certain cultural audience, and reflects a certain geographic perspective. Just as the coding of games requires a cultural and artistic understanding to make a game fun, so too does the testing of games. The testing of games requires testers "be able to see the bug" if, for example, the bug relates to rules, or character reactions in a culturally embedded 'western' situation such as a hockey game. This dimension of the industry is seen as a brake on the extent of outsourcing to Asia that is viable among companies focused on the North American market.

Finance

With development timelines for console games of up to three years and requiring teams of upwards of 60 people - and with no guarantee of success - financing game development is high risk. Game development has, therefore, typically relied not on venture capital or on traditional forms of financing, but on the large internal resources of major publishers and console manufacturers to fund development. Most of these publishers are multinationals that own the IP for their games and are often the first to acquire costly licenses for the development of new 'brand' games such as James Bond or Spiderman. These publishers finance the development of games either internally or externally through agreements with third party developers.

One outcome from this system is that alternative sources of financing for new game developments are limited. In addition to there being few Canadian game publishers with the necessary resources to fund Canadian third party developers, there have been few venture capital firms with industry understanding and, or, willingness to invest in third party studios that have no IP holdings and little value other than their intangible talent. This is a frustration for many

game developers in Canada as is evident from the survey results. Nationally, access to capital was viewed poorly with an average of 2.7 on a scale of 1 to 5 with 5 being excellent and 1 poor. However, provincially, Ontario stood out with access to capital being viewed far more favourably with a score of 3.67, compared to Quebec at 2.67, BC at 2.18 and Alberta at 1.67. This discrepancy may reflect receptivity to recent Ontario support programs, as well as a greater number of firms that have been successful in tapping into the province's financial markets. As previously noted, several Ontario firms interviewed have been successful in acquiring venture capital funding, breaking away from the industry's traditional financing model.

There is growing interest across the industry to establishing a Canadian publishing capacity that can keep intellectual property in Canada,which could broaden opportunities for Canada's third party developers. Playful Entertainment is one such company that was established in 2007 in Vancouver, and which offers a number of services to help create, develop and bring interactive software to the market. These include the licensing of IP, distribution and development agreements, and marketing services.

Rate of Firm Entrants and Exits

Though Canada's entertainment software industry is most often discussed in terms of its success, and the opportunity it affords for newcomers, a large segment of the industry exists in a state of uncertainty and volatility. There are numerous small to very small developers that are financially insecure and often fail. Indeed, such is the reality for more established firms as well. DC Studio, which had established an office in Montreal in 2000 and grew rapidly to a large and reputable studio, closed its doors in 2008 citing cost pressures, including rising salaries, and a shortage of available skilled employees.[7] One of Toronto's more prominent game developers, Pseudo Interactive, also closed its doors in 2008, having reached a size of over 50 employees while developing console games for major publishers. According to industry blogs, Pseudo was unable to fund its operations after Eidos and parent company SCi scrapped one of its projects.[8]

As one established studio president noted: "It's a tough business: you either work for a while and go out of business, or you work for awhile and get bought out." The challenges stem both from the high degree of competition and from the task of managing highly skilled and mobile employees on a project by project basis.

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[7] Develop Magazine, March 17 2008. 'Tax breaks - panacea or pestilence?'. http://www.developmag.com/interviews/145/Tax-breaks-panacea-or-problem.
[8] 1UP News, 04/04/2008. 'Full Auto Developer Shuts Down'. http://www.1up.com/do/newsStory?cId=3167253

6. Conclusion

Canada's entertainment software industry is an economic success. Employing over 14,000 people, most of whom are highly skilled, the industry now generates more than $1.7 billion in knowledge intensive economic activity across Canada. This economic activity is expected to increase further at an annual growth rate of 29% over the next three years, building on an already notable annual growth of 23% experienced over the past three years.

Much of the industry's growth will take place in the existing clusters of Vancouver, Montreal and the GTA, regions that are home to the majority of firms and that draw talent from across Canada and internationally. As with other knowledge intensive industries, the high degree of concentration in Canada's major city-regions is indicative of an industry that is highly innovative and whose companies must attract and retain top talent to maintain their competitive position. Having access to deep talent pools in Canada's major metropolitan regions is a key factor supporting the industry's clustering.

New training programs established in collaboration with higher education institutes and industry are supplying the need for talent. These programs in British Columbia and Quebec provide skills that are both technical and creative. For Canada to maintain its current competitive advantage, educational institutions will need to continue this trend by creating more programs that bring together hard programming skills with softer artistic and creative skills. This has been particularly important for secondary clusters which have a smaller and less diversified labour pool. Both Edmonton and Charlottetown are benefiting from inward investment by firms that have responded positively to specialized programs at local higher educational institutes that cater to entertainment software design.

Another lesson to be learned from Canada's rise as a centre for game development is the importance and potential effectiveness of government policy. The policy response from the Quebec government, which early-on had identified the growth potential of entertainment software industry, was pivotal to creating a critical mass outside of the Vancouver cluster and gave Canada an international reputation in the industry. The lesson is as much about timing as it is about offering strategic support. Though several other provinces in Canada have since introduced policies targeting the entertainment software industry, they have done so at a different stage of the industry's global development when a far greater number of regions are vying for a position in the global production network of entertainment software. And while opportunities remain considerable for Canadian firms establishing themselves in these newer regions, the challenges of having to compete with more strongly established and competitive regional hubs for talent will require a more strategic response from both industry and government alike.
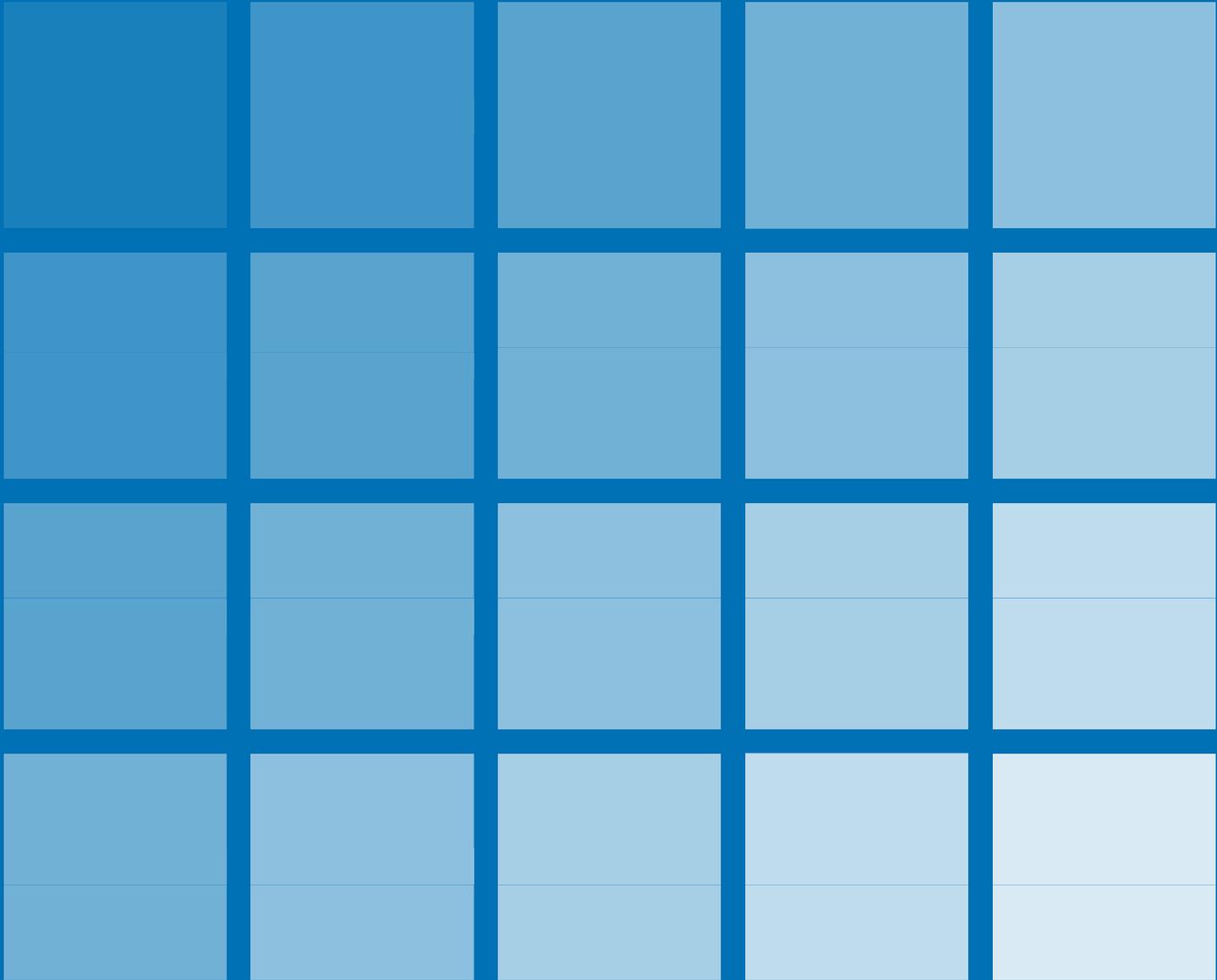
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