

CANADA'S ENTERTAINMENT SOFTWARE INDUSTRY IN 2011

A REPORT PREPARED FOR THE ENTERTAINMENT SOFTWARE
ASSOCIATION OF CANADA

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EXECUTIVE SUMMARY

With over 40 years of video gaming evolution from platforms to business models, the industry continues to grow and adapt, and Canada is among the most important players both in terms of volume of activity as well as quality of talent and resources. Directly employing nearly 16,000 people and contributing approximately \$1.7 billion in economic activity in 2011, Canada's leadership is expected to continue with a remarkable growth rate of 17% over the next two years.

The industry cultivates an interesting combination of creative, technological, and management skills that are transferable to a wide range of industries, supporting Canada's position in the changing global economy. Development of this type of talent not only stems from the video gaming companies themselves, but also from the ancillary contracted services including artwork, animation, and quality assurance, which also contributes to the total economic impact.

Though the composition of this innovative industry includes a mixture of both sizes and platform focuses, it is currently best categorized as a 'large company' industry with a focus on traditional console game development. This landscape is changing, however, as evidenced by the slow decline in traditional console share of resources while casual, social, mobile and massively multiplayer online (MMO) games have already begun a growth spurt that is projected to continue over the coming years.

In the global arena of video gaming, with many games being designed in one country, engineered with components developed in others, and then sold around the world, Canada has secured an international reputation as a source of high skilled talent with the third largest number of employees in the world; for being a 'full-service' location both on a national and even on a municipal level with hubs of video gaming and related activity, and for producing commercially successful IP including EA Sports' *FIFA Soccer* and Ubisoft's *Assassin's Creed*.

The main drivers of this success as a national video gaming industry include:

- Being predominantly a **'made-in-Canada' industry**: many of the most important video games and video game companies were started in Canada by Canadians.
- Offering **increasingly rich ecosystems** of video game development and related support companies, providing to publishers the ability to build and test all components of a new product locally.
- Producing **well-trained talent**, particularly at the university and college levels.
- Having **attractive economics** for video game companies:
 - **Government policies**: Canadian governments at both the federal and provincial levels have developed a range of programs applicable to video game companies.
 - **Exchange rate**: Over several decades and until very recently, the Canadian dollar has been relatively cheap in comparison to the U.S. dollar.
- Having **desirable places for talent** to live in. Montreal, Vancouver, and Toronto, Canada's dominant video game clusters, are well-known for their quality of life and more broadly, Canada itself has long been known as a desirable country to live and do business in.

- Positioning between the export markets of Asia and Europe, and in the same time zones as the major U.S.-based video game publishers.
- Being a multicultural society, Canada has **significant language and cultural overlaps** with the United States, Europe, and Asia.
- Receiving support from a variety of **video game and interactive/digital industry associations**
- Attracting frequent and well-informed **attention from the Canadian media.**

Overall industry developments since the release of the previous report in 2009 include

Developments in platforms & technology

- Arrival of **tablets**
- Increasing penetration of **smart phones**
- Success of **motion-sensor games**
- Changes in the **console introduction cycles**

Video Gaming categories

- Console gaming profits concentrating on **blockbusters**
- Rise of **social and mobile gaming**
- For triple-A console publishers, increasing proportion of **revenue generated by online sales**
- Rise of **cloud gaming**

When it comes to business conditions, companies operating within Canada believe internet and communications structure followed by availability of qualified personnel are the two most important factors, and on a national level, Canada performed highest on both of these dimensions. On a provincial level, however, there is significant divergence surrounding personnel between the major video gaming hubs of Quebec, British Columbia, and Ontario, where quality was high, while Western Canada and the Atlantic provinces had lower scores, suggesting that talent is migrating to the larger centres. Focusing specifically on government support, R&D, financial support, and HR are considered highly important, though only R&D has a moderate quality rating at 3.3 out of 5, with financial support and HR falling behind.

Looking forward to the future, top risks identified by respondents included unease about the scale of change and the uncertainty surrounding new competition and new business models; talent risk, and government support. Conversely on the opportunities end, significant emphasis was placed on new technologies and platforms, followed closely by distribution technologies and practices. Interestingly, education and training was identified as top opportunity, despite talent risk being identified as a major concern, suggesting that the next few years will be crucial in determining whether Canada is able to create or attract strong talent to support industry growth and other opportunities or whether the talent gap will become a barrier to the industry's success.

In addition to changes over the last few years and the risks and opportunities identified by respondents, there are a number of additional issues that the industry, its associations, and relevant government agencies would do well to watch. These include

- Increasing demographic diversity among users
- Evolving scope of the industry
- Increasing jurisdictional competition for projects and companies
- Exchange rate volatility
- Financing challenges
- Prevalence of outsourcing, on-shoring, and off-shoring

THE INDUSTRY IN CANADA

The Canadian video game industry is entering a time of remarkable change and equally remarkable opportunity. In the past forty years video games have evolved from text-only adventures played on university mainframes to a multiplicity of platforms, genres, and business models: from high-definition real-time “first person shooters” played on processor-packed consoles and sold at \$60 dollars a copy from games retailers, to low-resolution multi-player urban development games played on social networks for free and “monetized” through micropayments for virtual goods.

INDUSTRY SIZE AND GROWTH

As of April 2011, when the primary survey was conducted, the Canadian video game industry was comprised of nearly **350 companies**; directly employed approximately **16,000 people** across Canada, with an estimated 11,000 more from indirect and induced activity; and accounted for an estimated total of approximately **\$1.4 billion** in direct economic activity for a total of **\$1.7 billion** in economic impact to the Canadian economy. The industry has been growing rapidly over the past two years (an estimated 11% annually), and is expected to grow even more rapidly over the next two (at 17% per year).

INDUSTRY IMPACT

When compared to the overall information technology sector (the GDP contribution of ICT services in Canada totalled \$53 billion in 2010¹), the video games industry in Canada is not particularly large. But like the IT sector, its impact is greater than its size would imply, and thus plays a key role in the development and health of Canada’s advanced economy.

The industry provides **high-paying, high-quality jobs**. In 2011, the average salaries for employees at Canadian video game companies ranged between \$40,000 and \$73,000, which compares favourably with the median income earned by workers in the broader economy (\$29,000 in 2008²). Jobs in the industry are typically knowledge-intensive, challenging, team-oriented, and fast-paced, and are held disproportionately by younger workers. Further, the products that are made by video game companies

The entertainment software industry in Canada, 2011

Employees:	15,700
Economic activity*:	\$1.7B
Growth rate** (past two yrs):	11%
Expected growth rate** (next two yrs):	17%
Number of companies:	348
Avg. employees per company:	45

- Aggregate operating budgets and induced economic activity; not equivalent to total industry revenue. See Notes on Methodology for more details
- ** Compound annual growth rate (CAGR)

Average Salary and Average Entry-Level Salary by Geography*
\$

	N	Average Salary (\$)	Average Entry-Level Salary (\$)
Atlantic	8	72,667	40,333
British Columbia	16	68,714	40,583
Ontario	26	62,297	39,000
Quebec	17	60,450	34,179
Alberta	8	55,714	41,167
Manitoba	5	40,250	29,500
Canada Total	80	62,188	38,048

¹ Statistics Canada: <http://www40.statcan.ca/101/cst01/trade26-eng.htm>

² Statistics Canada: <http://www40.statcan.ca/101/cst01/famil105a-eng.htm>

frequently become household names, reviewed in the national and international media and played by millions of people. For sheer “glamour” there are few industries that can match it.

Hiring of new graduates is expected to pick up markedly in the next two years. Across Canada the percentage of video game companies hiring (or intending to hire) new graduates is currently 60%, a proportion that is expected to increase to 77% by 2013. Similarly, the average number of new graduates hired per company is expected to increase from 3 today to 8 in 2013; a typical mid-sized or large video game company expects to hire 24 to 26 new graduates in 2013, up from 10 to 16 this year.

The unique nature of video games as creative-technical productions means that the industry cultivates and develops **a wide range of skills in technology, creative arts, and management** which have applications in numerous other industries, including software development, film and TV production, interactive design, architecture, medicine, and simulation. The increasing mutual dependence of technology and creativity across a wide swathe of Canadian industries—and the boost this gives the Canadian economy in its competition with other advanced and emerging economies around the world—means that such “hybrid” skills are of great potential value.

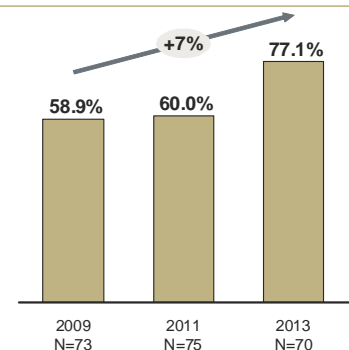
Noted one industry executive, the video game industry drives “a combination of creativity and core technologies essential for future economic development.”

The video game industry also drives **ancillary economic activity**—and the development of related technical and creative skills—through contracted services for artwork, animation, motion capture, marketing, IT support, customer service, quality assurance/testing, and other essential inputs into the video game development and publishing processes.

Montreal’s local video game industry, for example, is well known for the comprehensive range of services provided by the many development and development support companies located there.

The industry has also proven itself to be an effective catalyst for **the revitalization of urban neighbourhoods**. Game companies frequently locate themselves in lower-rent areas with an eye to the attractiveness of the location from a young-employee perspective, as well as locating near enough to other video game companies to allow for the movement of talent from one company to another, and the influx of well-compensated and well-educated employees (who often wish to live close to their places of work) typically has a positive economic effect on the area itself. Montreal’s Mile End district and Vancouver’s Yaletown have benefitted substantially from the growth of video game development ecosystems, and it seems likely that Toronto’s “Junction” neighbourhood is about to evolve in a similar fashion.³

Companies Hiring New Grads
Percent of companies hiring any new grads



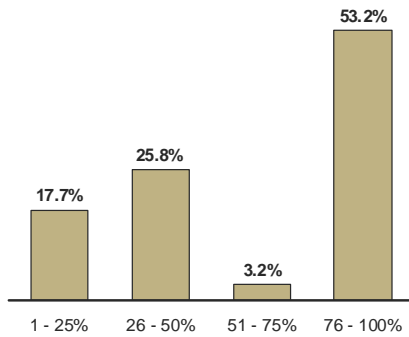
Average number of new hires by company size	Total	N= 89	2009 N=73	2011 N=75	2013 N=70
	Micro	N= 27	1	1	4
	Small	N= 38	2	2	6
	Medium	N= 14	6	10	24
	Large	N= 10	19	16	26

The industry drives
“a combination of
creativity and core technologies essential
for future economic
development”

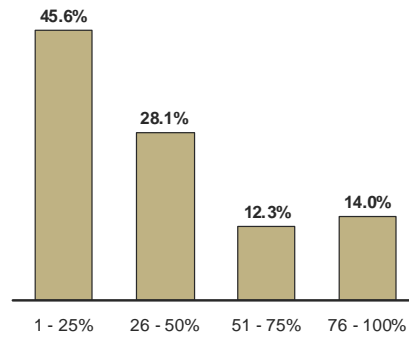
³ Peter Nowak, “Respawned: How video games revitalize cities”, CBC News (Sept. 14, 2010) <http://www.cbc.ca/news/technology/story/2010/09/09/f-videogames-economic-impact.html>

The industry is **highly innovative**, pouring large shares of its production budgets into new games (typically referred to as “Intellectual Property” or “IP”) or into new technologies.

Percentage of Total Production Budget Dedicated to IP
N = 62, % of surveyed companies in each categorization



Percentage of Total Production Budget Dedicated to Tech
N = 57, % of surveyed companies in each categorization



INDUSTRY STRUCTURE

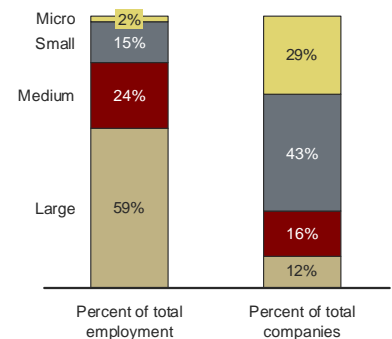
CANADA-WIDE OBSERVATIONS

Canada’s video game industry is comprised of a healthy mix of companies of different sizes and with differing concentrations on particular game platforms.

INDUSTRY STRUCTURE, BY SIZE

As shown in the table below, the video game industry in Canada can be categorized by size into large, medium, small, and “micro” companies. Measured by total number of employees this is a “large company” industry—the category represents nearly 60% of total employment—but measured by number of companies, the weight lies with the small company category, with 148 companies averaging 16 employees each. Indeed, more than 71% of companies in the industry fall into the small or micro categories.

Total Companies and Employees in Canada
Micro: 1 – 5, Small: 6 – 50, Medium: 51 – 150, Large: 151+, % of total



Canadian Quick Facts by Company Size

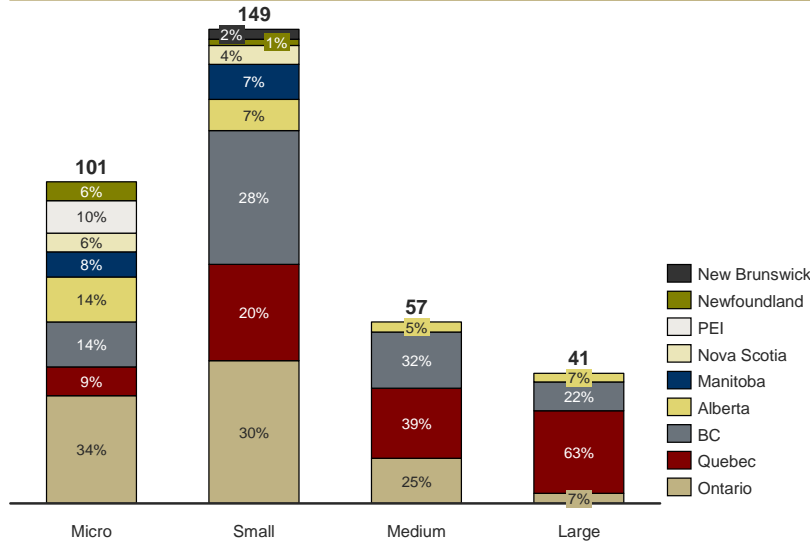
	Average Number of Employees	Total Employees	Total Number of Companies	Percent of Total Employment	Percent of Total Companies
<i>Micro</i>	3	292	100	1.9%	28.8%
<i>Small</i>	16	2312	148	14.7%	42.7%
<i>Medium</i>	67	3842	57	24.4%	16.4%
<i>Large</i>	221	9272	42	59.0%	12.1%

On a regional basis, almost 70% of all large video game companies in Canada are situated in Quebec, though that jurisdiction is only the third largest location for small companies and the fourth-largest for “micro”

companies. By contrast, Ontario is home to the greatest number of micro and small companies, housing ~30% of all companies in each category. British Columbia has strong compliments of small and medium-sized companies, while Alberta has a significant share of the micro-sized firms but a much smaller share of other categories.

Companies by size and province

Micro: 1 – 5, Small: 6 – 50, Medium: 51 – 150, Large: 151+



Companies by Size and Province

Micro: 1 – 5, Small: 6 – 50, Medium: 51 – 150, Large: 151+

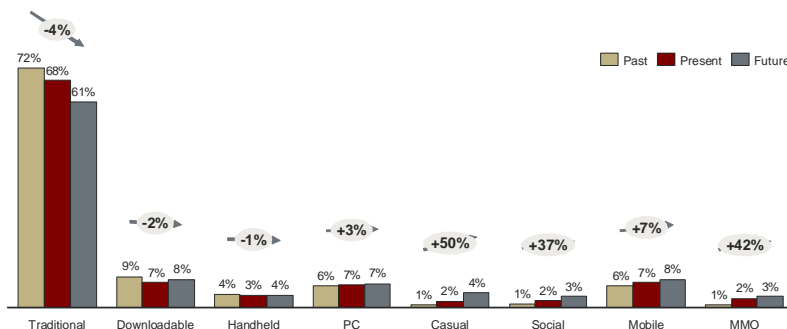
	Ontario	Quebec	BC	Alberta	Manitoba	Nova Scotia	PEI	Newfoundland	New Brunswick	Total
Micro	34	9	14	14	8	6	10	6	0	101
Small	45	30	42	10	11	6	0	2	3	149
Medium	14	22	18	3	0	0	0	0	0	57
Large	3	26	9	3	0	0	0	0	0	41
Total	96	87	83	30	19	12	10	8	3	348

INDUSTRY STRUCTURE, BY PLATFORM

Measured by estimated resources dedicated to each game platform type (i.e. console vs. PC vs. mobile, etc), the Canadian industry remains heavily concentrated around traditional console game development and publishing. This, however, is changing rapidly. While shares of total resources dedicated to downloadable, handheld, and PC games have been holding relatively steady, traditional console share has been declining, and is expected to continue to drop in response to rapid growth in resources dedicated to social, mobile, casual, and MMO (massively multiplayer online) gaming.

Overall Industry Resources Dedicated to each Platform

N = 89, % of all employees



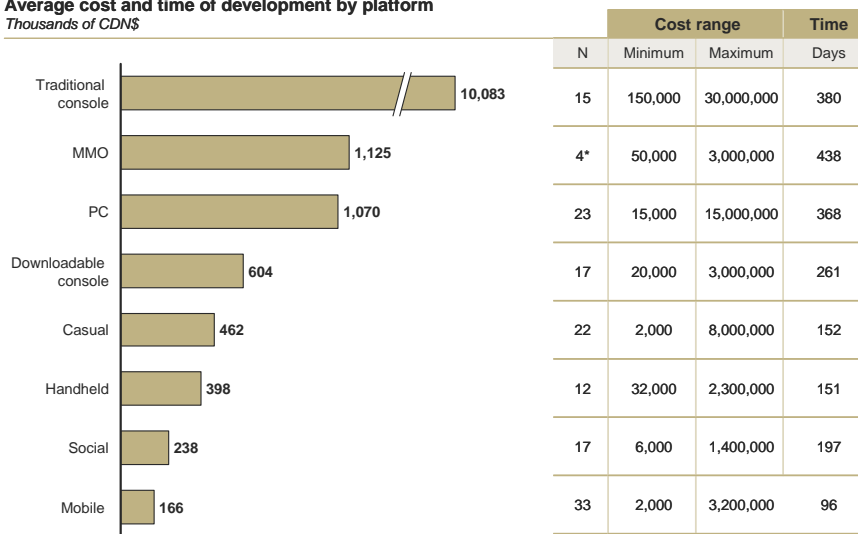
While this resource share analysis demonstrates the continuing dominance of traditional console games in comparison with other platforms, results are driven by the very high amount of resources dedicated to this platform by a comparatively small number of companies. As a proportion of companies focusing on one platform versus another, however, traditional console games are the focus of the largest significant minority of companies, but are far from the majority. In fact, by far the largest category in this regard is comprised of firms that focus on a number of platforms simultaneously—a fact that seems reflective of a time of industry evolution.

Breakdown of companies by platform in Canada
 % of total companies, based on 70%+ allocation of resources

Traditional console	PC	Mobile	Casual	Social	Downloadable console	MMO	Multiple
18.4%	10.5%	10.5%	9.2%	5.3%	3.9%	3.9%	36.8%

A note on platforms: *Platforms matter not only because the markets at which they are targeted are growing at different rates, but also because producing games for one platform versus another brings with it significant differences in typical development times and required investment, which in turn has direct impact on the returns and risks expected from any given investment in the sector. As the table at right shows, there is a very large difference between the cost of developing a traditional console game and the cost of developing a game for a mobile phone.*

Average cost and time of development by platform
 Thousands of CDN\$



*Note small sample size, results should be interpreted with caution

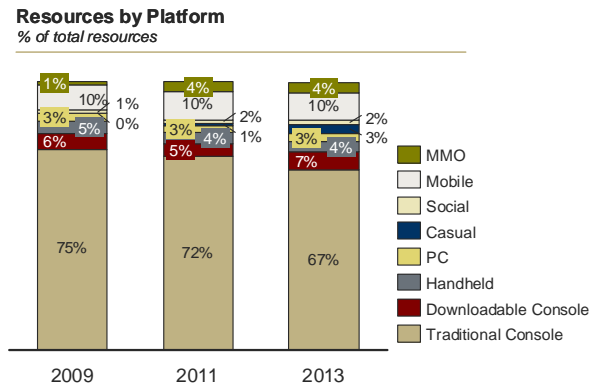
SELECTED PROVINCIAL PROFILES

QUEBEC

The province of Quebec has grown to be the dominant player in the Canadian video game industry. Over half of the industry's jobs are located there, as is over half of the aggregated operating budget; almost exactly one quarter of video game companies in Canada call Quebec home. Interestingly, the average number of employees per company (at 95) is twice that of the Canadian average, directly reflecting the predominance of large companies in the province. At 13% per annum, Quebec's industry growth rate has been slightly above the industry's, but is expected to converge with the average over the next couple of years.

On a platform basis, Quebec’s video game industry is equally concentrated around traditional console games, which are the focus of an estimated 72% of the resources in the local industry. This percentage share, however, is dropping rapidly: from 75% in 2009, it is expected to decline to 67% by 2013, with greater shares accounted for by growth in platforms like MMO (massively multiplayer online), social, and casual.

Quebec in 2011	
Total employees	8,236
Estimated spending in Quebec	\$733M
Total number of companies	86
Average number of employees / company	95
Historical growth ⁽²⁾	13%
Expected growth ⁽²⁾	16%

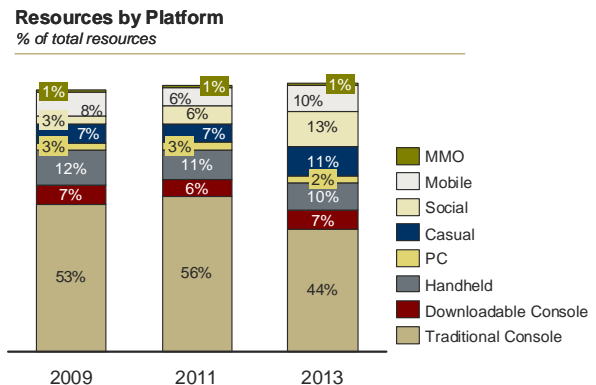


ONTARIO

The structure of the industry in Ontario is a stark contrast to that of Quebec. Though significantly smaller when measured in terms of employee numbers and economic activity—Ontario has only one-third of Quebec’s industry mass—the province hosts more companies than does Quebec (96 vs. 86) and is enjoying more rapid growth rates (20% versus Quebec’s 13% in the last two years). To a large extent, this is likely to be a function of the smaller average size of Ontario video game companies, as entrepreneurial companies tend to exhibit faster growth than more established companies do.

In terms of platforms, Ontario’s industry is not as centred on traditional console games, though they still command a slight majority share of the resources. More rapidly than in Quebec, increasing shares of total industry resources in Ontario are going to games on mobile, social, and casual platforms.

Ontario in 2011	
Total employees	2,600
Estimated spending in Ontario	\$238M
Total number of companies	96
Average number of employees / company	27
Historical growth ⁽²⁾	20%
Expected growth ⁽²⁾	21%



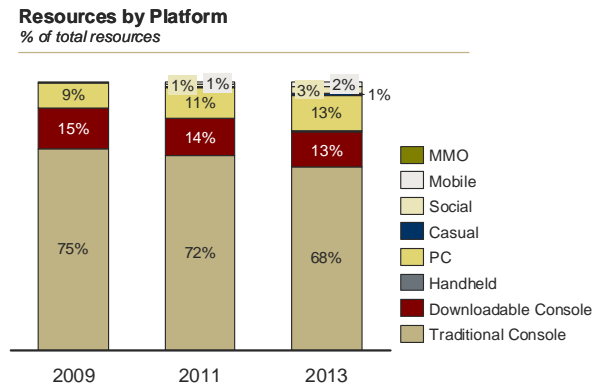
BRITISH COLUMBIA

In British Columbia, the industry’s employee base and economic activity are between the levels of Quebec and Ontario (though somewhat closer to the latter than the former). Average employees per company are also mid-range. But although BC video game companies have some expectation of growth in the next couple of years (when compared with expectations for the broader economy, at least), BC’s recent industry growth has been flat. These estimates align with the public impression of difficulties in the local industry, as major

Vancouver-based studios have conducted rounds of layoffs. Likewise, expectations of better days ahead seem to be underlined by the fact that many skilled but former employees of studios have elected to start game companies of their own.

The industry’s overall platform mix, by contrast, is evolving in similar ways to the rest of the Canadian industry, with traditional console games commanding a decreasing share of industry resources while social, mobile, MMO, and PC games grow their shares from 25% to a forecasted 32%.

BC in 2011	
Total employees	3,882
Estimated spending in BC	\$393M
Total number of companies	83
Average number of employees / company	47
Historical growth ⁽²⁾	0%
Expected growth ⁽²⁾	10%



CANADA IN A GLOBAL INDUSTRY

Like many other industries, the video game industry has become global, with many games being designed in one country, engineered with components developed in others, and then sold to a worldwide audience. In 2009 the industry was worth over \$50 billion USD and it is forecast to grow at a rate of 10.6% per annum to reach \$86.8 billion USD by 2014⁴. On this stage, Canada has become one of the most important players. Measured by number of industry employees, Canada is the third largest jurisdiction for video game development after the United States and Japan⁵; Canada’s approximately 16,000 industry employees compare favourably on a per capita basis with the United States industry’s 32,000 direct employees.⁶ Top-selling global game franchises have been developed by Canadian studios, including EA/BioWare’s *Mass Effect*, EA Sports’ *FIFA Soccer*, and Ubisoft’s *Assassin’s Creed*.

Perhaps unsurprisingly in light of the above facts, Canada is known internationally for its very strong base of creative and technological talent. This has become a virtuous loop: skilled Canadian video game developers, artists, and managers routinely create high-quality games, and when these games become commercially successful, it incents foreign firms to locate studios here or to contract work to Canadian studios, which in turn increases the experience level and numbers of game developers, artists, and managers in this country.

A similar story can be told at the company level. Canada is considered a “full-service” location for video game development because it hosts a comprehensive range of development studios and the support services they depend on, including middleware, quality assurance and testing, motion capture, audio services, acting and voice-over, animation, and interactive design. Within a single province—often within a single city—a video game publisher can have a new game developed and tested in its entirety, reducing management and oversight complexity and minimizing a variety of risks, from currency to culture.

⁴ PricewaterhouseCoopers “Consumer behaviour drives change; Entertainment & Media players seek new roles in digital value chain” (June 2010)

⁵ Entertainment Software Association of Canada, “Game On, Canada! Playing to win in the digital economy” (April 2010) p.6

⁶ Entertainment Software Association, “Video Games in the 21st Century: The 2010 Report” (August 2010), p. 12 http://www.theesa.com/facts/pdfs/VideoGames21stCentury_2010.pdf

Canada is also considered to be surpassed only by California in its mix of both large, established firms and smaller, entrepreneurial development studios and independent developer-publishers. Such a mix creates healthy opportunities for talent development as professionals cycle out of large firms and into small (or vice versa), and as managers and executives are more easily exposed to a wider range of experiences and scopes of responsibility. A larger number of companies of varying sizes also leads to a greater level of local industry robustness and reduced risk exposure to single negative events.

HISTORIC DRIVERS OF CANADA'S SUCCESS

According to our research, there are a number of important factors that have undergirded the success of the video game industry in Canada to date:

- To a significant extent, this is a **made-in-Canada industry**: many of the most important video games and video game companies were started in Canada by Canadians. California-based Electronic Arts, for example, first invested in Canada in 1991 by purchasing Vancouver's Distinctive Software, a 60-person firm whose founders had developed *Evolution*, one of the country's first commercially successful video games.⁷
- Canada has been able to offer **increasingly rich ecosystems** of video game development and related support companies, providing to publishers the ability to build and test all components of a new product locally.
- Canadian **educational programs have produced well-trained talent**, particularly at the university and college levels. Quebec's CÉGEP programs, for example, have been helpful in training young people who are capable of providing affordable quality assurance and testing support for game developers, before they go on to further studies at university.
- Canada has offered **attractive economics** for video game companies:
 - **Government policies**: Canadian governments at both the federal and provincial levels have developed a range of programs applicable to video game companies. Ontario, Quebec, and British Columbia, for example, have all instituted refundable tax credits on labour ranging from 17.5% to 37.5% of expenses, and the federal government's Scientific Research and Experimental Development (SR&ED) tax incentive program awards tax credits and/or cash refunds for R&D-related expenditures.
 - **Exchange rate**: Over several decades and until very recently, the Canadian dollar has been relatively cheap in comparison to the U.S. dollar. Because of this, local game developers/publishers have found their US dollar export sales converted into larger amounts of Canadian dollars and thus giving them improved revenue to cost ratios, and U.S.-based video game publishers have found game development costs in Canada to be lower than they otherwise would be. See "Risks" for a discussion of the recent increase in the Canadian dollar's value.
- Canada's major cities are **desirable places for talent** to live in. Montreal, Vancouver, and Toronto, Canada's dominant video game clusters, are well-known for their quality of life, benefitting from culturally diverse populations, thriving downtowns of mixed commercial, residential, and entertainment focuses, and generally affordable condominium and rental markets. This helps video game companies attract not only recent graduates but also experienced developers, artists, and managers from other countries. More broadly, Canada itself has long been known as a desirable country to live and do business in.
- Canada is **well-positioned geographically**, between the export markets of Asia and Europe, and in the same time zones as the major U.S.-based video game publishers. A particularly close link in this last regard has been between the major publishers located in the West Coast cities of Los Angeles, San Francisco, and Seattle, and the development studios they have purchased or built in the Vancouver area.

⁷ Peter Nowak, "The evolution of video games in Canada", CBC News (Sept. 13, 2010) <http://www.cbc.ca/news/technology/story/2010/09/09/f-videogames-history.html>

- As a multicultural society, Canada has **significant language and cultural overlaps** with the United States, Europe, and Asia.
- Canada's **video game and interactive/digital industry associations** are active and helpful.
- The industry attracts frequent and well-informed **attention from the Canadian media.**

CHANGES SINCE ESAC'S 2009 REPORT ON THE INDUSTRY

Since ESAC's previous report on the industry was written in 2009, there have been significant developments in the video game industry both in Canada and more generally.

Selected Canadian developments

- In February 2010, British Columbia introduced the Interactive Digital Media Tax Credit, which covers 17.5% of qualified labour expenditures, to a maximum of 60% of production costs
- Vancouver has seen significant layoffs at major studios, though against this trend, Microsoft recently began hiring for a new studio in Vancouver's Yaletown district.
- Several game companies, including THQ and WB Games, have established studios in Montreal, spurring intense competition for labour which will only increase as the city continues to grow as a centre for video game development.
- Toronto has been gaining increasing prominence as a game development hub. Ubisoft opened a studio in the city in 2009, while at the same time a large number of small development companies have opened their doors, many of them exploiting the opportunities created by the rise of the mobile and social gaming categories.

Developments in platforms & technology

- **Arrival of tablets:** The iPad launched in April 2010 and almost immediately created a new computing category, its sales reaching 15 million by the launch of the iPad 2 in March of this year. This has extended the use of Apple's iOS operating system beyond the iPhone, and has sparked the creation of high-resolution app-based games for the system. By proving the category is viable, it has also led to the competitive rise of tablets based on the Android and other operating systems, and, similarly, to the further adoption of low-priced game apps by consumers.
- **Increasing penetration of smart phones:** 39% of Canadian households now have "smart phones"⁸, which are commonly defined as cell phones with high-resolution colour screens and enough processing power to allow for activities like web browsing and video games. The low-priced app category in fact began on a smart phone platform—Apple's iPhone—and has been simply extended into the tablet platform and to other smart phone platforms, including Android, Blackberry, Windows, and Symbian. Games sold for smart phones are increasingly high-quality and in many respects can be considered competitors to (though not replacements for) the dedicated gaming handsets produced by the large console manufacturers, like Sony's PSP and Nintendo's 3DS.
- **Success of motion-sensor games:** Video games have traditionally been played sitting on a couch with a controller in hand, but in the past few years the invention of inexpensive motion-sensing components has created a new—and highly successful—interface option, leading to the development of games centred around physical activities like boxing, tennis, or dancing, and because of its ease of use and the accessibility of its games, has expanded the natural audience for video games. The pioneer system, Nintendo's Wii, since its introduction has significantly outsold major console devices. More recently, Microsoft's motion-sensing Kinect (an add-on component for Xbox) was launched in North America in November 2010 and became the fastest-selling consumer device in history.
- **Console introduction cycle:** New "generations" of video game consoles from dominant manufacturers Nintendo, Microsoft, and Sony have historically appeared in five or six-year cycles,

⁸ J.D. Power and Associates 2011 Canadian Wireless Customer Satisfaction Study, May 2011

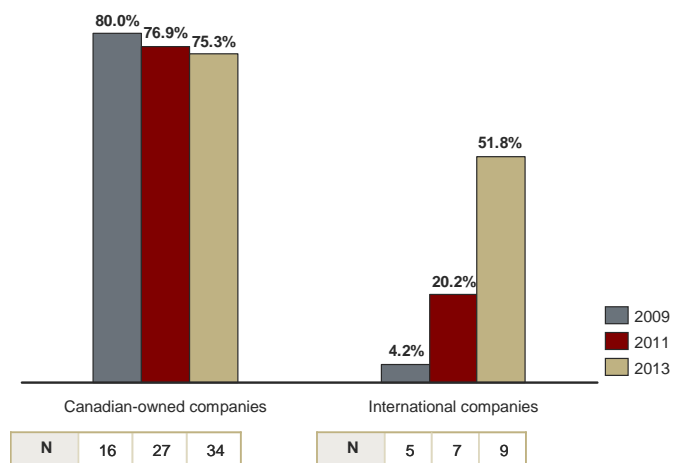
driving waves of game software innovation and updates after each launch. The latest seventh-generation consoles (which debuted with the Xbox 360 in 2005), however, are not predicted to be replaced until 2013-14, apart from a recently announced new platform from Nintendo. The current generation of consoles continues to sell well, and manufacturers seem willing to continue recouping their very large investments in the development of these machines. Meanwhile, many game developers are able to capture productivity improvements deriving from their increasing familiarity with these platforms.

Video Gaming categories

- Console gaming profits concentrating on blockbusters:** Increasing competition among console video game publishers, along with increasing standards by the “core gamer” customer base they are primarily developing for, have led to a polarization in console game success. Total category profits are increasingly concentrated on a small number of games made at very high cost and supported by equally high marketing budgets, while games with small to medium amounts of investment behind them have an increasingly difficult time making any profit at all. The phenomenon is roughly analogous to the fortunes of the contemporary film industry, which also spends a very high proportion of its development budgets on “tent-pole” blockbusters. 2010’s blockbuster video game was arguably Activision’s “Call of Duty: Black Ops”, which booked \$650m in sales in only five days.
- Rise of social and mobile gaming:** Both of these video game categories have depended, naturally, on the flourishing of the platforms they run on: iOS and Android-based smart phones and tablets in the case of mobile gaming, and social networks like Facebook in the case of social gaming. Very low price points, rapid interpersonal “sharing” of hit games and development of new business models such as microtransactions have meant that for at least a few games, success has been meteoric. 2007-founded social game company Zynga is already estimated to be worth between \$7 - \$10B, while Zynga's recent game *CityVille* (released December 2010) has broken usage records on Facebook and now boasts 89m monthly active users. On the mobile side, Rovio’s *Angry Birds*, first released in December 2009, booked 100m downloads in 18 months—at \$0.99 each.

- For triple-A console publishers, increasing proportion of revenue generated by online sales:** Although a truism in the social and mobile gaming categories, online sales comprise an increasing proportion of the revenues of console game publishers as well. The major console manufacturers have developed online networks accessible through their consoles (see in particular Xbox LIVE, Sony PSN) which provide gamers with the ability to purchase and download add-on packs for their store-bought console games, as well as stand-alone games developed for and sold through the online network. Similarly, publishers have begun to sell their games through web-based portals, bypassing physical retailers and building direct and long-lasting relationships with their user communities. The first set of bars in the chart above illustrates the already very high proportion of online sales in the revenue mix at independent Canadian video game companies—a proportion which, according to the survey, seems to be gradually declining, perhaps as companies

Online Sales in Canada
Of Canadian sales, percentage that is online



grow larger and diversify their distribution channels beyond online sales, or perhaps, more simply, due to market-driven shifts in relative sales figures for retail versus downloaded games. By contrast, the second set of bars shows the rapid growth in online sales share at the international publishers, as they move aggressively into making this distribution channel a more or less central part of their customer relationship strategy.

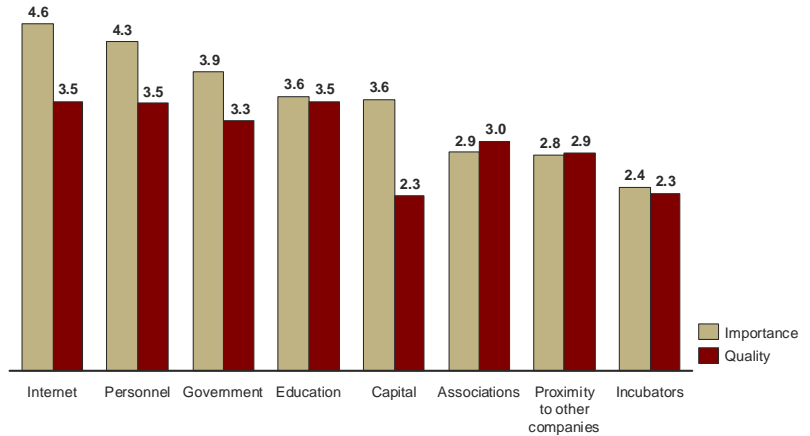
- **Rise of cloud gaming:** Games hosted on servers and accessed over the Internet have a long history (the first MUD, or multi-user dungeon, was hosted in 1978, but the genre spread more widely on Usenet in the late 1980s). With recent advances in technology, providers are now able to offer a range of hosted (or “cloud-based”) games ranging from vast immersive worlds with thousands of other players (often termed “MMOs” for massively multi-player online), to click-and-play versions of console games that would historically be available only in a store, to browser-based games for the serious or casual gamer. Users may purchase permanent rights to play a game (at a price typically significantly lower than for the equivalent product in a store), or may rent a given window of game play (e.g. three days).

INDUSTRY VIEWS ON BUSINESS CONDITIONS AND GOVERNMENT SUPPORT

BUSINESS CONDITIONS

In order to understand the relative importance of underlying business conditions to the success of the video game industry in Canada, the survey asked respondents to rate a number of conditions on a scale of 1 to 5 (1 being the lowest rating and 5 being the highest) with regard, first, to the importance of each condition to their business, and second, to the perceived quality of that condition as it exists today. The Canada-wide aggregate responses are shown in the chart on the right.

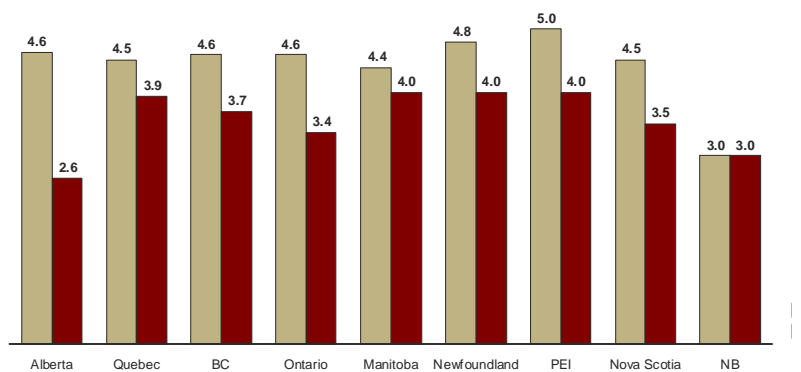
Business Conditions in Canada
1=Extremely Low, 5=Extremely High



N	Importance	77	78	78	78	76	78	76	75
	Quality		75	76	76	76	74	76	72

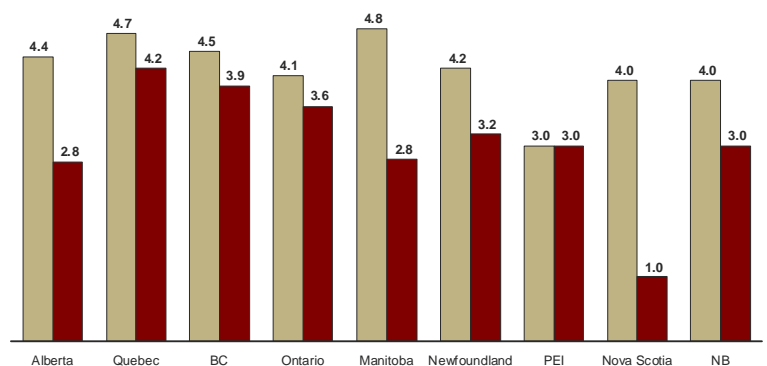
The two conditions deemed most important by the industry are (a) the **Internet and communications infrastructure**, and (b) the **availability of qualified personnel**, both of which conditions also received the highest scores for quality. On a regional basis, however, quality scores for Internet/communications infrastructure varied more widely, with Manitoba, Newfoundland, and PEI respondents awarding 4.0s, and Alberta respondents only a 2.6.

Average Quality and Importance of Internet Infrastructure by Province
N = 81



Another interesting divergence in quality perceptions arises in regard to the availability of qualified personnel. The highest scores for personnel are awarded by the three provinces in which the bulk of the industry is located: Quebec, BC, and Ontario. By contrast, markedly lower scores are awarded by respondents in Western Canada and the Atlantic provinces. The implication that talent has migrated to the larger centres is hard to avoid.

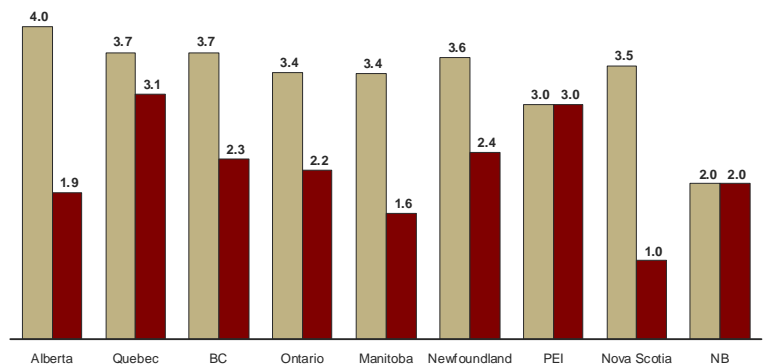
Average Quality and Importance of Personnel by Province
N = 81



An additional divergence worth noting at the Canada-wide level is the importance assigned to the availability of capital (scoring a 3.6) and the relatively low assessment of its actual quality (a score of 2.3). This accords with evidence from industry interviews and secondary research that while

large publishers are able to fund themselves through their organic cash flow or through project-financing arrangements with banks, smaller video game companies find it very difficult to obtain financing through banks or through venture capital firms. The fact that, on a regional basis, Quebec respondents give capital availability a moderately good score (3.1) while Ontario respondents give it a significantly lower score (2.2) may directly reflect the relative dominance of larger firms in Quebec’s video game industry, and the dominance of smaller firms in Ontario’s.

Average Quality and Importance of Capital by Province
N = 81

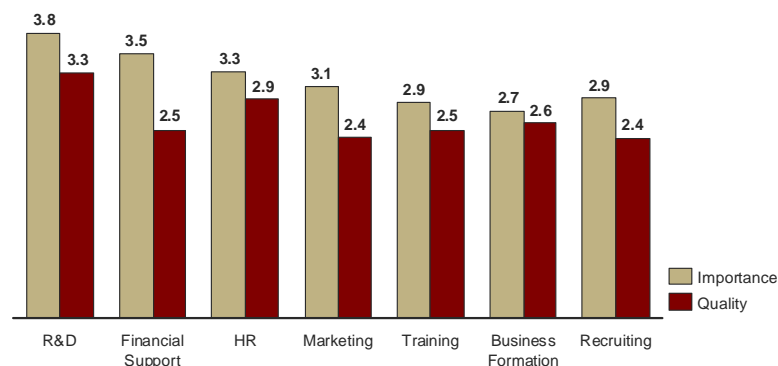


GOVERNMENT SUPPORT

Governments have clearly played an important role in the recent development of the Canadian video game industry, and so understanding industry perceptions of the support currently provided by various levels of government is valuable input to the question of where (or whether) improvements need to be made. As with Business Conditions (above) the survey asked respondents to rate a number of areas of government support (actual or potential) on a scale of 1 to 5 (1 being the lowest rating and 5 being the highest) with regard, first, to the importance of each area of support, and second, to the perceived quality of that support as it exists today. The Canada-wide aggregate responses are shown in the following chart:

In terms of perceived importance, government support for **research and development** leads the pack, followed by financial support and by support for human resources-related areas (since “HR” includes labour expenses, the industry tax credit programs fall into this category). But while R&D support elicits a 3.3 rating out of 5, the quality of financial support seems poorly regarded, and even HR support just barely reaches a score around the mid-point.

Government Support in Canada
1=Extremely Low, 5=Extremely High



N	Importance	74	72	72	73	72	71	71
	Quality	71	70	69	71	70	68	68

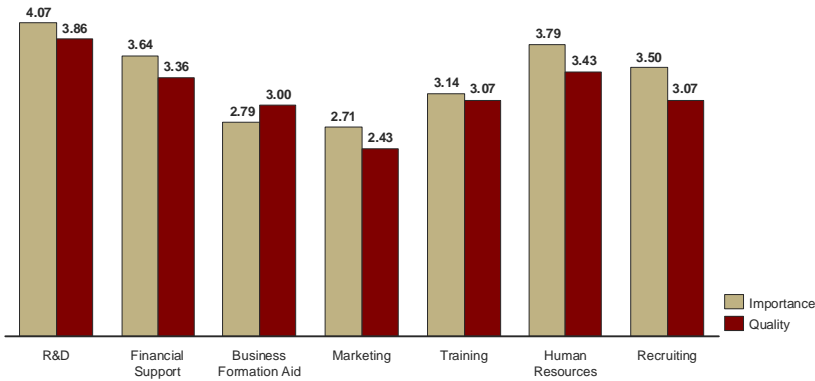
A regional comparison, however, uncovers some significant differences in how the quality of government programs is perceived. In Quebec, for example, not only is R&D support given relatively good marks (at 3.86), but financial support and HR support are not far behind, coming in at 3.36 and 3.43 respectively.

Ontario, by contrast, has a dimmer view. Though perceptions of R&D support quality are reasonably close to those of Quebec respondents, Ontario respondents rate financial support quality at only 2.55 (despite its relative importance, scored at 3.41), and HR support at a barely higher 2.86.

Finally, British Columbia respondents are the least enthusiastic of all about support provided by governments for these three areas. Perceived R&D support quality sits at almost exactly the midpoint of the range (at 3.08), while perceptions of HR support (at 2.62) and financial support (at 1.92) are lower still.

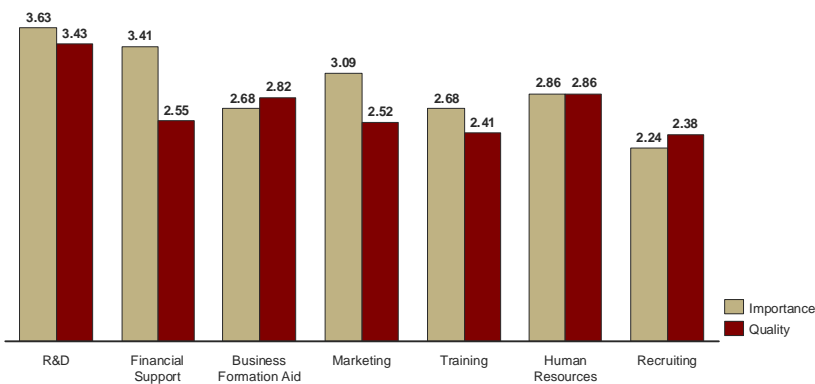
Quebec Perception of Government Support

Scale of 1 – 5, 1: extremely low, 5: extremely high, N=89



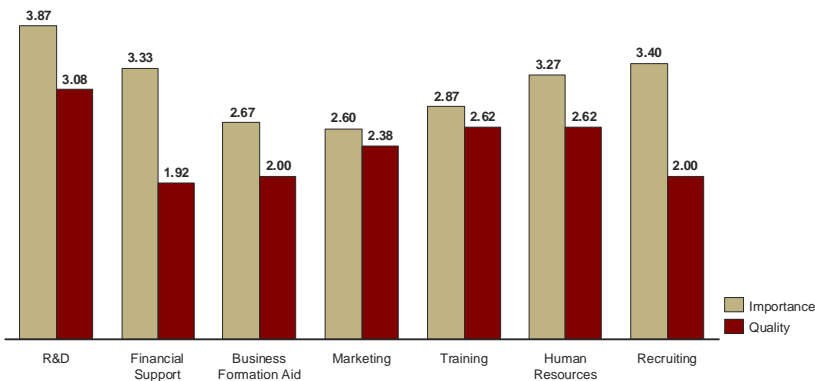
Ontario Perception of Government Support

Scale of 1 – 5, 1: extremely low, 5: extremely high, N=89



British Columbia Perception of Government Support

Scale of 1 – 5, 1: extremely low, 5: extremely high, N=89



PERCEPTIONS OF RISK AND OPPORTUNITY

INDUSTRY RISKS

We asked survey respondents to tell us about the top 3 risks they think the Canadian video game industry may face in the next two to five years. Responses were open form, and have been categorized into general themes as shown in the table.

One in every two respondents indicated that **changes to the industry's dynamics** were a top risk, reflecting an unease about the scale of change and the uncertainty surrounding new competition and new business models. Specific concerns in this regard included a fear of not being able to adapt to change rapidly enough, competition (and price devaluation) from a proliferation of low-priced, low-quality games, and the impact of the shift currently underway from the physical distribution and retailing model to one based on digital download and streaming.

Talent risk followed close behind—an important concern for an industry that relies heavily on the quality and skills of the highly creative and highly technical people it employs. Some respondents worried that intense labour competition is making experienced staff harder to find, and (when found) to retain, while others felt that the post-secondary education system is not producing graduates in sufficient numbers or with skills that meet industry expectations.

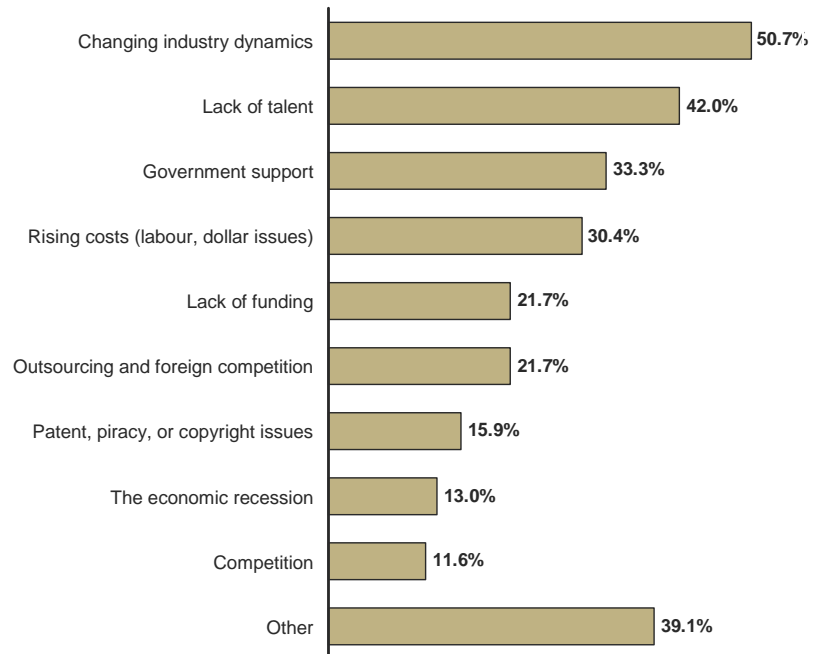
Government support was also identified as a top risk by respondents. A large proportion of responses expressed the feeling that existing government programs were designed for, and chiefly benefit, large scale developers and publishers, and that service providers and smaller video game companies are not able to take advantage of the same programs. Another significant proportion noted the dependence of the industry on government tax credits and similar programs, and worried about what would happen to the industry should those programs be withdrawn in future.

INDUSTRY OPPORTUNITIES

We also asked respondents to tell us about the top 3 opportunities they think the Canadian video game industry may have the option of seizing in the next two to five years. As with top risks, responses were open form and have been categorized into general themes as shown in the accompanying chart.

A significant majority of respondents identified **new technology** (including new platforms) as a top opportunity for the industry. Not unexpectedly, in this category a very strong emphasis was placed on mobile gaming, but other technologies made an appearance too, including social and casual gaming, next generation

Risks in Canada
% of total responses

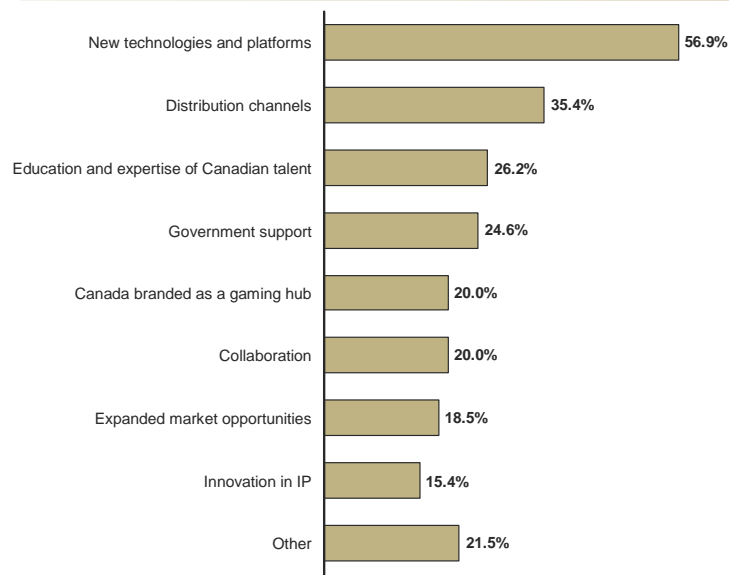


consoles, augmented reality, the merging of interactive media platforms, and even the emergent possibilities arising from growing numbers of small studios.

The next most frequently mentioned category of opportunity relates to changes in **distribution technologies and practices**. Digital sales and distribution channels, say respondents, reduce risk for publishers and publisher-developers by eliminating the expense and capital requirements of printing, storing, and distributing games on physical media; in doing so, they “level the playing field” between smaller and larger companies, and expand access to global markets.

By contrast with the first two opportunities, the opinions expressed in support of the importance of **education and training** were less specific. But for all that they were no less clear: from the development of well-trained graduates to the retention of skilled programmers and artists in Canada, from the creation of graduate programs in the sector to the importance of ongoing job-focused training, more than a quarter of respondents see this area as one of the industry’s top three opportunities. This proportion contrasts in an interesting way with the 42% of respondents who saw the talent gap as one of the industry’s top three risks. A reasonable conclusion is that well-trained, available talent is a foundation stone of the industry, allowing (and requiring) other opportunities to build on top of it, but leading directly to industry decline in its absence.

Opportunities in Canada
% of total responses



ADDITIONAL TRENDS, CHALLENGES, AND OPPORTUNITIES

This is clearly another transformative moment for the video game industry here in Canada and around the world, marked by increased levels of volatility and uncertainty. In addition to the impactful recent changes discussed above and to the risks and opportunities identified by survey respondents, there are a number of additional issues that the industry, its associations, and relevant government agencies would do well to watch.

INCREASING DIVERSITY AND SCOPE OF THE INDUSTRY

In sharp distinction to the “core gamer” stereotype of previous decades (e.g. males aged 14-24), the video gamers of today and tomorrow are as likely to be women, people in their 30s, 40s, or 50s, or children. Likewise the console-centric, action-game industry of yesteryear has given way to one serving up a wide variety of genres on a wide variety of platforms over numerous distribution channels. Even the industry’s business models have become diverse, with physical games sold in stores for \$60, cloud-based games offered for \$9.99, iPhone apps downloaded for \$5.99 or \$0.99, and special items in “free-to-play” social or mobile games purchased for a range of prices. Financing needs are another point of significant difference: while a console game developer may invest \$40-50 million, and three years, in a “Triple-A” game and its marketing, the development and marketing of an iOS or Android mobile game might total \$25,000 and be accomplished in a week or two.

In sum, it is more difficult than ever to conceive of video games as an industry with a single nature—and as a result, government policies developed for the industry will likely be most effective insofar as they take into account, even exploit, its diverse nature. Within the industry, opportunities for partnerships between social/mobile start-ups and established console developers may be worth exploring, not only in a mergers & acquisition framework but also with a view to potential joint ventures in which both types of company are able to bring their comparative advantages to bear, for example, on a platform-crossing brand. There may be

INCREASING JURISDICTIONAL COMPETITION FOR PROJECTS AND COMPANIES

Globalization is a phenomenon that impacts almost every industry in some way, and the video game industry is no exception. Competition between countries (and within countries) for game-related investment is fierce: video game developers in Canada report receiving offers from foreign countries to relocate their business there, and Canada itself has been notably successful in attracting investment and skilled personnel from jurisdictions like the United Kingdom, which cancelled its plans for tax incentives for its own video game industry in June 2010.

Although every investment decision is unique and often complex, taking many factors into account, tax incentives and other government programs are a significant factor in most such decisions. In this respect, Canada faces competition from South Korea, France, Australia, and the United States—twenty-one states in the U.S., in fact, offer some kind of tax relief applicable to video game companies.

With the disappearance of its favourable exchange rate with the US dollar, Canadian development capabilities are no longer automatically considered cheap by U.S.-based publishers. While there may be limited appetites on the part of Canadian governments to increase the pro-rata tax credits they provide to the industry, both federal and provincial governments should review their existing programs to ensure that they are easy to understand, easy to access, and capable of being used by all types of video game companies, whether entrepreneurial or established. And given the importance of effective marketing to the overall success of games, and to the profits that allow video game companies to reinvest in themselves, governments should consider whether there are ways to help on this front as well—or, conceivably, to rebalance support between

development effort and marketing effort in order to maximize the development of well-marketed games, not just games in general.

EXCHANGE RATE VOLATILITY

The Canadian industry has benefitted from Canada's long-standing discount that its currency has enjoyed against the US dollar. In recent years (driven in part by Canada's resource-dependent economy and in part by high levels of US sovereign debt and the country's ultra-low interest rate policies) this discount has vanished, and has even, to a mild extent, reversed itself.

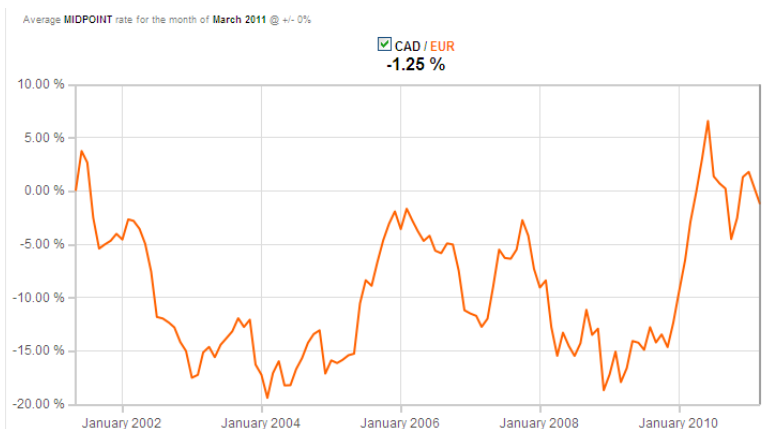
Not only does such a shift change the economics for U.S.-based publishers considering an investment in Canadian development talent (which now becomes that much more expensive in US dollars), but it also directly impacts the export earnings of Canadian publisher-developers, who must convert their US-dollar sales into much more expensive (and therefore fewer) Canadian dollars. More insidiously, the high volatility that has accompanied this change—over ten years the exchange rate has varied between -3.7% and +60.2% of its starting point—complicates long-term investment decisions, since the range of possible economic outcomes is much wider than it would be if the exchange rate were essentially stable. The increased risk that this implies necessarily demands increased returns to justify it, which raises the bar for investments in Canada.



There are several avenues that may be worth exploring in order to understand the full implications of currency risk and to mitigate it where possible:

- As part of a globalized industry, a given Canadian publisher or developer may see both negative and positive impacts from a given exchange rate shift. For example, while US bound exports may be hurt by a strengthening Canadian dollar, components developed in the US on behalf of the Canadian firm will become less expensive.

- Other currencies, and their Canadian dollar exchange rates, are almost always relevant. It would be beneficial to examine the level of Canada/USD currency risk in comparison with risk from other currencies—if relatively low against the Euro (see chart), for example, this fact could be used to encourage foreign investment from European game publishers, and to direct export sales efforts by Canadian firms toward European markets. The Canadian dollar, in fact, has *depreciated* 1% against the Euro in the past ten years, demonstrating significantly less volatility (10-yr range: -19.4% to +6.6%) in doing so.



- Though large companies typically have sophisticated finance teams that are able to devote time and expertise to the management of currency risk, small firms by and large cannot do so. Canadian governments and/or industry associations should explore how best to improve awareness of methods

small firms can use to reduce currency risk; where finance institution costs are prohibitive on a single-company basis, the potential for pooling arrangements should be explored—just as many industry associations and buying groups are able to offer lower-price insurance plans to their memberships.

FINANCING CHALLENGES

While large publishers generally have adequate access to financing through their internal resources and long-term relationships with banks (and in some cases, with public equity markets), smaller Canadian publishers and developers typically have great difficulty in securing financing for their projects. Banks are generally risk-averse, and game companies by their nature have relatively few hard assets to pledge as collateral for project loans (computers depreciate rapidly, and most of a firm's other assets are its people). Venture capital, meanwhile, which has been a significant source of funding to the wider information technology industry, has by and large refrained from investing significantly in Canadian video game companies. On the other hand, “friends and family” and angel investing has proven helpful to mobile and social game developers who require relatively small amounts of money to develop their games, as have online “crowd-sourcing” services like Kickstarter.com, from which some developers have sourced up to \$25,000 for a given project. In the face of this gap, government programs that enable game companies reduce expenses, or that provide funding for research & development or for marketing and associated travel expenses, have been helpful.

Worth investigating is the question of whether there may be a broader and more systematic solution to the overall financing challenge. Such a solution might involve the development and trial of new funding models (a quick example being the use of the film industry's “bank and bond” model by Big Sandwich Games last year), and the systematic promotion of successful models to the broader industry. It might involve the establishment of an intermediary that could screen pitches for potential investors, conduct investor-investee matching, and coach game companies on the most effective way to look for capital and develop effective pitches. It might involve the education of banks, VCs, and angel networks on the economics and risk/return tradeoffs in the video game industry, or even the formation of an industry-focused investor network. Perhaps more radically, the creation of a cooperatively-owned financing institution could be considered, which would focus on the industry's needs and be able to provide finance (and associated oversight) more effectively than the more generalist commercial banks can.

OUTSOURCING, ON-SHORING, AND OFF-SHORING

As the simple decision to create value for shareholders by contracting out a function most effectively or efficiently performed by an outside firm, outsourcing is an extremely common practice in virtually all industries. As such, it does not, in and of itself, present a risk to the Canadian video game industry. Indeed, it is for many video game companies an inescapable fact of doing business, as companies must continually seek the least expensive and most timely ways of bringing new games and products to market. The decision to outsource, it should be noted, is never simple. Many Canadian firms have elected for pragmatic business reasons not to outsource any of their primary functions. Other firms outsource, but do so to Canadian companies (a practice known as “on-shoring”), while still others outsource functions to companies in foreign countries (or “off-shoring”).

Previously, only the simplest and easiest to modularize functions were off-shored: environmental and character art, for example. But engineering talent is strong in countries like Russia, Argentina, and China, and overall levels of video-game-related talent have been increasing steadily in most regions around the world. Off-shoring deals now frequently involve higher-value functions like animation and engineering—but again, there are always trade-offs between cost, productivity, quality, and time that must be taken into account when making and assessing outsourcing decisions.

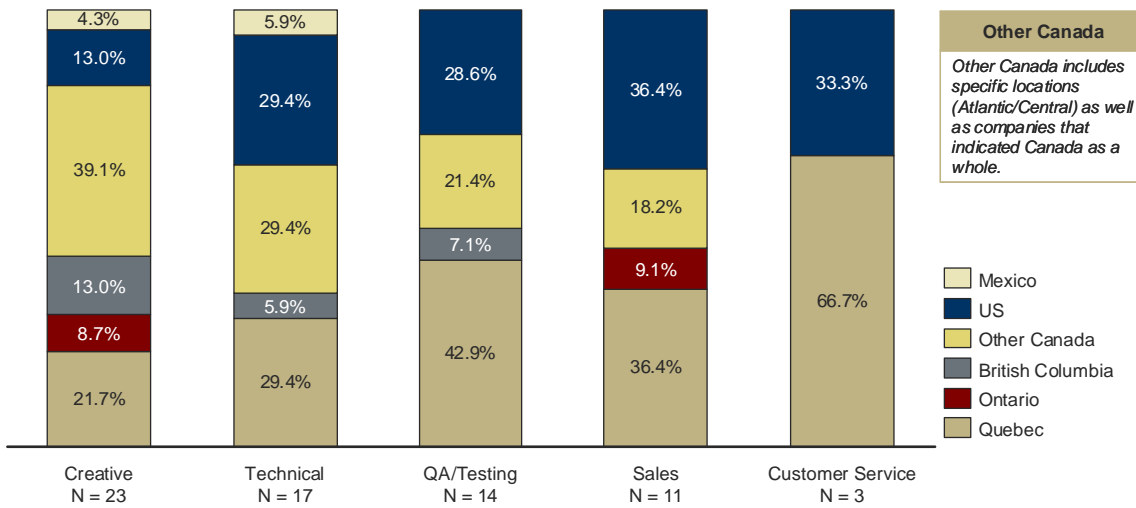
From a government policy point of view, concerns will logically centre around the question of the number and nature of jobs that are retained in a given jurisdiction, and on the independence, health, and sustainability of the video game industry itself. In the UK, for example, concerns are frequently expressed not only about the recent net loss of game developer roles, but also about the reduction in the number of independent companies or “head offices” in the country, which has implications for the amount of power the local industry is able to wield and for the ownership of profits (which naturally hold greater potential for wealth creation (and for risk) than do the salaries or fees paid to development studios working only for hire).

In this respect, Canada has developed what appears to be a healthy mix. It has a significant complement of foreign publisher-owned studios producing very high-budget games, paying high salaries, and teaching important skills to programmers, artists, and managers. It has robust ecosystems of supporting specialist companies, often Canadian-owned. And it has a large number of mid-sized and smaller game publisher-developers that frequently own their intellectual property while also doing work for hire. Within each of these levels, outsourcing is occurring both as an “inbound” phenomenon (foreign companies off-shoring their work to Canadian subsidiaries or outsourcing it to independent Canadian companies), and as an “outbound” one (Canadian studios or independent companies outsourcing their work to other companies in Canada or in foreign countries—including Canadian-owned subsidiaries in foreign countries).

Outsourcing is a complex matter, and it is not obvious without significant further analysis whether its net effect on Canada and the Canadian video game industry is positive or negative—and indeed, whether that net effect (if any) is of long duration or changes from year to year. What is clear, at least, is that sound policy should aim at several objectives:

1. Ensuring that the business and regulatory environment in Canada is as hospitable as possible for all types of video game companies: foreign subsidiaries, independently-owned firms, and brand new start-ups. This will include an understanding of the primary drivers behind decisions to off-shore, and making up (where possible) for deficiencies.
2. Ensuring that Canadian studios and companies are encouraged to focus on innovation and creativity in game and technology design and development in order to compete more effectively against lower-cost competition, and that they are able to continuously upgrade the skills of their employees so that higher-value-added tasks may replace lower-value-added tasks that are outsourced or off-shored.
3. Ensuring that Canadian companies are aware of local options for outsourcing and fully incorporate them into any set of options they are considering in regard to outsourcing one or more functions. “Outsourcing without off-shoring”, this might be termed.

On-Shoring in North America

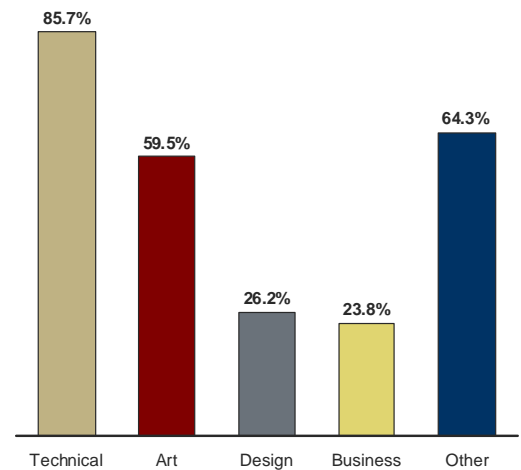


TALENT

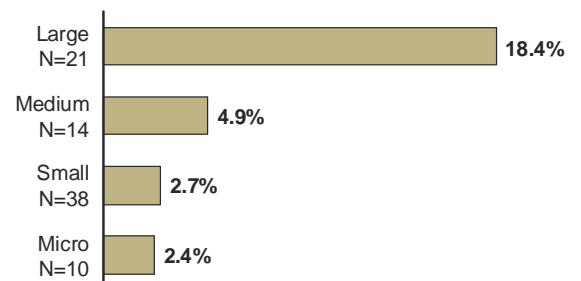
One of the simplest but most striking statements we heard in our interviews was that “the future of the industry hinges on people.” This is not a truism; in distinction with many other industries, the video game sector’s success depends on uncommonly close ties between creative and technical skills, a fact which puts a premium on finding and retaining top talent. On this front, the Canadian story is mixed. Educational programs are generally considered to be producing well-trained graduates in approximately the right quantities to fill entry-level positions around the industry, but there are as yet no standards for what ought to be taught in these programs. More experienced and skilled resources, meanwhile, are often extremely difficult to find in Canada during boom years (or in Montreal right now), and immigration procedures typically impose long delays on attempts to bring in needed talent from outside Canada. It should be noted, furthermore, that experienced foreign workers are recruited for a range of needs, not just for technical skills like Flash, Ruby on Rails, or iOS; the chart at right shows that while technical hires are most common, significant percentages of foreign hires came with artistic, design, or business skills.

Improvements in labour supply will remove one of the largest restrictions on growth faced by the industry, but this is likely to require changes on two fronts. First, the industry and its associations should consider how it can best engage the higher education system in a coordinated program to prepare students for the fast-evolving video game sector, something that might involve the definition of skill- or role-related standards (i.e. developer, producer, artist), and the re-investment of time and

Reasons for Recruiting Foreign Workers



Average percent of foreign workers % of total employees



perhaps tangible resources into education so that programs can be made as relevant and as cutting-edge as possible. “Eight: The Hamilton Institute for Interactive Digital Media”, a now-underway partnership between Silicon Knights, McMaster University, the Art Gallery of Hamilton, and Mohawk College, is an experiment worth watching in this regard. As a further note, this cooperation need not be limited only to undergraduate programs aimed at entry-level jobs; there may well be benefit in determining how education can address the needs of mid-to-senior level game company managers and executives (e.g. through the development of a game-industry-focused MBA).

Second, since education is necessarily a slow but sure way of developing the needed talent in Canada, in the short run companies will need improved access to critical foreign talent. A review and possible revamp of immigration procedures and regulations may well be warranted.

NOTES ON METHODOLOGY

- In order to size the video game industry in Canada we have focused on estimating economic activity as driven by aggregated annual operating budgets and peripheral economic activity created in Canadian communities. Retail sales of video games are excluded as they represent the next phase of the value chain that falls outside the scope of this analysis. For the operating budgets, we estimate this by multiplying the industry mean salary by total number of employees, and then adjusting the result upward by 47% in order to capture estimated annual non-salary expenses (i.e. benefits, rent, infrastructure, maintenance, marketing, etc) typical of the industry. Though commonly used to estimate the size of many other industries, revenue is not an effective measure in this case—in large part because several of the largest video game companies in Canada are in fact subsidiaries of global parent companies and do not therefore have revenues. Operating budget estimates are used to avoid these difficulties, and to avoid underestimating the industry's importance. Accordingly, it is important to understand that the industry size estimate in ESAC's 2009 report **is not directly comparable** to the industry size estimate in the present report, and therefore inferences about industry growth cannot be drawn by comparing the two. Indirect and induced economic activity is estimated based on average rates for supporting activities as well as for the incremental disposable spend driven by increased economic activity in the region.
- Saskatchewan does not appear in this report because although companies from the province were identified as industry participants, no responses to the survey were received. Accordingly, we remove those companies, and the province, from the data analysis to avoid giving analytical results without any actual data.
- All monetary figures are given in Canadian dollars except where otherwise indicated.

GLOSSARY

Android	Google's mobile operating system, used on a wide variety of smart phones, netbooks, and tablets
IP	"Intellectual property". In the video game industry, shorthand for a game or game franchise
iOS	Apple's mobile operating system, used on the iPhone, iPod touch, iPad, and Apple TV
MMO	"Massively multi-player online", a term for online games in which very large numbers of players interact with each other in a virtual world
Triple-A	A term denoting full-sized, big-budget console games developed by major publishers