

Economic Profile of Ontario's Computer Animation and Visual Effects Industry in 2014

Final Report

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Prepared for:

CASO 

COMPUTER ANIMATION STUDIOS OF ONTARIO

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Executive Summary

Introduction and Context

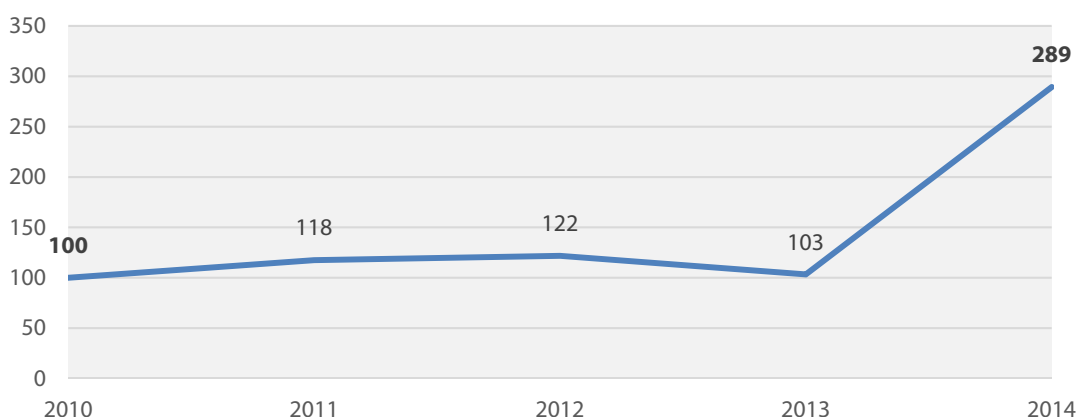
In 2008, and again in 2011, the Computer Animation Studios of Ontario (CASO) engaged Nordicity to develop an economic profile of the computer animation (CA) and visual effects (VFX) industry in Ontario. Since the 2012 publication of the last profile very little additional sector information has been made available to CASO members or the broader industry. In this rapidly changing industry, CASO determined that an updated economic profile would be crucial to the CA/VFX industry in order to identify and understand industry changes and areas of growth. Past research has, for example, identified the industry as a vital source of employment and creative innovation in Ontario.

This *Economic Profile of Ontario's Computer Animation and Visual Effects Industry (2014)* delivers key information about the firms operating in this industry including a snapshot of their corporate profile, financial profile, employment and market growth outlook as well as economic impacts. The findings in this report are drawn primarily from a survey to CA and VFX firms based in Ontario. This report also includes labour market case studies of five jurisdictions with which Ontario competes: Vancouver, Montréal, Los Angeles, New York and London, U.K.

A Rapidly Growing Industry

Figures presented throughout this report indicate strong growth since 2010 in employment, overall company revenue, and GDP impact. The growth of the total value of the OCASE tax credit is in line with this growth of the industry – in 2010, the total value of OCASE was \$15.3 million – by 2014, its total value had risen to \$44.2 million, an increase of **289%** over the five years under consideration. Increases in production output, revenue, labour spend and employment are all roughly in line with this growth. The chart below shows the change in the total value of the OCASE tax credit from 2010 to 2014, with the 2010 total indexed to 100.

Figure A: Total OCASE Value

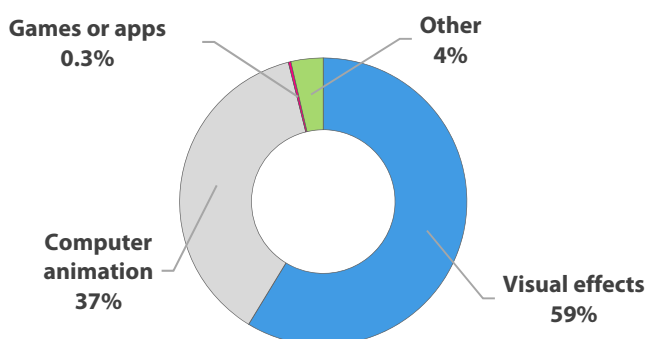


Source: OMDC: Tax Credit Applications Received and Certificates Issued 2010-2014 – OCASE

Financial Profile

Overall, the combined CA and VFX industries earned **\$397.8 million** in revenue in 2014. While these results are not directly comparable to the past report, the total impact is more than two and half times the total operating revenue recorded in 2010 - **\$156.3 million**. That figure, in 2010, was itself more than **1.5** times the 2009 operating revenue recorded – that is to say **\$99.3 million**. The chart below shows how that **\$397.8 million** breaks down as far as sources of revenue.

Figure B: Revenue by source



Source: Nordicity survey of CA/VFX in Ontario (2015)
n=17

Expenditures across all aspects of the CA/VFX industry in Ontario totaled **\$329.1 million** in 2014. In keeping with the revenue growth observed earlier, this total was some 2.75 times greater than 2010 expenditures at **\$120.2 million**. In other words, revenue has more than doubled over this period and expenditures have increased even more.

Direct Economic Impact

The total direct economic impact of activity in the visual effects and computer animation industries is approximately **\$291.4 million**. Direct economic impact is based on a combination of a portion of an industry's direct output¹ and the wages it pays to employees.

This impact is approximately **3.5** times higher than in 2010 when the total direct economic impact was reported to be **\$82.9 million** (or a compound annual growth rate of **34.2%**).

Industry Employment in Full time Equivalent (FTEs)

The Computer Animation and Visual Effects industries in Ontario lead to the employment of approximately **6,750** full-time equivalent jobs (or FTEs) in the Province.

¹ "Output consists of those goods or services that are produced within an establishment that become available for use outside that establishment, plus any goods and services produced for own final use." Organisation for Economic Co-operation and Development (OECD) Glossary. <http://stats.oecd.org/glossary>

The FTE figure is attained by taking the total hours worked divided by average annual hours worked in full-time jobs. The FTE figure is useful because it allows for comparisons across industries and time periods. This figure is roughly **2.5** times the 2010 FTE count of **2,720**.

Spin-off and Total Economic Impact

Where the direct economic impact relates to GDP, wages and output as described previously, indirect and induced economic impacts are included as “spin-off impacts.” Spin-off economic impact result from the computer animation and visual effects industry’s purchase of goods and services from other industries (indirect), and the economic activity generated by the re-spending of income and profits within the Canadian economy (induced).

In 2014, the computer animation and visual effects industries indirectly generated **\$60.3 million** of provincial GDP. At the same time, the induced impact of the industries was **\$97.8 million** in 2014. Combined with the direct impact, the spin-off yields a total economic impact of **\$449.5 million**.

International Case Studies

Other jurisdictions offer many lessons for Ontario’s CA and VFX industry. While London and Vancouver demonstrate the value of collaboration between companies, Montréal proves the importance of public interventions beyond tax credits. Finally, although government funding is often used to attract major, international players, New York City confirms that small, independent studios also contribute to the computer animation and visual effects scene.

Conclusions

In Ontario CA and VFX firms have become increasingly intermingled, with new companies starting-up and many working across a diverse range of activities.

Almost half of surveyed firms have two lines of business or more in what was once a highly specialized industry. Will this hybrid-company approach work for the future and help companies grow and diversify into new areas?

As far as revenue and impact, the CA and VFX industry has experienced major growth since 2010 – in some respects the industry grew three times as large over the past five years.

It is important to contextualize this growth with the recognition that the “universe” of companies in Ontario has grown since 2010. A greater number of companies in operation has helped to increase the industry’s footprint in every direction (direct, FTEs, spin-off etc.). As such, it may not be the case that individual companies are experiencing the same level of growth.

Overall, profit margins for CA and VFX firms in Ontario remain a healthy **17%** but there case studies of other jurisdictions indicate that the health of individual firm can be precarious, even when working on big budget productions.

Talent attraction and labour quality were described as high priority issues and growth limiters for Ontario firms, both as far as availability at the intermediate and senior levels and as far as artistic and digital skills at the entry-level.

Ontario’s post-secondary programs claim to produce graduates of the highest quality. Based on Ontario firms’ level of satisfaction with new entrants, however, it is unclear whether a) these graduates match the industry’s needs or b) those top graduates are staying in Ontario to work.



Talent development and retention is an area that can require consistent industry collaboration across a variety of stakeholders and may require focus and leadership from CASO in the near term. This leadership may also help to address some of the concerns raised about lack of industry collaboration in Ontario.

The CA/VFX market is global but Ontario's main competition, for now, is North American.

North American cities were identified to be Ontario's top competitors for business and for talent – ahead of the UK, South America and Asia. There are perhaps opportunities for Ontario's firms to nurture more global connections through co-productions (and other partnerships) in order to forge new talent pipelines and be more competitive in North America. As well, in this increasingly global market, it is vital to monitor competitor jurisdictions and learn how they are fostering innovation, attracting talent and – ultimately – growing.

1. Background

In 2008, and again in 2011, the Computer Animation Studios of Ontario (CASO) engaged Nordicity to develop an economic profile of the computer animation (CA) and visual effects (VFX) industry in Ontario. Since the 2012 publication of the last Profile, however, very little additional sector information has been made available to CASO members or the broader industry, despite rapid industry changes. An updated Economic Profile is crucial for the CA/VFX industries to identify and understand these changes, benchmarks and areas of growth and innovation in Ontario. This research also highlights the important contribution the industry makes to the Ontario economy. Past research has, for example, reinforced the recognition of the CA/VFX industries as vital sources of employment and creative innovation.

1.1 Project Mandate and Objectives

This *Economic Profile of Ontario's Computer Animation and Visual Effects Industry* (2014) delivers key information about the firms operating in this industry including a snapshot of their combined:

- **Corporate Profile** – e.g., years in operation and types of business ownership;
- **Financial Profile** – e.g., revenue by market segment and operating expense breakdowns, as well as access to financing and sources of original capitalization;
- **Employment and Training** – e.g., number of full-time, part-time and freelance employees, availability of required skills; and perceived quality (preparedness) of new hires;
- **Market Growth Outlook** – e.g., areas of opportunity and barriers to growth; and
- **Economic Impacts** – e.g., direct, spin-off and total impacts and FTEs.

Where possible, this report has included comparisons of the above information to the results reported in the 2012 study (with 2010 data) conducted by Nordicity for CASO, and supported by the Ontario Media Development Corporation (OMDC).

For this iteration of the report, CASO Board's requested more insight into the industry's competitiveness against other jurisdictions with regard to talent recruitment and retention. To that end, Nordicity developed labour market case studies of five jurisdictions with which Ontario competes: Vancouver, Montréal, Los Angeles, New York and London, and the U.K.

1.2 Approach and Methodology

Developing and Distributing the Survey

As in 2012, the primary research tool for this study was a detailed online survey distributed to Computer Animation (CA) and Visual Effects (VE) firms based in Ontario. Nordicity worked extensively with CASO to build a distribution list of approximately 80 companies as a starting point for the survey (and which included both CASO members and non-members). The survey was also shared openly online with promotional support from Interactive Ontario and the OMDC. Nordicity and CASO also called each company individually in order to promote the survey and study. There was very strong

participation amongst CASO's membership but motivating non-members to participate was a challenge.

Survey Population and Gross Up

Usable data (i.e., survey responses that included at least information about a company's activities and lines of business) was collected from **23** companies, leading to an implied universe of **108** companies operating in computer animation and visual effects in Ontario in 2014. This estimate is based off of the total use of the Ontario Computer Animation and Special Effect (OCASE) tax credit – subtracting the outliers' use of OCASE from the total gave a sample base of companies making use of the credit.² For this sample, an average company profile can be determined. Extrapolating this sample to the total value of OCASE and then adding the outliers back in produced the total estimate of 108 companies. A short breakdown of the calculation of the implied universe of companies follows:

- Total OCASE use (\$44.2million) MINUS Outlier OCASE use (\$9.2 million) EQUALS **discounted OCASE use (\$35 million)**
- Total companies with expenditure data (17) MINUS Outlier companies (3) MINUS non-OCASE companies (3) EQUALS **gross up sample (11)**
- Gross up sample (11) TIMES discounted OCASE use (\$35 million) OVER sample OCASE use (\$3.79 million) PLUS Outlier companies (3) PLUS non-OCASE companies (3) EQUALS **implied universe of companies (108)**

In order to gain a better understanding of the ecosystem of computer animation and visual effects companies operating in Ontario, Nordicity employed the respondents' use of the OCASE tax credit as a basis for estimating the total size of the industry in Ontario. Currently, there is no comprehensive census of companies active in the CA/VFX industry (other than this report) due to both the dynamic nature of the industry and to broader media firms' diversification into new activities (such as VFX). Accordingly, the OCASE data, which is tracked year-on-year by the OMDC, provides the most robust means of relating the sample data to the total population.

In order to effect this gross up of the sample, survey data was analyzed to calculate the degree to which each respondent used OCASE in 2014. The average OCASE use for each company in the sample was determined based on their total labour spend, which was then discounted by the percentage of their projects that made use of OCASE in 2014, and then by the OCASE tax credit value of **20%**. Determining this average OCASE spend per company allowed Nordicity to estimate the labour spend associated with the total OCASE value, and thus total revenue, employment and expenditures associated with that value.

At this point, several outlier companies³ were extracted from the sample. Outlier companies' total use of OCASE was subtracted from the total for purposes of grossing up the sample. Companies not making use of OCASE were also treated as outliers, though their contribution is negligible, representing only 3 of the 23 companies in the sample, and accounting for only 1.6% of total

² It should be noted that the OCASE tax credit is open to Ontario-based companies engaging in computer animation and/or visual effects activities regardless of whether those activities are their main line of business.

³ Outlier firms are those whose presence would distort the gross up, usually at least an order of magnitude above the average company size. It is assumed that the survey captured these very large companies in its data.



expenditures captured in the sample. The remainder of the sample was then grossed up from the OCASE use in the sample to the implied size of an industry matching the actual use of OCASE in 2014. This methodology was used to gross up the following quantities:

- Revenue;
- Expenditure;
- Employment; and
- Industry output (minutes, shots, games).

Where methodologies align, the report compares the results of this study with those from the 2010 edition.

Case Studies

Ontario's CA and VFX firms compete with other Canadian and international jurisdictions for talent. This year's profile provides case studies of five competing CA and VFX jurisdictions: London, Montréal, Vancouver, Los Angeles and New York City. Case studies were selected based on early survey responses that indicated the top jurisdictions with which Ontario competes for talent, and then confirmed with CASO. The case studies focus on the job market, including issues such as average salaries and the process to recruit international artists, while providing context on the size of the industry in each city, government interventions and the broader climate of collaboration.

2. Industry Profile

This section introduces the Computer Animation and Visual Effects Industry as a whole, as well as some basic corporate information about Ontario firms operating in this industry.

2.1 About the Computer Animation and Visual Effects Industry

The CA and VFX industries in Ontario comprise companies that produce content and/or provide other services for film, television and digital media markets, in Canada and internationally. Globally, demand for the services provided by these industries is growing, both for high-end television productions like *Game of Thrones*, *Orphan Black* and *The Walking Dead* and for box office blockbusters and award-winning films like *Star Wars - The Force Awakens*, *Spotlight* and countless others.

For companies active in CA and VFX, the primary customer base includes film (and television) producers, distributors, content producers, video game developers, mobile application/content developers and television broadcasters. These companies often also serve the commercial market by producing TV commercials, training materials, corporate communications, or music videos; either directly or indirectly through an agency. Some production companies operating in the CA and VFX industries provide post-production services in-house, whereas other producers contract work out to specialty post-production service houses. Some producers do both.

In fact, in 2014, Ontario CA and VFX companies were shown to be increasingly working across two or more lines of business. Only about half (52%) described themselves as working in a single line of business.⁴ To put it another way, a higher share of companies reported doing both CA and VFX than reported working in either vertical alone.

In our past study, it appeared that companies in CA and VFX were more specialized – that is to say, involved in one or the other line of business. Today, it seems that there is more overlap as far as work undertaken and sources of revenue. Reasons for this diversification are not obvious based on the survey data alone. In any case, for this reason, the results presented in this study were *not* often available by CA or VFX company distinction and instead were presented to reflect the increasingly hybrid nature of the survey sample.

Amid growth in demand, the precarious nature of many companies operating in the global CA and VFX industries have received considerable attention since the last report was developed in 2012. This precariousness or turmoil is perhaps best exemplified (or most well-known) through the example of the bankruptcy of the 25-year-old, LA-based VFX firm Rhythm & Hues in 2013. The firm's bankruptcy filing came just one week before it won an Oscar for its work on the film *Life of Pi*. The firm cited various reasons for its business challenges including the constant pressure to “chase a price point that has been dropping very rapidly” – that is to say, delivering high quality work at a lower and lower cost.⁵ Some connect this price “distortion” to tax credits, while one writer reflected on the business

⁴ As illustrated by survey data from the Nordicity CA/VFX survey (2015).

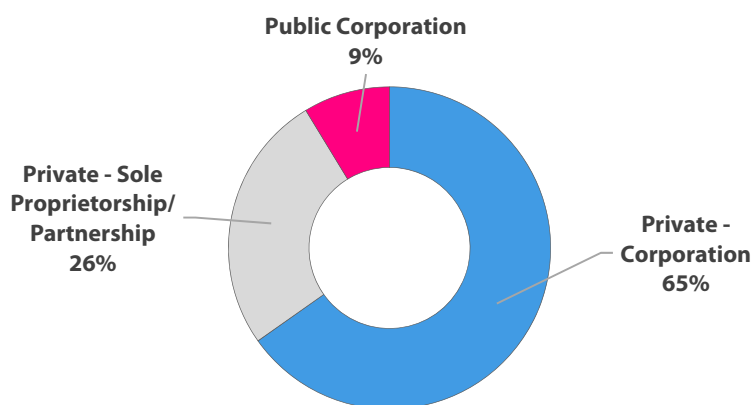
⁵ Rhythm & Hues directors were also accused of some high-risk business dealings which may also have played a role in the firm's financial state.

challenges related to the VFX industry's "fixed-bid" system, explaining, "The fixed-bid system, where VFX vendors bid for jobs based on the number of shots -- with no allowances for additional hours that may be required for changes, can eat into the already-thin profit margins of VFX contracts."⁶ This report examines industry challenges and opportunities in further detail in Section 5.

2.2 Corporate Profile

The corporate profile describes the nature of the firms operating in the CA and VFX industry in Ontario as far as ownership, age and lines of business. For example, as the figure below shows, CA and VFX firms in Ontario are mainly private corporations.

Figure 1: Company ownership



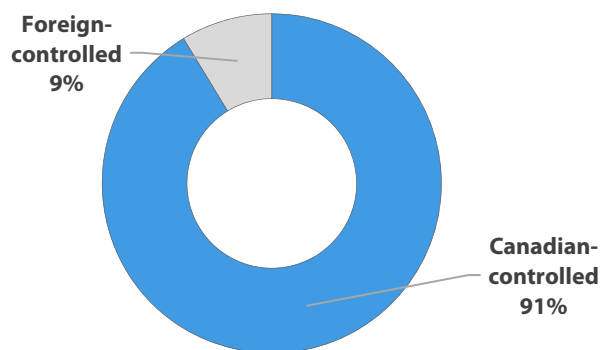
Source: Nordicity CA/VFX survey (2015)
n=23

- As shown in the figure above, approximately two-thirds (**65%**) of firms operating in Ontario's CA and VFX industry were private corporations. About one-quarter (26%) were sole-proprietorship or partnerships and the remaining **9%** were public corporations;
- This breakdown is almost directly in line with the 2010 results, apart from a small increase in publicly-traded companies (from **5%** to **9%** of our sample).

As the chart below demonstrates, CA and VFX firms in Ontario are also predominantly Canadian-controlled.

⁶ Barkan, Kristy. "What's Wrong with the Visual Effects Industry?" Retrieved from: siggraph.org/discover/news/whats-wrong-visual-effects-industry#sthash.m0ZXkiuE.dpuf (Feb 2014)

Figure 2: Company control

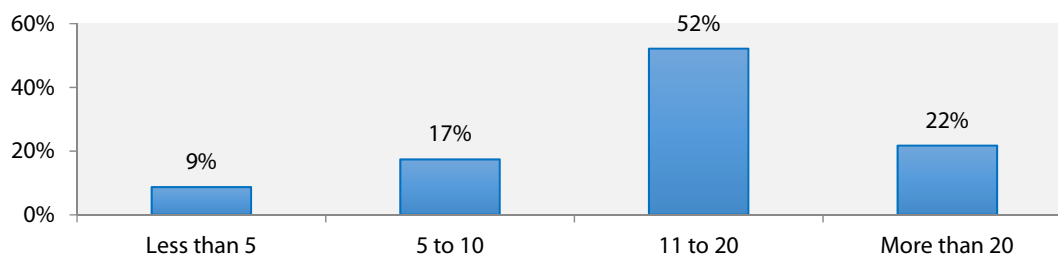


Source: Nordicity CA/VFX survey (2015)
n=23

- In 2014, the vast majority (**91%**) of surveyed companies were Canadian-controlled, as shown in the figure above;
- This share has dropped slightly since 2010, when **95%** of companies were Canadian-controlled.

As the figure below shows, the Ontario CA and VFX industries are relatively mature, that is to say with more than a decade of experience.

Figure 3: Years in operation



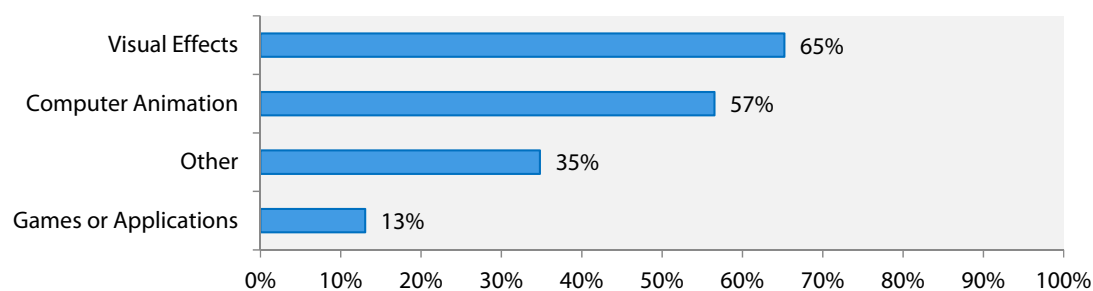
Source: Nordicity CA/VFX survey (2015)
n=23

- In 2014, about half (**52%**) of CA and VFX firms reported having been in operation for between 11 and 20 years. Some **22%** were reported to have been in operation for more than 20 years;
- Nine percent of companies are *fewer than five years old*, which may be one indication of a healthy start-up culture for this industry in Ontario;
- This result is in keeping with the results from 2010 (four years earlier). In that year, the average age of a CA company in Ontario was **9** years and **13** years for VFX.

As described in Section 2.1, the survey results portray an industry where companies are increasingly working, at least to some degree, in more than one line of business. Only about half (**52%**) of companies reported working in a single line of business. Approximately one-third (**30%**) reported two lines of business and the remaining **18%** reported three or more lines of business. Based on this finding, it did not make sense to try to classify respondents as being either “VFX” or “Computer Animation” companies.

To that end, the figure below shows the share of companies that responded working in a given aspect of the industry.

Figure 4: Lines of business



Source: Nordicity survey of CA/VFX in Ontario (2015)

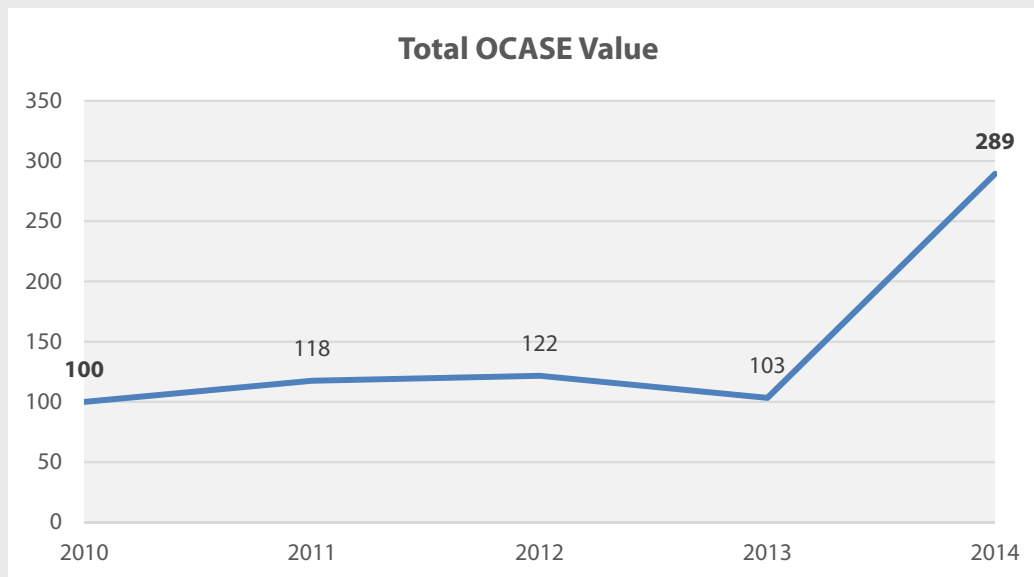
n=23

Tally exceeds 100% - “Check all that apply”

- Some **65%** of companies were working in VFX in 2014, compared to **57%** of companies reporting working in CA;
- More than one third (**35%**) have “other” lines of business. The survey did not ask for companies to specify what comprised “other” but we can speculate that it likely includes distribution, merchandising or possibly software development tools;
- Some **13%** are also working in games and/or mobile applications.

A Rapidly Growing Industry

Figures presented throughout this report indicate strong growth since 2010 in employment, overall company revenue, and GDP impact. The growth of the total value of the OCASE tax credit is in line with this growth of the industry – in 2010, the total value of OCASE was \$15.3 million – by 2014, its total value had risen to \$44.2 million, an increase of 289% over the five years under consideration. Increases in production output, revenue, labour spend and employment are all roughly in line with this growth. The chart below shows the change in the total value of the OCASE tax credit from 2010 to 2014, with the 2010 total indexed to 100.



Source: OMD: Tax Credit Applications Received and Certificates Issued 2010-2014 – OCASE

3. Financial Profile

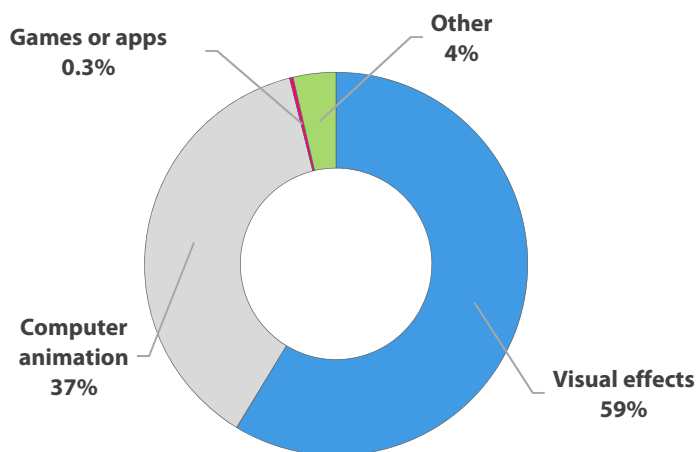
This section explores the financial profile of CA/VFX firms in Ontario, from operating revenue and expenditures to profit margins.

3.1 Financial Profile

Overall, the combined CA and VFX industries earned **\$397.8 million** in revenue in 2014. While these results are not directly comparable to the past report, the total impact is more than two and half times the total operating revenue recorded in 2010 - **\$156.3 million**. *That* figure, in 2010, was itself more than **1.5** times the 2009 operating revenue recorded – that is to say **\$99.3 million**.

The table below shows how that **\$397.8 million** breaks down as far as sources of revenue.

Figure 5: Revenue by source

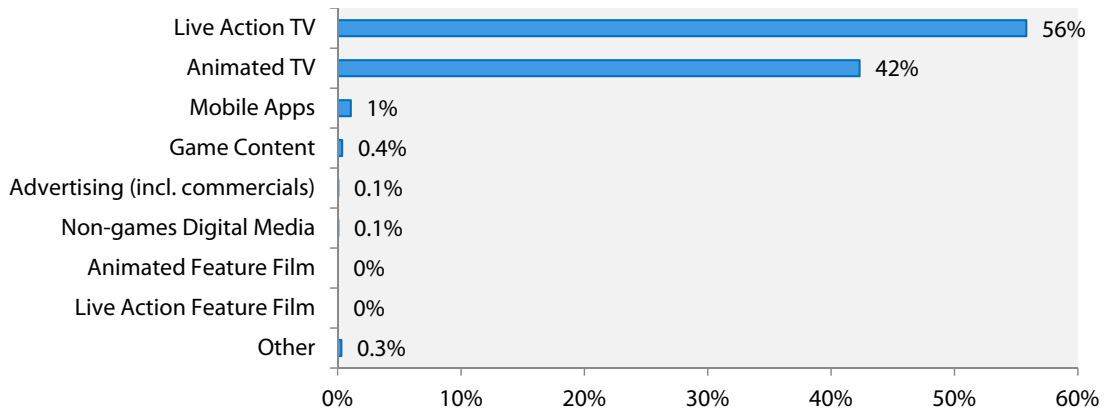


Source: Nordicity survey of CA/VFX in Ontario (2015)
n=17

- More than half (**59%**) of all company revenue in 2014 was derived from work in VFX;
- Some **37%** of the total revenue was derived from CA; and
- Less than **1%** was derived from games or apps, while “other” accounted for **4%** of total revenue.

The following two charts show the breakdown of revenue by market segment – first for original content and then for service work.

Figure 6: Revenue by market segment from original content

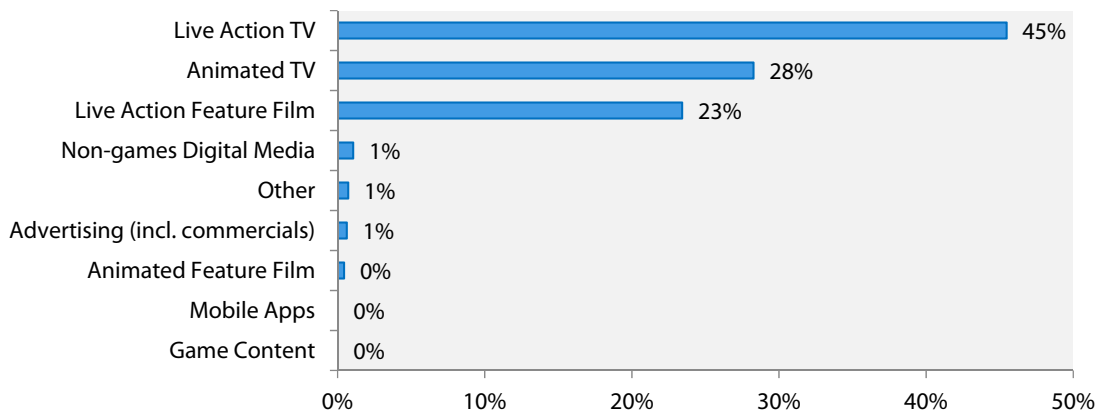


Source: Nordicity survey of CA/VFX in Ontario (2015)
n=17

- According to the survey sample, almost all (**98%**) of the original content created in 2014 was created for television whether Live Action (**56%**) or Animated (**42%**);
- Film, games, apps and other segments were barely represented in the survey responses.

Service work was similarly driven by television content, though also included other market segments, as shown in the figure below.

Figure 7: Revenue by market segment from service work



Source: Nordicity survey of CA/VFX in Ontario (2015)
n=17

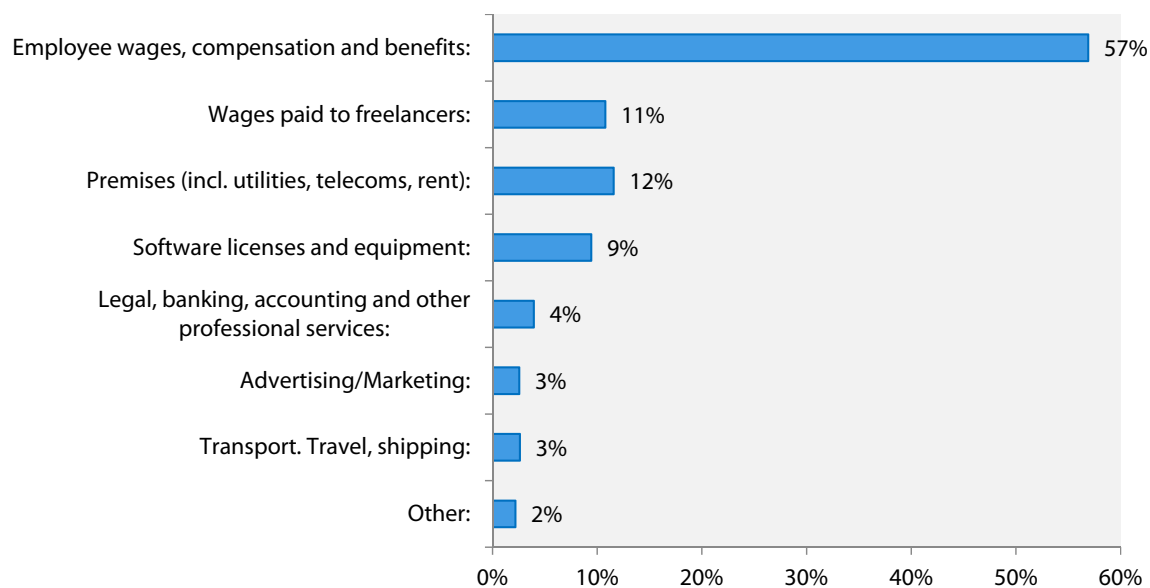
- According to the survey sample, the majority (**73%**) of the service work content created in 2014 was created for television, whether Live Action (**45%**) or Animated (**28%**);
- Approximately one quarter (**23%**) of the service work undertaken in 2014 was for Live Action Feature Films; and

- Non-games Digital Media, Advertising, Animated Features Films each accounted for approximately **1%** of service work in 2014.

Expenditures across all aspects of the CA/VFX industry in Ontario totaled **\$329.1 million** in 2014. In keeping with the revenue growth observed earlier, this total was some 2.75 times greater than 2010 expenditures at **\$120.2 million**. In other words, revenue has more than doubled over this period and expenditures have increased even more.

The table below presents the breakdown of those expenditures in 2014, based on survey responses.

Figure 8: Expenditure breakdown



Source: Nordicity survey of CA/VFX in Ontario (2015)
n=17

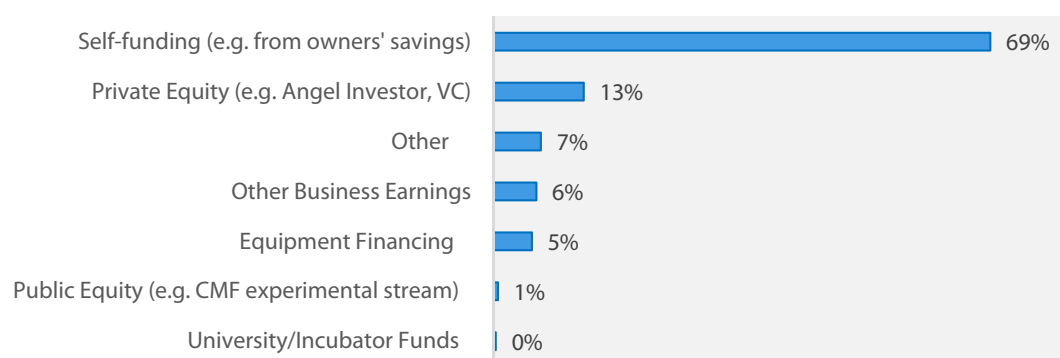
- Labour accounted for just over two thirds (**68%**) of total expenditures, including salaried staff wages/benefits and freelancer fees. This share is equivalent to the 2010 figures when labour accounted for **68%** of CA studios' expenditures and **67%** of VFX studios' expenditures; and
- As in 2010, "Premises" accounted for the next highest share of expenditures. At **12%**, it is similar to 2010's results when "Premises" accounted for between **9** and **11%** of total expenditures.

Overall, the CA/VFX industries in Ontario reported a profit of **\$68.7 million** in 2014, across all types of activities. As a result, the industry as a whole could be said to have a **17%** gross profit margin. This

figure is on par with 2010's results, when the combined profit market for CA and VFX firms was reportedly **15%**.⁷

The following chart shows the importance of companies' sources of *original* capitalization, defined as monies invested into a business before that business begins to generate revenue. The chart below is a weighted average of all capitalization in the sample.⁸

Figure 9: Sources of original capitalization



Source: Nordicity survey of CA/VFX in Ontario (2015)
n=16

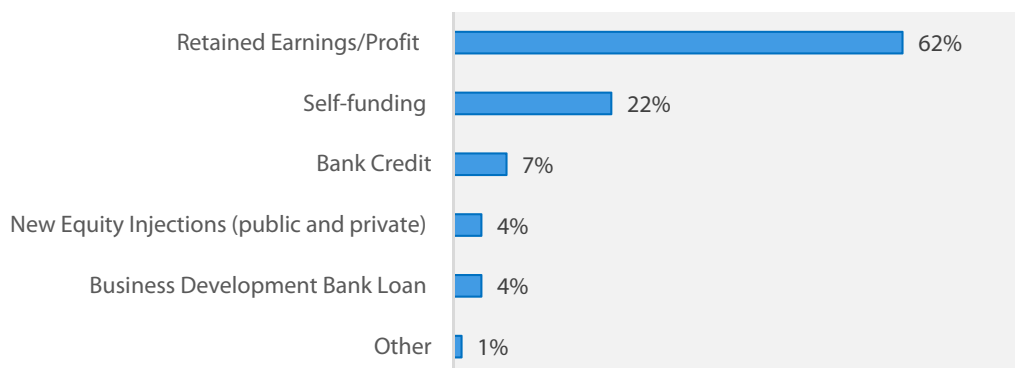
- As one might expect, self-funding represents the most important source of original capitalization – **69%** of all original capitalization is derived from self-funding; and
- Private equity accounts for another **13%** of original capitalization, whereas public equity funding accounts for just **1%** of original capitalization.

Looking at *ongoing* capitalization – the funds studios must continue to raise to finance operations, the chart below (constructed analogously to the one above) shows that retained earnings represent the most important source of ongoing capitalization.

⁷ In the 2012 report, CA firms reported a 17.9% profit margin and VFX firms reported a 15% profit margin (based on 2010 data).

⁸ Because the survey did not measure the dollar value of either original or ongoing capitalization, Nordicity assumed that each company had 100 units of capitalization. It is important to note that both of these capitalization charts are agnostic as to the dollar value of capitalization involved – i.e., they treat small companies identically to large ones.

Figure 10: Sources of ongoing capitalization



Source: Nordicity survey of CA/VFX in Ontario (2015)
n=16

- Some **62%** of all ongoing capitalization is derived from retained earnings; and
- Self-funding remains a significant source of ongoing capitalization for companies operating in Ontario accounting for **22%** of ongoing capitalization.

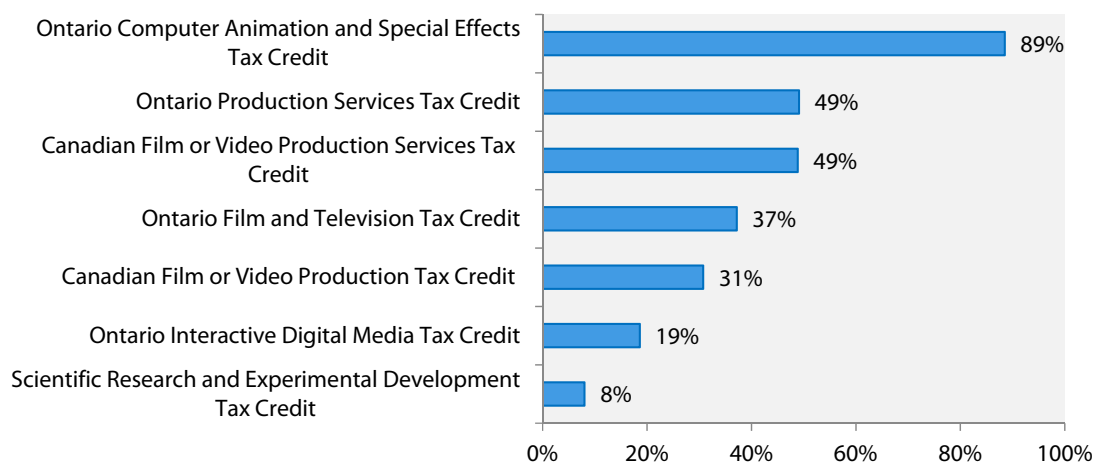
Public funding is an important source of financing for CA and VFX industries. The main sources of funding that are available include:

Table 1 Public sources of funding

Program or Credit	Administered by:
Ontario Computer Animation & Special Effects Tax Credit	OMDC
Ontario Production Services Tax Credit	
Ontario Film and Television Tax Credit	
Ontario Interactive Digital Media Tax Credit	
Canadian Film or Video Production Services Tax Credit	Department of Canadian Heritage
Canadian Film or Video Production Tax Credit	
Scientific Research and Experimental Development Tax Credit	Canada Revenue Agency

The figure below presents the share of projects for which companies draw on a given source of public funding.

Figure 11: Use of public funding sources



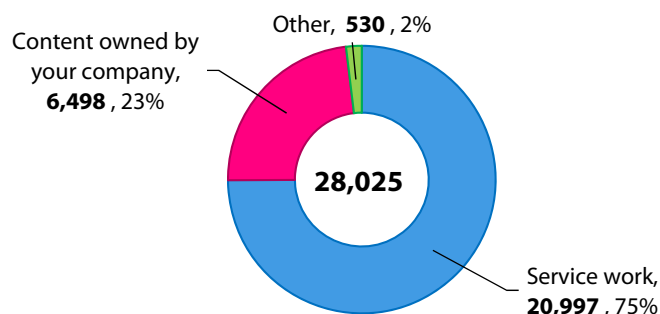
Source: Nordicity survey of CA/VFX in Ontario (2015)
n=16

- As the chart above shows, overall, OCASE was the most commonly used source of public funding among respondents, with companies indicating that an average of **89%** of their projects each year make use of that tax credit; and
- SR&ED and OIDMTC are used in a far smaller percentage of projects, being made use of in **8%** and **1%** of projects, respectively.

3.2 Production Activity

One key indicator of the CA and VFX industries is simply the amount of work they produce in a given year. In CA, this volume is represented by minutes produced as per the chart below. The total number of CA minutes produced in 2014 was **28,025** - a **53%** increase from **18,279** minutes in 2010.

Figure 12: Minutes of computer animation produced

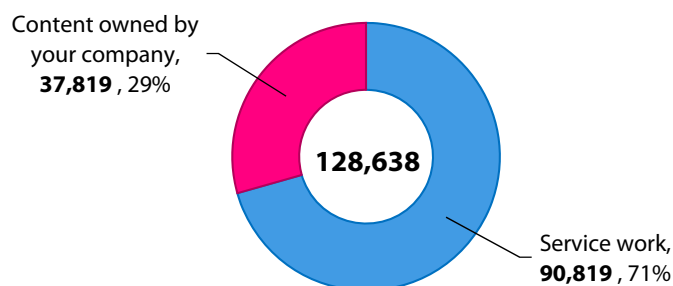


Source: Nordicity survey of CA/VFX in Ontario (2015)
n=10

- The vast majority (**75%**) of minutes produced in 2014 were service-work minutes; and
- Approximately **23%** of minutes produced were for content owned by a given firm.

In VFX, this volume is represented by the number of shots produced, as shown in the chart below. The total number of VFX shots produced in 2014 was **128,638**. This figure has increased drastically since 2010 – some **273%** - which is in keeping with the growth in reported revenue, jobs and OCASE.

Figure 13: VFX shots produced

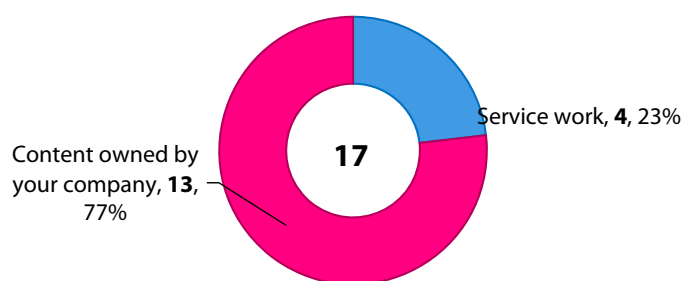


Source: Nordicity survey of CA/VFX in Ontario (2015)
n=13

- The vast majority (**71%**) of shots produced in 2014 were service-work minutes; and
- The remaining **29%** of shots produced were for content owned by a given firm.

As for Games, the volume is represented by a count of projects produced.

Figure 14: Game projects produced



Source: Nordicity survey of CA/VFX in Ontario (2015)
n=3

- In 2014, CA/VFX firms reported having worked on some **17** games; and
- Three quarters (**77%**) of those game projects were developed with content owned by CA and VFX firms.

3.3 Employment

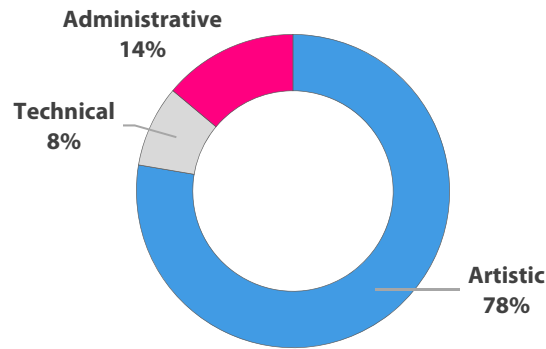
This section of the report details employment in the CA and VFX industries in Ontario, based on the survey results. Functional areas include:

- **Artistic:** such as designers, layout artists, modelers, riggers, animators, etc.
- **Technical:** such as systems operators, programmers, network and communication specialists, etc.
- **Administrative:** such as CTO, CFO, production management, sales, marketing, PR, finance, etc.

This section also refers to full time, part-time, contract and freelance employees. For this study, “contract employees” are understood to be individuals hired on a short-term basis, either full or part-time. Conversely, freelancers are understood to be self-employed workers.

The figure below shows the breakdown of full time employment in the CA and VFX industry by functional area. Total full-time equivalents (FTEs) are presented in section 4.2, below.

Figure 15: Full time employment by functional area

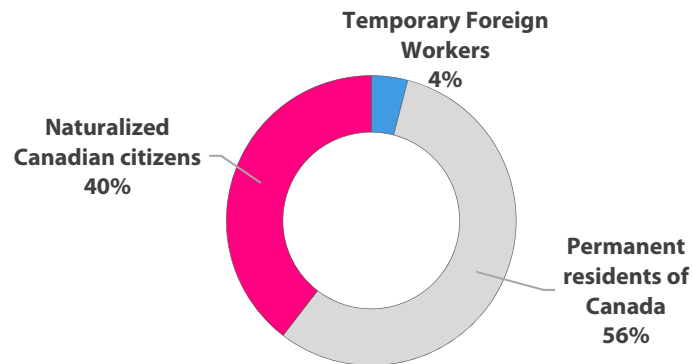


Source: Nordicity CA/VFX survey 2015
n=10

- The largest share of full time employment is artistic positions, which account for nearly four fifths (78%) of total full time employment.

The chart below shows the proportion of the industry workforce at Ontario CA/VFX companies that are temporary foreign workers, permanent residents, and naturalized Canadian citizens.

Figure 16: Current workforce by worker residency status



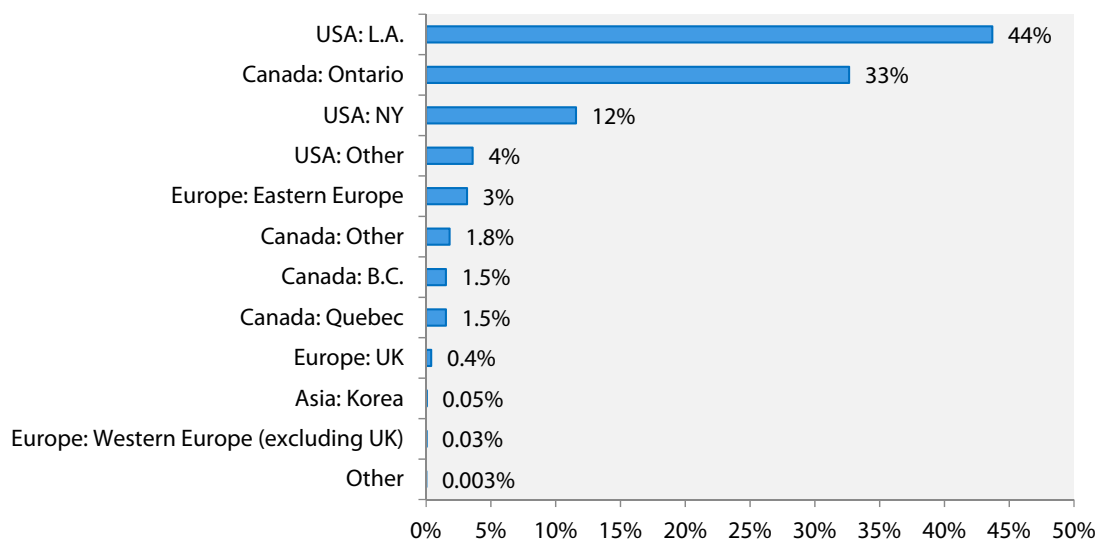
Source: Nordicity CA/VFX survey 2015
n=15

- The majority (56%) of those employed in the CA and VFX industries are Permanent Residents of Canada, with another 40% reported to be Naturalized Canadian citizens (that is to say, someone who became a Canadian citizen after moving to Canada); and
- Just 4% of the CA and VFX industry’s current workforce is reported to be “Temporary Foreign Workers.” Of those, some 66% have gone on to become permanent residents and another 5% have become naturalized citizens (according to survey respondents).

3.4 Markets

The following chart shows the breakdown for revenue by the jurisdiction or territory in which it is generated. For example, work for a client in Los Angeles would be represented as “USA: LA”.

Figure 17: Revenue by jurisdiction



Source: Nordicity survey of CA/VFX in Ontario (2015)
n=17

- According to survey respondents, at **44%**, Los Angeles represented the highest share of revenue in 2014, followed by Ontario at **33%** and New York at **12%**;
- These three jurisdictions were also the most important for revenue in 2010, but *Ontario*, not Los Angeles, was the source of the highest share of revenue – **79%** in CA and **50%** in VFX; and
- This finding suggests that the domestic market (e.g., television shows produced in Ontario) is an increasingly important market for VFX and CA companies in the province.

4. Economic Impact Analysis

This section reports the CA and VFX combined economic impact – that is to say direct, industry employment in FTEs, spin-off and total impact.

4.1 Direct Economic Impact

The total direct economic impact of activity in the visual effects and computer animation industries is approximately **\$291.4 million**. Direct economic impact is based on a combination of a portion of an industry's direct output⁹ and the wages it pays to employees.

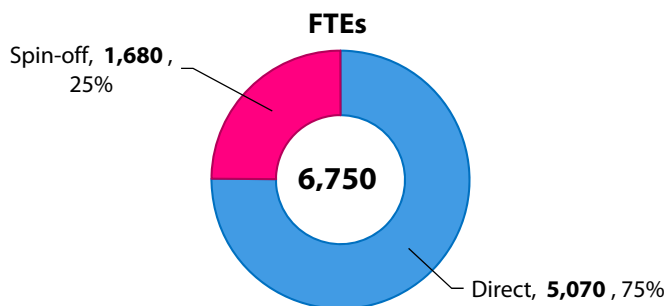
This impact is approximately **3.5** times higher than in 2010 when the total direct economic impact was reported to be **\$82.9 million** (or a compound annual growth rate of **34.2%**).

4.2 Industry Employment in FTEs

The Computer Animation and Visual Effects industries in Ontario lead to the employment of approximately **6,750** full-time equivalent jobs (or FTEs) in the Province.

The FTE figure is attained by taking the total hours worked divided by average annual hours worked in full-time jobs. The FTE figure is useful because it allows for comparisons across industries and time periods. This figure is roughly **2.5** times the 2010 FTE count of **2,720**.

Figure 18: Total employment impact (FTEs)



Source: Nordicity survey of CA/VFX in Ontario (2015)

- As shown in Figure 30 (above), the total figure of **6,750** is composed of **5,070 (75%)** directly employed FTE's and approximately **1,680 (25%)** spin-off FTEs. Of those spin-off FTEs, **685** are indirect FTEs and **995** are induced FTEs (see next bullet)

⁹ "Output consists of those goods or services that are produced within an establishment that become available for use outside that establishment, plus any goods and services produced for own final use." Organization for Economic Co-operation and Development (OECD) Glossary. <http://stats.oecd.org/glossary>

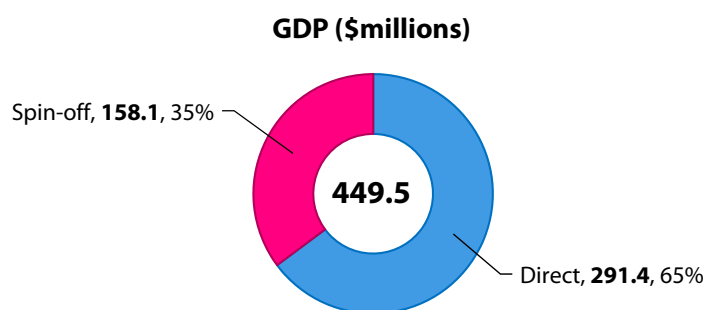
- Spin-off FTEs are of two kinds: indirect and induced. Indirect FTEs are those created by suppliers to the CA and VFX industries; for example, an employee of a firm that makes VFX software. Induced FTEs are those created by re-spending of income in the wider economy. For example, an employee of a car dealership where a CA/VFX worker purchases a new vehicle.

4.3 Spin-off and Total Economic Impact

Where the direct economic impact relates to GDP, wages and output as described previously, indirect and induced economic impacts are included as “spin-off impacts.” Spin-off economic impact results from the computer animation and visual effects industry’s purchase of goods and services from other industries (indirect), and the economic activity generated by the re-spending of income and profits within the Canadian economy (induced).

In 2014, the computer animation and visual effects industries indirectly generated **\$60.3 million** of provincial GDP. At the same time, the induced impact of the industries was **\$97.8 million** in 2014. Combined with the direct impact, the spin-off yields a total economic impact of **\$449.5 million**, as indicated by Figure 31 below:

Figure 19: Total GDP impact



Source: Nordicity survey of CA/VFX in Ontario (2015)

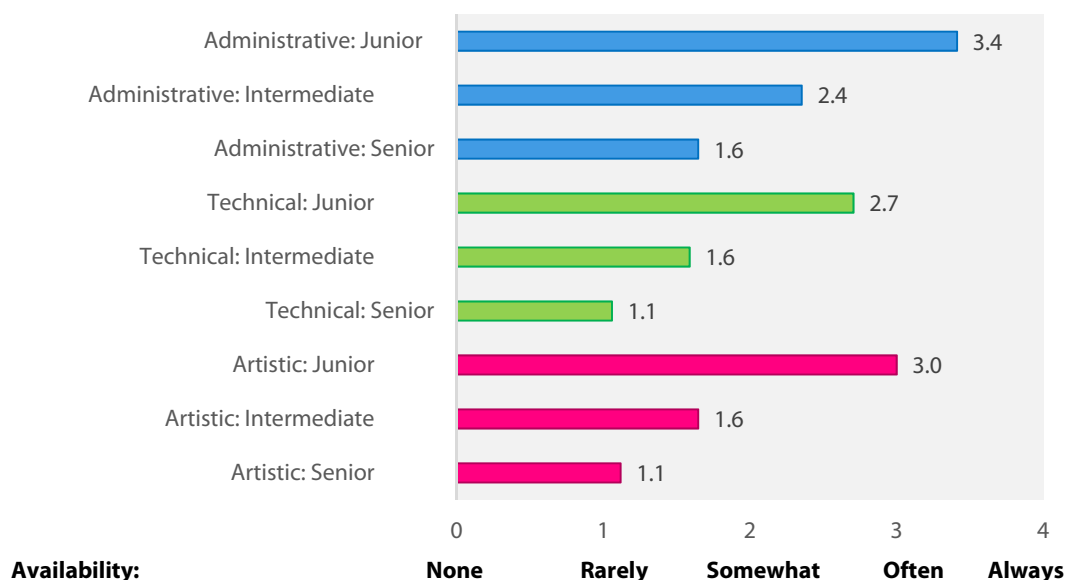
- This total economic impact is up from **\$190 million** recorded in 2010.

5. Challenges and Opportunities

In addition to the corporate and economic data described in the preceding sections, firms were also asked to report on their outlook for the of the CA and VFX industries in Ontario. More precisely, they were asked about subjects including expected growth, the availability and quality of talent, and the barriers that may be inhibiting growth.

Talent is a crucial component of a firm (and industry's) ability to compete and thrive. The chart below presents availability of talent in CA and VFX in Ontario. Survey respondents were asked to rate the availability of talent at various levels and of various types on a scale from "Not at all Available" (None) to "Always Available."

Figure 20: Availability of talent

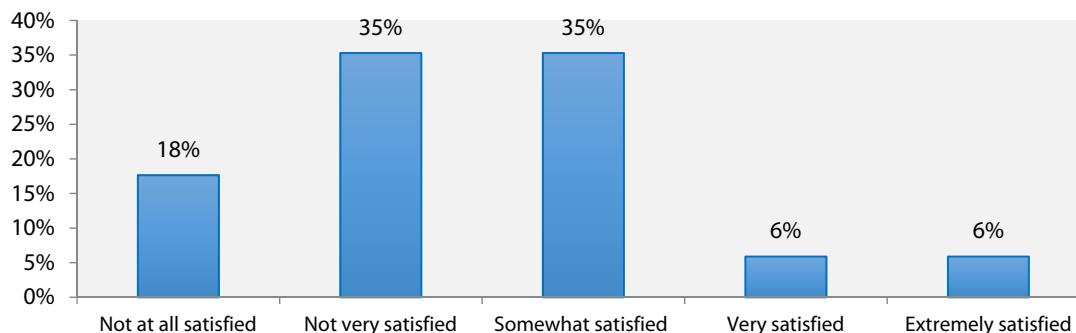


Source: Nordicity CA/VFX survey 2015
n=17

- The survey results show that Junior talent across all three types of work tended to be most available – scoring between **2.7** and **3.4** on scale of zero to four;
- On the other hand, senior talent was reported to be far less available – scoring between **1.1** and **1.6** (or "rarely" to "somewhat"); and
- As with senior level talent, intermediate talent was less available as far as artistic and technical workers (**1.6**) but more available in terms of administrative roles.

Taking a closer look at issue of junior-level talent, the chart below maps CA and VFX firms' *satisfaction* with graduates' abilities to meet their needs.

Figure 21: Satisfaction with graduates' ability to meet talent needs

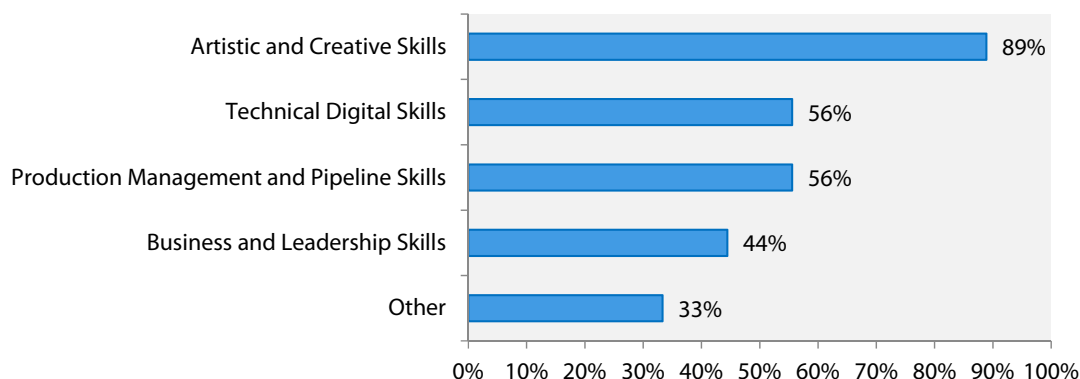


Source: Nordicity CA/VFX survey 2015
n=17

- There appears to be moderate satisfaction with graduates, with the greatest share of respondents (**35%**) reported being either “somewhat satisfied” or “not very satisfied”;
- A full **18%** of survey respondents reported that they were “not at all satisfied” with graduates’ abilities to meet their needs; and
- Just **12%** of survey respondents reported that they were “very” or “extremely” satisfied with the abilities of new graduates to meet their needs.

Across the CA and VFX industries, there is increasing pressure for graduates to be able to hit the ground running. Areas for improvement, expanding on the results above are shown in the figure below.

Figure 22: Areas for improvement in graduate skillsets

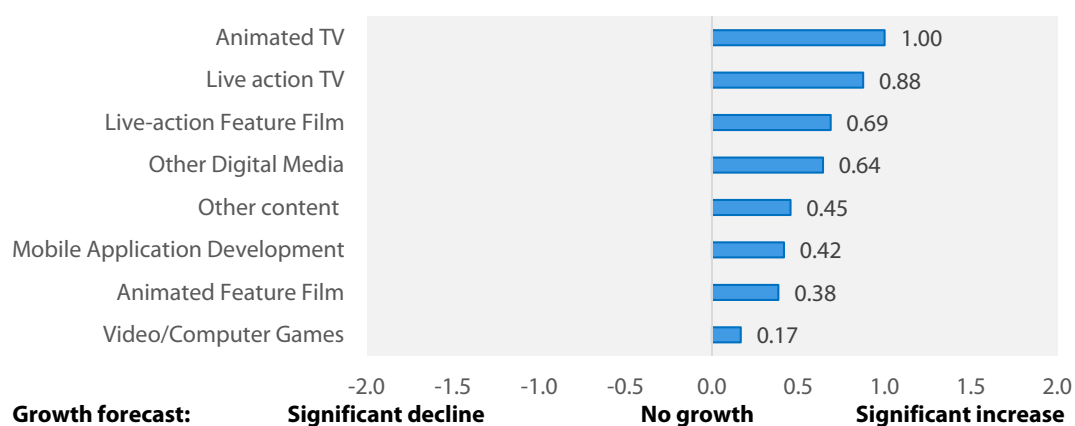


Source: Nordicity CA/VFX survey 2015
n=17
Sums to more than 100 – check all that apply

- The area cited by the greatest share of respondents (**89%**) as needing improvement was “Artistic and Creative Skills”; and
- More than half of respondents (**56%**) cited “Technical Digital Skills” and “Production Management and Pipeline Skills” as needing improvement.

The following figure relates to studios’ perceptions of growth in the coming two years (i.e., 2016 and 2017).

Figure 23: Two-year growth forecast

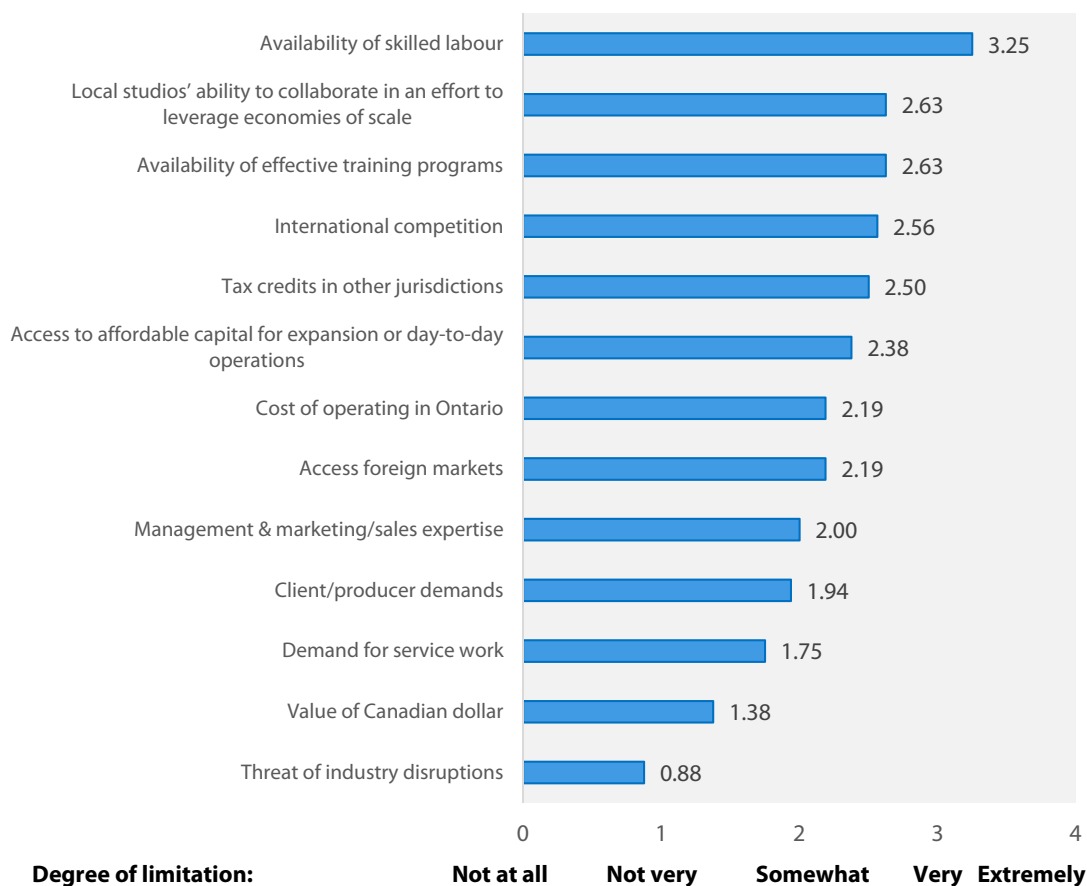


Source: Nordicity CA/VFX survey 2015
n=16

- Animated TV was predicted by survey respondents to be the area of the greatest growth in the coming two years; and
- Notably, *all* areas were deemed, on average, to have at least “some” growth potential (though very little for Video and Computer Games).

The table below presents survey respondents’ ranking of various factors as to the degree to which they may be affecting growth on a scale from zero or “Not at all limiting” to four “extremely limiting.”

Figure 24: Growth impact factors



Source: Nordicity CA/VFX survey 2015
n=17

- As above, **labour** and **talent/skill-related** issues were selected among the top two factors limiting the growth of CA/VFX firms in Ontario; and
- Tied for second highest, with a score of **2.63** placing it between “Somewhat” and “Very” limiting is the ability of local studios to collaborate in an effort to leverage economies of scale. While this challenge could relate to organizing collaborations which benefit the industry (such as this report), advocacy around tax credits, or terms of trade, it could also have an impact on the availability of CA and VFX talent and the ability to retain top talent in Ontario.

In the figure above, “international competition” is rated as between “Somewhat” and “Very” limiting for CA and VFX firms. The table below ranks jurisdictions as far as the degree to which Ontario firms ranked them as competitors for business.

Table 2: Top competitor jurisdictions for Ontario firms (business)

	1st place (3 points)	2nd place (2 points)	3rd place (1 point)	Total
1) Vancouver, Canada	18	6	1	25
2) Los Angeles, USA	6	6	4	16
3) Montreal, Canada	9	4	1	14
Other Canadian City	6	4	1	11
New York, USA	3	4	0	7
London, UK	0	2	3	5
Other US City	0	0	2	2
Other South American City	0	2	0	2
Seoul, South Korea	0	0	1	1

Source: Nordicity CA/VFX survey 2015
n=17

- Notably, two of the top three jurisdictions chosen by respondents as competitors for business were Canadian: Vancouver (#1) and Montréal (#3);
- As well, the top five business competitors were all based in North America. Los Angeles was described as the second highest competitor for business. London, UK was the highest competitor outside of North America (#6);

The table below presents jurisdictions in terms of the degree to which Ontario firms ranked them as competitors for *talent*.

Table 3: Top competitor jurisdictions for Ontario firms (talent)

	1st place (3 points)	2nd place (2 points)	3rd place (1 point)	Total
1) Vancouver, Canada	15	12	1	28
2) Other Canadian City	15	0	3	18
3) Montreal, Canada	12	6	0	18
Los Angeles, USA	0	4	2	6
Other City	0	4	1	5
London, UK	0	0	0	0
Other UK City	0	0	1	1
New York, USA	0	0	1	1

Source: Nordicity CA/VFX survey 2015

n=17

- Once again, Vancouver led the pack as the jurisdiction with which Ontario firms believe they compete the most for talent.

Interestingly, lack of inter-studio collaboration or “lack of collegiality” were cited as a major challenge to the industry’s growth in Ontario in the long answer component of the survey. Other Canadian jurisdictions such as Montréal and Vancouver were seen to be ahead of Ontario as far as attracting “tent pole” productions that can overflow to mid-size vendors. One respondent suggested that, “Major studios have essentially said that Toronto is a major risk because of the lack of integrated pipelines, HR sharing and basic communications between competing studios.”

Another challenge which is not reflected in the survey data reported in this study are the 2015 changes to OCASE tax credit. Some in the industry suggest this reduction is having an impact on the ability of Ontario firms to compete for global business. Both are important considerations leading into the next section of this report, the global case studies.

6. Case Studies

The CA and VFX industries operate in, and depend heavily on, a highly-connected ecosystem of international talent. Talent quality, attraction and retention are perceived to be crucial to the success of the CA and VFX industries. In addition, as a province, Ontario competes with other jurisdictions to both nurture local startups and attract world leaders.

The following case studies provide an overview of recent trends shaping the CA and VFX industries in **London, Montréal, Vancouver, Los Angeles and New York City**. The focus is on the job market, including issues such as average salaries and the process to recruit international artists, but the case studies also provide context on the size of the industry in each city, government interventions and the broader climate of collaboration within and between companies.

6.1 London: demand for talent exceeds supply

The BBC estimates that the VFX sector contributes £250 million (\$454,500,000 CAD) per year to the UK economy.¹⁰ The majority of the UK's CA and VFX companies are headquartered in London. The industry has a long history of collaboration in the city, dating back to the creation of Sohonet, a grassroots network designed to connect visual effects studios in the Soho district founded in 1995. More recent growth has been fueled by the Harry Potter franchise, which provided a stable source of work in CA and VFX over the course of a decade and allowed companies to both expand and specialize. Screen Daily notes that while only 15% of VFX work for the first Harry Potter film in 2000 was completed in the UK, 85% was undertaken in the UK for the final Harry Potter film in 2010.¹¹ The Financial Times estimates that as of 2014 more than 3,000 people work in post-production and special effects in the UK, although this number does not take into account artists who work outside of film and television.¹²

Despite dozens of educational programs in London, demand for artists exceeds supply. As a result, professionals working in CA and VFX are on the National Occupation Shortage List.¹³ This means that employers can hire an international worker without first fulfilling the requirements of the Resident Labour Market Test to demonstrate that there is no suitable worker in the UK who could do the job. In response to the search for international talent, a visual effects accreditation system is being developed to streamline recruitment.

¹⁰ Taylor, Jim, "Visual effects workers in film industry 'overworked' (May 2013)

<http://www.bbc.co.uk/newsbeat/article/22397980/visual-effects-workers-in-film-industry-overworked>

¹¹ Screendaily.com "World of Locations" (December 2015) <http://www.screendaily.com/world-of-locations/world-of-locations-england/5098325.article>

¹² Cookson, Robert, "British film business boosted by record spending from abroad" (Feb 2016) <http://www.ft.com/cms/s/0/d4e9c968-addf-11e4-919e-00144feab7de.html#slide0>

¹³ Reed, Jim and Adam Eley, "Tackling the UK's creative skills shortage" (August 2015) <http://www.bbc.com/news/technology-33974775>

Policy Context

The CA and VFX industry in London benefits from a range of tax incentives targeting multiple sectors. The most recent support is the Video Game Tax Relief, which was introduced in April 2014 and responds to similar programs elsewhere in Europe, such as the Danish Film Institute's subsidy for video games. The UK tax credit is applicable to costs related to designing, producing and testing video games. There are also other tax credits targeting film, animation and high end television. Each tax credit focuses on production costs and cultural content that benefit Britain or the European Economic Area more broadly. Taken together, these supports result in substantial savings for visual effects and computer animations activities in London and throughout the UK. According to a study by Olsberg SPI and Nordicity, "For each pound of Animation Tax Relief (ATR) granted during the first year of operation, £1 in additional GVA was created through direct and multiplier effects. This equates to a taxation return for the Exchequer of £0.3 in additional tax revenues for each pound of tax relief granted."¹⁴

Job Market

Data from PayScale¹⁵ indicates that the average salary of an animator in the UK was £23,711 (\$41,108 CAD) in 2015. However, salaries are higher in London than elsewhere in the UK. In 2010, *The Guardian* reports that Framestore offered salaries of £25,000-60,000 (\$47,335-113,605 CAD) for positions ranging from junior to senior animators in 2010.¹⁶ Although, as mentioned above, the National Occupation Shortage List expedites international hiring in the CA and VFX, immigration regulations also dictate that foreign workers must be paid wages that are competitive with local salaries.¹⁷

In London, workers in non-performance roles in media and entertainment (including digital media) are represented by the national trade union BECTU¹⁸. In April 2013 BECTU hosted a VFX Forum in London to discuss issues facing the industry and union membership among VFX artists has been growing since that time. BECTU approached VFX company MPC in 2015 asking for union recognition at the film compositing department of the company's London office. MPC intends to contest the bid however members of the CA and CFX industry in Canada and the United States are following the evolution of unionization in London closely.

6.2 Montréal: strong ties with American and European markets

As the historic home of animation in Canada and the leading jurisdiction for French language production outside of Europe, Montréal is home to more than 40 VFX companies in addition to CA

¹⁴ Olsberg SPI and Nordicity, "Economic Contribution of the UK's Film, High-End TV, Video Game, and Animation Programming Sectors (February 2015) p. 3.

¹⁵ Retrieved February 3, 2016 from Payscale.com

¹⁶ King, Mark, "A working life: The special effects animator" (November 2010)

<http://www.theguardian.com/money/2010/nov/27/working-life-special-effects-animator>

¹⁷ Effectively, The UK Shortage Occupations List details the professions that are in high demand in the UK. Employers for the occupations listed in the shortage occupations list are not required to advertise the posts they wish to fill.

¹⁸ The Broadcasting, Entertainment, Cinematograph and Theatre Union

studios. The city is home to Canadian innovators like Rodeo FX and Moment Factory while major international players such as Framestore and MPC have also opened studios in Montréal.

Policy Context

A robust system of tax credits supports visual effects and computer animation in Montréal. Both CA and VFX benefit from a 20% rebate on all Québec production costs with the possibility of an additional 16% on all CGI and green screen shots.

As well as offering ongoing tax credits, the province of Québec also provides targeted investments to increase the international profile of Montréal in the computer animation and visual effects industry. For example, in 2015 Investissement Québec supported the launch of effects MTL, an international industry conference.

Provincial funding has also attracted international companies to Montréal. In 2014, the province provided a \$1.2 million interest-free loan to London-based visual effects company Cinesite, which opened a \$6.7-million-dollar studio in Montréal.¹⁹ According to Investissement Québec, the move was expected to create 200 jobs and have a total payroll of \$42.2 million. Similarly, in May 2015 Premier Philippe Couillard announced a \$1 million interest-free loan to help Framestore, another London-based visual effects company expand its operations in Montréal from 150 to 200 employees.²⁰

In addition to encouraging connections with the European visual effects and computer animation industry, public sector inventions have also generated interest in Montréal south of the border. In 2014 California-based Atomic Fiction announced it was opening a 15,000 square foot flagship facility in Montréal. Atomic Fiction co-founder Kevin Baillie explained the move was motivated by the combination of tax credits and the availability of local talent already working in the city.²¹

Job Market

The relocation of international companies to Montréal also puts pressure on the Canadian immigration system. The federal government regulates the temporary foreign worker program, however the Québec Ministry of Immigration, Diversity and Inclusion (MIDI) has introduced measures to simplify the immigration process for workers whose skills are in demand in Québec. The Québec Skilled Worker classification system prioritizes applicants with training in computer science and computer engineering, which benefits employers in computer animation and visual effects. Although the government of Québec has expedited the immigration process for skilled workers it also requires employer to pay international hires wages that are competitive with local salaries.

¹⁹ Cinesite Opens a Second Studio in Montréal (February 2016)

<http://www.investquebec.com/international/en/press-room/news/Cinesite-Opens-a-Second-Studio-in-Montreal.html>

²⁰ Presse Canadienne, “Visual-effects studio Framestore to add 150 jobs in Montreal” (May 2015)

<http://montrealgazette.com/business/local-business/visual-effects-studio-framestore-to-add-150-jobs-in-montreal>

²¹ Montréal International “Atomic Fiction sets up operations in Greater Montréal” (September 2014)

<http://www.montrealinternational.com/en/news/2014/09/atomic-fiction-sets-operations-greater-montreal/>

According to Laval University, employment in visual effects and computer animation has grown 24% since 2009. Data from PayScale indicates that in 2016 average salaries range from \$60,778 for a software developer and \$66,922 for a software engineer to \$77,494 for a project manager. Limited information is available for more senior positions.

Although salaries are slightly lower than in Vancouver or Toronto, the cost of living in Montréal is less than in other major Canadian cities (consider that the average rent of a two-bedroom apartment in Montréal was almost half the price of a comparable apartment in Vancouver in 2015²²).

6.3 Vancouver: tax credits and talent attract international companies

Vancouver is one of Canada's leading jurisdictions for foreign location services contracts, and arguably ranks as Canada's leading centre of CA and VFX. *The Globe and Mail* reports that Vancouver is home to more than 900 companies working in interactive digital entertainment and The Georgia Straight estimates that more than 2,500 people work in visual effects and computer animation in the city.²³

A network of postsecondary programs at more than six different universities and colleges contributes to the local talent pool and fuels a vibrant start up culture that rewards collaboration. Vancouver also benefits from a strategic location in the same time zone as American centres of film, television and digital media such as Los Angeles and the Bay Area.

Policy Context

The evolution of government support for computer animation and visual effects in British Columbia demonstrates the impact of competition between Canadian jurisdictions. As different provinces compete to attract international companies and co-productions, the government of British Columbia has responded by increasing the value and expanding the scope of tax credits.

In 2003 the government of British Columbia introduced a tax credit to support digital animation and visual effects in the film and television industry. Although the rebate was initially valued at 15% of BC labour expenditures, it was increased to 17.5% in 2010. In 2015 the tax credit was further expanded to include post-production services. In 2016, reductions to the BC film and television tax credits, including the digital animation or visual effects (DAVE) tax credit. From October 1, 2016, "the basic production services tax credit rate will be set at 28%, down from 33%, and the digital animation or visual effects (DAVE) tax credit rate will be set at 16%, down from 17.5%."²⁴

A combination of tax credits and other factors such as quality of life and local talent have driven the growth of American visual effects and computer animation companies opening offices in Vancouver.

²² "See What a \$1,200 apartment rental looks like across Canada" <http://globalnews.ca/news/2146260/see-what-a-1200-apartment-rental-looks-like-across-canada/>

²³ Goldie, James, "B.C. digital entertainment industry struggling with new TFW rules" (April 2015) <http://www.theglobeandmail.com/news/british-columbia/bc-digital-entertainment-industry-struggling-with-new-tfw-rules/article24057104/>

²⁴ BC Gov News, "New film tax credit rates give industry certainty and protect taxpayers" (May 2016) <https://news.gov.bc.ca/releases/2016FIN0016-000699>



According to Vancity Buzz, Sony Pictures Imageworks opened a studio in Vancouver in 2010 with a staff of 80. Five years later, the company reportedly employed more than 700 people in a 74,000 square foot facility in downtown Vancouver. Sony Pictures Imageworks Executive Vice President & General Manager, Randy Lake explains that the city offers “an ecosystem” of companies that provide a constant source of skilled workers and offer ambitious artists opportunities for advancement and promotion.²⁵ Look Effects and Industrial Light and Magic are examples of other American computer animation and visual effects companies that have also opened studios in Vancouver.

Job Market

In Vancouver, the CA and VFX industries appear to be fueled by a strong synergy between video game development and film and television production. It’s not unusual for artists in Vancouver to gain experience working in both video games and film/television.

Data from PayScale indicates that in Vancouver the average salary for a software developer is \$62,969 while a software engineer makes an average of \$70,984. However, despite the strength of local networks, the Vancouver Economic Commission estimates that 20% of any project team in digital entertainment is international. For this reason, the Canadian immigration system also shapes the job market of the visual effects and computer animation industry in Vancouver.

Federal regulation of the temporary foreign worker program ensures that international talent is paid the prevailing wage for the region but it also slows down the recruitment process for employers interested in hiring from outside of Canada. Although the federal government piloted a program to expedite the immigration process for skilled IT workers in 2010, the program was not extended outside of Québec. As a result, foreign workers with skills in digital media require an assessment of their potential impact on the Canadian labour market before they can proceed with the work permit application.

The Globe and Mail reports that Canadian digital media companies wait an average of 5 months for assessments and applications to be processed after identifying a talented foreign worker. The long wait times associated with the immigration process are a serious liability in the fast-paced world of computer animation and visual effects however the new government may reform the temporary foreign worker program.²⁶

Although the computer animation and visual effects industry is not currently unionized, IATSE Local 891 represents over 5,000 people working technical and artistic aspects of film and television production in British Columbia and the Yukon. As part of its activities, the local has an ongoing campaign for collective agreements for visual effects artists, with a focus on companies in Vancouver.

²⁵ Bailey, Ian, “Sony Pictures Imageworks makes itself at home in Vancouver” (July 2015) <http://www.theglobeandmail.com/news/british-columbia/sony-pictures-imageworks-makes-itself-at-home-in-vancouver/article25408795/>

²⁶ Goldie, James.

6.4 Los Angeles: high salaries in an incredibly competitive market

Los Angeles is a global centre for film and television production, with CA and VFX industries which are arguably as strong as each other. In May 2014 the USA Bureau of Labor Statistics reported that there were more multimedia artists and animators working in California than any other state. Los Angeles has the highest level of employment of any metropolitan with 5,920 people working as multimedia artists and animators.

Policy Context

In 2015, the State of California expanded its tax credit for film and television to include eligible visual effects expenses. Although previously films costing more than \$75 million USD (\$100.9 million CAD) were not eligible, the new program applies to the first \$100 million USD (\$134 million CAD) spent, regardless of the film's total budget. Industry blog Cartoon Brew suggests that these changes are a response to growing competition from visual effects industries in Canada, the UK and New Zealand.

Job Market

According to the USA Bureau of Labor Statistics, the average hourly wage for multimedia artists and animators working in Los Angeles was \$40.03 USD (\$53.89 CAD) as of May 2014, for an annual income of \$83,260 USD (\$112,081 CAD). In addition to salaried employment, Los Angeles is a competitive environment for contract work in visual effects and computer animation. For instance, in a profile of Disney Studios from 2011, Animation Career Review reveals that a CG Animator can make \$83,000-90,000 USD (\$111,700-121,100 CAD) on salary or \$56-60 USD (\$75-80 CAD) per hour on contract.²⁷

Los Angeles is home to many medium and large CA and VFX companies that were founded in the city and have expanded around the world. For instance, Look Effects started in 1998 and now has studios in New York City, Vancouver and Stuttgart. In contrast, Scanline VFX is based in Munich, Germany, but opened a studio in Los Angeles in 2007. CoSA VFX is an example of a more recent addition to the visual effects and computer animation scene in Los Angeles and has seen rapid growth both locally and internationally. CoSA started as a boutique studio in 2009 and now employs more than 200 people at offices in both Los Angeles and Vancouver. While some VFX studios such as Prologue have been active in Los Angeles since the 1980s, the city is also home to the next generation of startups such as Studio229, which employs fewer than 10 people.

In Los Angeles, The Animation Guild (IATSE Local 839) represents animation artists as well as writers and technicians. The representation of visual effects workers, however, is evolving. The issue made headlines in 2013 when, as mentioned previously, Rhythm and Hues filed for bankruptcy. The layoff of 250 employees exposed the precarious working conditions of many visual effects artists and inspired protests at the Academy Awards as well as renewing discussions about working conditions in visual effects and computer animation. Although much local organizing has been directed at protesting the impact of Canadian tax credits on American workers, discussions about unionizing the industry are ongoing, if fragmented.

The American immigration system facilitates the recruitment of skilled workers in the computer animation and visual effects industry. Employers may apply for visas for temporary foreign workers in

²⁷ Walt Disney Animation Studios – Career Profile (2011) <http://www.animationcareerreview.com/articles/walt-disney-animation-studios-career-profile>

specialized occupations that require, at minimum, a Bachelor's degree. The visas last for three years and 65,000 are issued annually. Research by Brookings reveals that more than 70% of visas are requested for computer-related occupations. This suggests that employers in visual effects and computer animation take advantage of the American temporary foreign worker program to hire international talent. Of all the states, California requests the most visas for specialized occupations, with more than 100,000 requests in 2010-2011.²⁸

6.5 New York: diverse scene driven by small, specialized studios

New York is a leading centre for computer animation and visual effects, with a strong reputation for innovation in animation and a long history of independent filmmaking. While post-production for film and television make up the bulk of computer animation and visual effects projects in LA, the scene is more diverse in New York City and many artists work with small, independent studios. For example, Tronic Studio was founded by architecture students and combines animation and interactive design for clients ranging from MTV and HBO to Nike. In contrast, TMBA Inc. offers specialized animation services for medicine and engineering.

According to the USA Bureau of Labor Statistics, 2,170 people worked as multimedia artists and animators in New York City as of May, 2014. This encompasses people working independently or for small studios and large firms, as well as those who provide visual effects and animations services for companies that specialize in other areas. For instance, Animation Career Review suggests that many marketing and PR firms in New York City incorporate visual effects and computer animation into their work and either employ artists in-house or on contract. Opportunities for artists outside of computer animation and visual effects studios contribute to an active freelance network in New York City that encourages collaboration and experimentation.

Policy Context

The state of New York introduced a series of tax credits to support the film and television industry in 2004. Empire State Development explains that \$420 million USD in tax credits is available each year. In contrast, California's tax credit is capped at \$330 million USD per year. Under New York's tax credit program, 30% of production and post-production costs were eligible for rebate as of 2015. In the case of visual effects and animation, at least 20% or \$3 million USD of costs must be incurred in New York.

Job Market

The USA Bureau of Labour Statistics shows that the average hourly wage for multimedia artists and animators in New York City was \$35.17 USD (\$47.24 CAD) for an annual income of \$70,660 USD (\$95,120 CAD). Data from Glassdoor confirms that the average salary for computer animators working in New York City is below the national average. Animation Career Review explains that many

²⁸ "The Search for Skills: Demand for H-1B immigrant Workers in U.S. Metropolitan Areas (2012). <http://www.brookings.edu/~media/research/files/reports/2012/7/18%20h1b%20visas%20labor%20immigration/18%20h1b%20visas%20labor%20immigration.pdf>

animators and visual effects artists in New York City supplement their incomes by teaching at one of the more than 100 post-secondary institutions in the city.²⁹

In terms of hiring internationally, research by Brookings shows that the second-highest number of requests for visas for workers in specialized occupations comes from the state of New York. Of these 70% are in computer-related jobs including animation and visual effects. In 2010-2011 more than 60,000 such visa requests came from New York.

In New York City, United Scenic Artists, an IATSE local, recently expanded the scope of its membership to include computer artists. In practice, this may include workers in the visual effects and computer animation industry. Membership for computer artists is limited to New York City and not available in other regions where United Scene Artists is active, such as Los Angeles. United Scene Artists regulates professional standards and working conditions for its members.

6.6 Relevance for Ontario

The table below summarizes some of the facts and figures cited in the case studies though these cannot be compared due to the variety of sources consulted.

City	# of Artists	Average Salary (CAD)	Tax Credits
London	3,000	\$41,108*	Up to 80% for film, animation, high end television and video games
Montréal	1,500	\$63,098*	20% for computer animation and VFX + 16% for CGI and green screen
Vancouver	2,500	\$70,546*	16% (as of October 1, 2016) for digital animation and visual effects
Los Angeles	5,920	\$112,081**	25% for visual effects work
New York City	2,170	\$95,120**	30% for post-production and computer animation

* PayScale, February 2016

** US Bureau of Statistics, May 2014

Other jurisdictions offer many lessons for Ontario's CA and VFX industry. While London and Vancouver demonstrate the value of collaboration between companies, Montréal proves the importance of public interventions beyond tax credits. Finally, although government funding is often used to attract major, international players, New York City confirms that small, independent studios also contribute to the computer animation and visual effects scene.

The CA and VFX industry thrives on collaboration in both London and Vancouver. In London, Sohonet emerged in 1995 as a grassroots network to connect visual effects studios in London's Soho district and has developed into a state-of-the-art fibre optics service that connects UK studios to clients in other major production centres around the world. Sohonet is an example of how companies engaged

²⁹ New York Animation Careers: Employment & Salary Trends, Job Opportunities, & Colleges Offering Animation Programs in New York (September 2015), <http://www.animationcareerreview.com/articles/new-york-animation-careers-employment-salary-trends-job-opportunities-colleges-offering-ani>



in similar activities can take advantage of physical proximity to secure a competitive advantage over other jurisdictions.

In Vancouver, the mobility of individual artists who gain experience working in video game development as well as film and television production contributes to broader collaborations and innovations across interactive digital media. For instance, Gener8 Digital Media Corp is a company founded by two former video game developers that specializes in converting films from 2D to 3D. The company's early success on projects such as Harry Potter and the Deathly Hallows Part 2 and The Amazing Spider Man have also enabled it to promote further innovation by investing in Reelhouse Media Ltd., a local startup exploring online film distribution.

London and Vancouver are leading examples of collaboration between companies. However, the case of Montréal demonstrates that government policies and programs also have a significant impact on the development of the visual effects and computer animation industry. Although all of the jurisdictions discussed in the case studies offer some form of tax credit that benefits computer animation and visual effects, the government of Québec went one step further in encouraging international companies to relocate. By providing interest-free loans, Investissement Québec helps cover costs associated with opening new facilities. This strategy has succeeded in attracting Cinesite, Framestore and Atomic Fiction to Montréal, which further strengthen connections with markets in both the United States and Europe. Furthermore, by expediting the immigration process, Québec's Ministry of Immigration, Diversity and Inclusion gives Québec an advantage over other Canadian jurisdictions where employers face longer wait times to hire international talent.

The bulk of Québec's investment in the computer animation and visual effects industry goes towards attracting large, multinational companies to Montréal. In contrast, the case of New York City suggests that a network of smaller studios encourage artists to take risks and expand their practice beyond film and television production. Specialized services in animation for forensics, architecture or engineering have emerged in New York to meet the needs of a diversity of clients. Similarly, as computer animation and visual effects becomes increasingly important in advertising and marketing, artists working independently or with small studios are well-positioned to take advantage of evolving opportunities and expand into new markets.

7. Conclusions

While the results described in this study are plentiful, some of the main conclusions are worth revisiting in brief.

In Ontario CA and VFX firms have become increasingly intermingled, with new companies starting-up and many working across a diverse range of activities.

Almost half of surveyed firms have two lines of business or more in what was once a highly specialized industry. Will this hybrid-company approach work for the future and help companies grow and diversify into new areas?

As far as revenue and impact, the CA and VFX industry has experienced major growth since 2010 – in some respects the industry grew three times as large over the past five years.

It is important to contextualize this growth with the recognition that the “universe” of companies in Ontario has grown since 2010. A greater number of companies in operation has helped to increase the industry’s footprint in every direction (direct, FTEs, spin-off etc.). As such, it may not be the case that individual companies are experiencing the same level of growth.

Overall, profit margins for CA and VFX firms in Ontario remain a healthy **17%** but the case studies of other jurisdictions indicate that the health of individual firm can be precarious, even when working on big-budget productions.

Talent attraction and labour quality were described as high priority issues and growth limiters for Ontario firms, both as far as availability at the intermediate and senior levels and as far as artistic and digital skills at the entry-level.

Ontario’s post-secondary programs claim to produce graduates of the highest quality. Based on Ontario firms’ level of satisfaction with new entrants, however, it is unclear whether a) these graduates match the industry’s needs or b) those top graduates are staying in Ontario to work. Talent development and retention is an area that can require consistent industry collaboration across a variety of stakeholders and may require focus and leadership from CASO in the near term. This leadership may also help to address some of the concerns raised about lack of industry collaboration in Ontario.

The CA/VFX market is global but Ontario’s main competition, for now, is North American.

North American cities were identified to be Ontario’s top competitors for business and for talent – ahead of the UK, South America and Asia. There are perhaps opportunities for Ontario’s firms to nurture more global connections through co-productions (and other partnerships) in order to forge new talent pipelines and be more competitive in North America. As well, in this increasingly global market, it is vital to monitor competitor jurisdictions and learn how they are fostering innovation, attracting talent and – ultimately – growing.

A Appendix

Economic Profile of the Computer Animation and Visual Effects Industry in Ontario – Survey to Companies

A. About your company

- a. Is your company public or private?
- b. Is your company Canadian or foreign-controlled?
- c. In what year was your company founded?
- d. Please indicate your company's lines of business (as of the fiscal year ending in 2014).
- e. What is your company's volume of output?
- f. What percentage of your company's projects (as described in the previous question) is service-oriented vs. original content owned by your company?

B. About Your Company's Finances

- a. For the Fiscal year ending in 2014, what were your company's total operating revenue and operating expenses?
- b. Please indicate the approximate division of your company's operating revenue for each line(s) of business (as of the fiscal year ending in 2014).
- c. In the fiscal year ending (FYE) in 2014, what was the approximate breakdown of your company's operating expenses?
- d. Based on all projects completed in FYE 2014, what percentage of your annual revenue was generated by the following types of projects...?
- e. What percentage of your company's revenue was generated by each of the following market segments in FYE 2014?
- f. In the fiscal year ending in 2014, what percentages of your company's revenue came from projects commissioned from each of the following regions?

C. Access to Financing

- a. What is the source of your company's original and ongoing capitalization? (Percentages must sum to 100%)
- b. Please indicate the percentage of the projects produced by your company in the FYE 2014 for which you have applied or intend to apply the following tax credits?
- c. In FYE 2014, did your company produce any projects for which you did not apply nor do you intend to apply for an Ontario tax credit (i.e. OCASE, OPSTC, OIDMTC or OFTTC)
- d. For those projects that did not access an Ontario tax credit (and were produced in the fiscal year ending in 2014), why did your company opt not to use the tax credit?

D. Employment and Training

- a. How many employees did your company employ (on average) during the fiscal year ending 2014?
- b. What percentage (%) of your business unit's current existing workforce are...
- c. Of the employees hired through the Temporary Foreign Workers program in the past 5 years, what percentage have gone on to become ...
- d. How would you rate the current availability of well-trained, experienced new hires for your company in the following categories?
- e. How satisfied is your company with the ability of new Ontario graduates' ability to meet your talent needs?
- f. In what specific skill areas do you feel that new graduates should improve?

E. Market Growth Prospects

- a. In which of the following areas do you anticipate growth or decline for your business over the next two years?
- b. Please rate the following company growth factors on a scale of "not at all limiting" to "extremely limiting."
- c. What are the top three jurisdictions (cities) with which your company competes for business?
- d. What are the top three jurisdictions (cities) with which your company competes for talent?
- e. If you have any other comments on market growth prospects or the Computer Animation and VFX industry in Ontario, please share them below