



Toronto New Media Works Study

January, 2000

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## 1.0 Executive Summary

The world's leading organisations are re-orienting themselves around electronic business. Pioneering efforts are little more than five years old, yet e-business initiatives and start-up companies are transforming entire industries and becoming general phenomena. The economic promise of e-business will continue to drive growth of the technology and New Media clusters and provide competitive advantage to leading edge cities in the new economy. However, there is a serious "digital content gap" emerging in the Greater Toronto Area. Although the GTA can be described as Canada's business centre, this is not reflected in the size, scale or stability of the New Media cluster. Comparisons with other international New Media centres suggest that Toronto may be generating only half of its potential revenue in this industry based on its position as Canada's leading business centre. Benchmarking studies indicate there is a gap approaching \$1 billion between what the Toronto cluster is currently producing and its potential.

Toronto is conceivably losing between \$2 and \$3 billion in lost direct, indirect, and induced economic output from this digital gap. This equates to a minimum of 10,000 jobs directly and another 20,000 jobs indirectly for a total of 30,000 potential jobs lost. Moreover, the gap will most likely widen even more rapidly in the future if policy and program action is not taken soon. If the Toronto New Media cluster cannot grow in a sustainable manner, it is unlikely that Canada can participate fully in e-business and other digital activity, to its own advantage.

This study revealed that many positive attributes exist in the Toronto New Media cluster. The quality of the outputs from the various organisations within the cluster is excellent. This includes leading-edge world-class products sold successfully to businesses and consumers around the world, and a full spectrum of services relevant to the global economy. The cluster also contains a strong supply base of hardware platforms, software programs, and skilled people. Indeed, Toronto's access to creative and technical skills is recognised worldwide. The reputations of such Toronto educational institutions as Sheridan College, the Bell Centre for Creative Communications (Centennial College), the University of Toronto, and many others, are symbolic of the quality of the cluster. As well, Toronto, as a Canadian business centre, offers numerous potential markets for New Media.

The Toronto New Media cluster's weakness is its small size and scale. As a result, it lacks a unified voice and prominent New Media brand names. The two most important strategies for policy and program action are, first, to ensure that new product and services development involves direct co-operation with specific customers ("dragging the customers into the lab"), in order to highlight the cluster's capabilities to clients, and second, to provide external marketing support. As well, there is a requirement for the private sector to provide significant new financing for growing the cluster.

## 2.0 Objectives and Acknowledgements

As stated in the original RFP, the objectives of this Toronto New Media Works Study were to:

- a) Create a New Media taxonomy based on products, services, processes and skills. We have interpreted and expanded the taxonomy to include:
  - ◆ Market Block
  - ◆ Commercial Supply Block
  - ◆ Infrastructure Block
  - ◆ Support Block
- b) Provide a consolidated view of existing research on New Media companies.
- c) Identify performance indicators and establish baselines for performance benchmarking of the Toronto New Media industry.
- d) Recommend how to reduce the barriers and energise the drivers of Toronto New Media industry growth.

PricewaterhouseCoopers LLP would like gratefully to acknowledge the work of the Steering Committee for this project:

### **Toronto New Media Works**

Toronto New Media Works (TNMW) is a multi-stakeholder initiative of Bell Centre for Creative Communications, City of Toronto, Interactive Multimedia Arts and Technologies Association (IMAT), Ontario Film Development Corporation (OFDC), Ontario Ministry of Energy, Science and Technology and SMART Toronto.

### **Toronto New Media Works Study Steering Committee**

The Toronto New Media Works Study is administered by a Joint Adjustment Committee which is governed by its members under the terms of an Adjustment Incentive Agreement with the Canada Employment Insurance Commission and guidelines administered by the Industrial Adjustment Service of Human Resources Development Canada.

Members of the Adjustment Committee are:

- ◆ Mr. Mark Deacon - President, SMART Toronto;
- ◆ Mr. Nate Horowitz – Acting Director, Bell Centre for Creative Communications, Centennial College (replacing Mr. John King);
- ◆ Ms. Eva Pyatt - Manager, Sectors and Strategic Partnerships, City of Toronto;
- ◆ Ms. Sara Morton – Acting Chief Operating Officer, Ontario Film Development Corp.;

- 
- ♦ Ms. Brigitte Danzig – Senior Advisor, Digital Media for the Information and Communications Technologies Branch, Ontario Ministry of Energy, Science and Technology;
  - ♦ Mr. Aurel Langlois – President, IMAT (replacing Ms. Adele Newton, and prior representative Maxim Engel);
  - ♦ Mr. Sandy McMillan – Industrial Consultant, Industrial Adjustment Service, Human Resources Development Canada, (HRDC);
  - ♦ Mr. Greg Warren - Chair, Joint Adjustment Committee of Toronto New Media Works;
  - ♦ Ms. Aisha Wickham, Secretary, Joint Adjustment Committee.

HRDC worked in partnership with the group of stakeholders that brought this initiative together and also provided funding for this project; their contributions are many and is gratefully acknowledged.

### 3.0 The Methodology for this Study

The methodology for this study followed the PricewaterhouseCoopers “cluster analysis” technique. Our overall approach was to map the New Media cluster in reference to existing markets and applications together with potential new market opportunities. This is applied in relation to a structural or tiered model of industrial and infrastructure capabilities.

First, the framework starts with an examination of the markets. For Toronto New Media Works, we differentiated the market on three levels: current local, current external and potential new.

Second, the framework establishes levels of complexity and value-added within the commercial supply capabilities. We differentiated complexity and value-add on five levels: integrated content producers, production segments, freelancers, tools and services, and hardware platforms.

Third, the framework sets out the infrastructure supply base. We differentiated the infrastructure based on three levels: new-media-specific business associations and infrastructure, new-media-specific public infrastructure, and the generic supporting public and business infrastructure.

Fourth, the framework describes three levels of support, which we differentiated on the basis of: policy framework and environment; new-media-specific public and co-operative education/research; and relevant generic public and co-operative education/research. These levels impact across the other subgroups.

The research team carried out 60 interviews with representatives drawn from all 14 levels identified in the taxonomy (Exhibit 1). To follow-up and validate the interview results, an e-survey was conducted using the facilities and services of our partner in this project, MultiMediator Strategy Group. Approximately 50 respondents participated in the e-survey. A focus group, drawn from local thought-leaders, was also held to drive in-depth policy recommendations. Finally, to better understand Toronto, we undertook a benchmarking exercise. This exercise included four cities: New York, San Francisco, Vancouver (British Columbia), and Montreal (Quebec).

New York and San Francisco constitute world-class New Media leaders and should therefore provide a good understanding of industry best practices. Vancouver and Montreal constitute other important Canadian New Media centres and should provide a Canadian context for the benchmarking exercise. Field visits were made to New York and San Francisco in person, telephone interviews were conducted with Vancouver representatives, and secondary sources were referenced for Montreal.

### 3.1 Statistical Significance

The research and interview process in this project was designed to reveal the dynamics and the qualitative aspects of the cluster's activities. However, the extreme consistency of the results suggests a degree of statistical significance. It can be argued that the results reach statistical benchmarks, even though not explicitly an objective of the study.

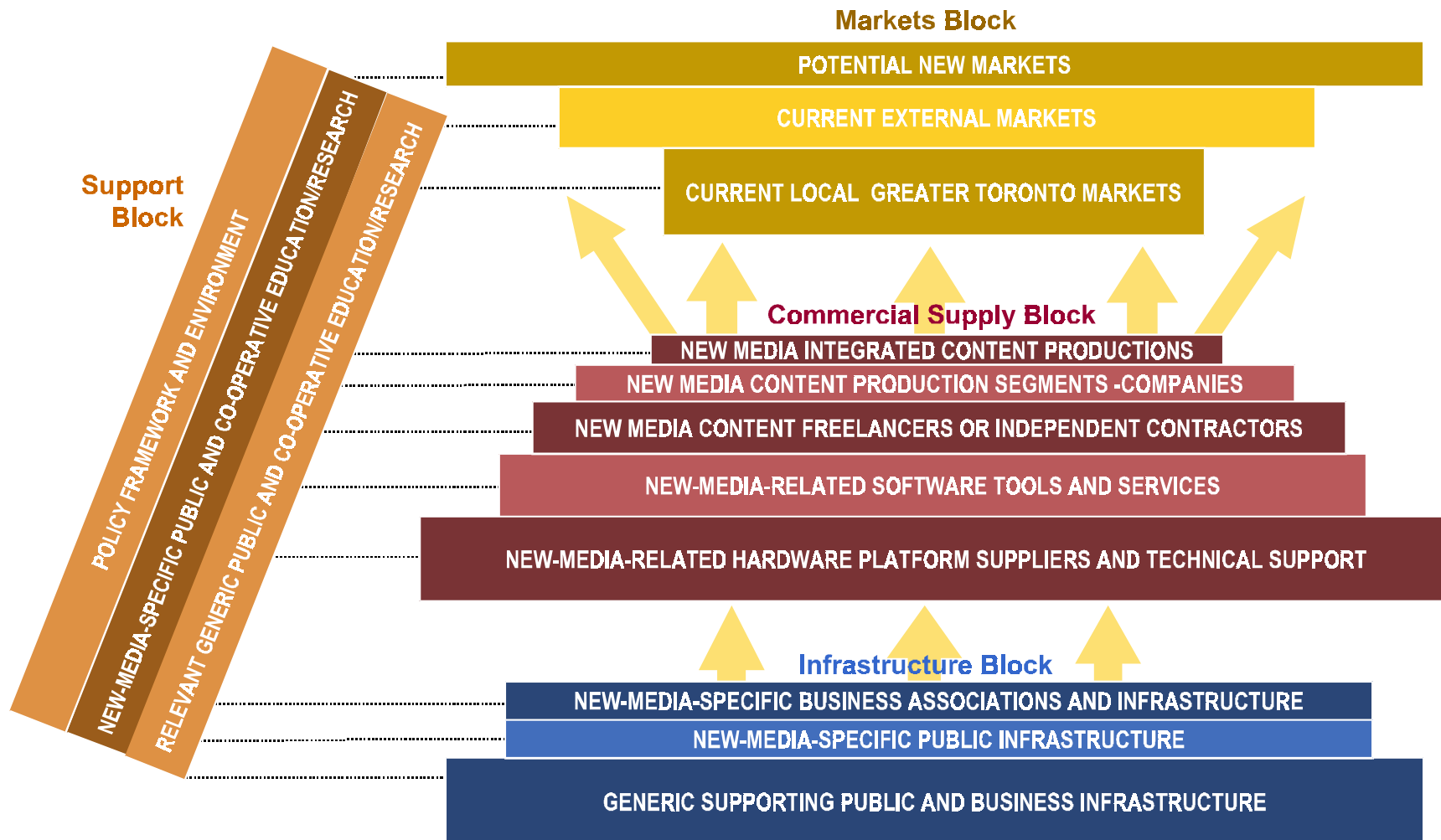
The total population of the survey pool is an estimated 400 companies within the Toronto New Media cluster. There were two types of surveys performed with Toronto New Media firms, those being a qualitative survey which consisted of 60 interviews and 53 electronic quantitative surveys, giving a total number of respondents of 113. A section of the oral interview involved asking the interviewees to rank eight aspects of the Toronto New Media environment, the scale being 1 to 10. The electronic survey consisted of eight similar questions to those posed in the oral interview and again the people being surveyed were asked to rank the same aspects of the Toronto New Media environment on a scale of 1 to 10. The oral and electronic surveys displayed consistent results for all eight questions.

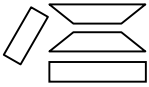
The "margin of error" calculation of the Toronto New Media survey results provides an indication of the accuracy with which estimates actually do represent the data (i.e., if all 400 had been surveyed as opposed to a sample). The margin of error in the case of the combined survey results is +/- 7.8% at a 95% confidence interval, 19 times out of 20. A figure of +/- 7.8% is generally well within the acceptable margin of error for surveys covering a small population size of 400.

However, it should be understood that the statistical significance of the results is dependent on the surveys selecting a truly random sample of the 400 firm total population. The project team believes that the selected respondents are certainly broadly representative of the whole cluster population (i.e., there was no discernible bias in the selection process), however, this cannot be proved in retrospect. Nevertheless, these survey results certainly would appear to consistently reflect the views of the Toronto New Media cluster.



**Exhibit 1. Taxonomy of Toronto New Media**





## 4.0 Definition of Industrial Clustering

The idea of industrial clustering has a long history and is well-anchored in the study of economic geography. However, with the emergence of the global economy, with its emphasis on high-speed communication and accessible markets, one would expect the importance of locations to diminish.<sup>1</sup> This has not proved to be the case, in fact the opposite is true, for one very clear reason – a cluster is *not* a collection of firms. The presence of dozens of firms classified within one industry does not signify that there is a cluster within the region. Rather, a cluster is a dynamic entity wherein firms and organisations, usually classified within several industry groupings, buy and sell from one another, hire local graduates, and sustain product and process innovations from nearby R&D labs and sources.

The key characteristics of an industrial cluster are:

- ♦ strong linkages, formal and informal, among firms and the supporting technological and business infrastructure, in a region or locality, to stimulate the innovation process and the growth of the cluster;
- ♦ geographic proximity of firms, educational and research institutions, financial and other business institutions, to enhance the effectiveness of the innovation process; and,
- ♦ The concept that the larger the cluster (e.g. large number of firms and workers) the higher the level of self-sufficiency; i.e. there is less need to get key functions (e.g. supplies, financing) supplied from other regions.

Through the work that PricewaterhouseCoopers LLP and its predecessor firms have undertaken related to this phenomenon, we have estimated that there are at least 200 or so sub-national regions and municipalities active globally in developing strategies to attract knowledge/technology-based investment<sup>2</sup>. Examples include the well-known Silicon Valley in California, Austin Texas, and Boston's Route 128 in the USA and in Europe the regions of Rhône-Alpes in France, Baden-Wurttemberg Germany, Lombardy Italy and Catalonia Spain; as well as the 26 clusters set up under Japan's Technopolis Law of 1983. In addition, there are now some examples in Canada itself, such as the high-tech telecommunications cluster in Ottawa, and the computer networks and electronics cluster in Toronto.

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<sup>1</sup> Clusters and the New Economics of Competition. Michael E. Porter. Harvard Business Review. November – December 1998. Pp 77-90.

<sup>2</sup> See for example (a) Nordicity Group Ltd.; Regional/Local Industrial Clustering: Theory and Lessons from Abroad prepared for National Research Council; February 27th, 1996 (b) Roger Voyer and Jeffrey Roy; "European High-Technology Clusters" in Evolutionary Economics and the New International Political Economy (ed. J. de la Mothe, G. Paquet) Pinter 1996; Nordicity Group Ltd., An Industrial Cluster Strategy for Atlantic Canada, ACOA, Ottawa, 1997.

PricewaterhouseCoopers LLP has identified, from previous experience with industrial clustering, eight critical success factors<sup>3</sup>. They are:

- ◆ the recognition of the potential of knowledge-based industries by regional/local leaders;
- ◆ the identification and support of regional strengths and assets;
- ◆ the catalytic influence of local champions;
- ◆ the need to have an entrepreneurial drive and sound business practices;
- ◆ the availability of various sources of investment capital;
- ◆ the cohesion provided by both informal and formal information networks;
- ◆ the need for educational and research institutions; and, most importantly,
- ◆ the need to have "staying power" over the long term.

Underlying these elements is, of course, the need for sustained economy activity. These indicators provide collectively a generic benchmarking framework that was used to evaluate the level of development of the Toronto New Media Cluster.

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<sup>3</sup> Ibid.

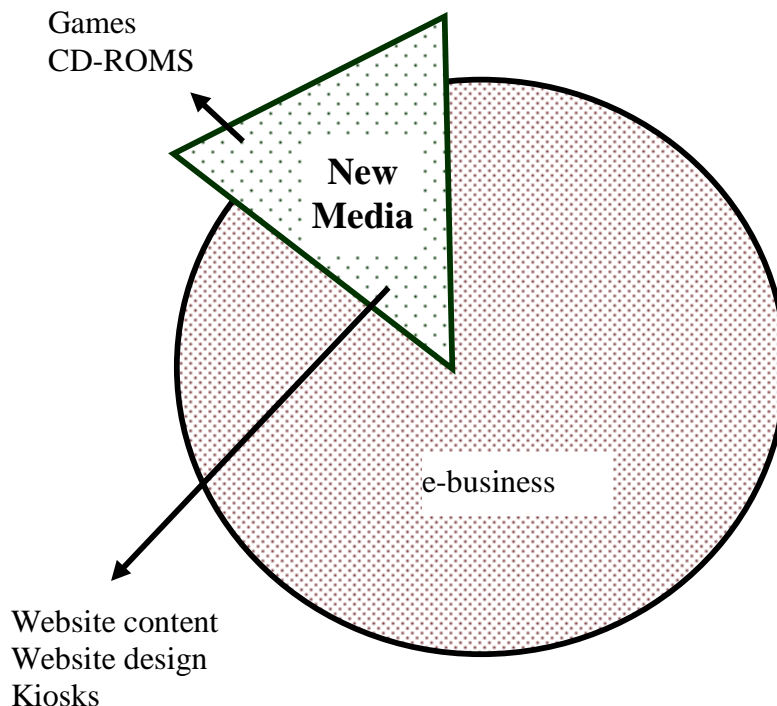


## 5.0 The Significance of New Media

New Media has been defined by the CRTC as “encompassing, singly or in combination, and whether interactive or not, services and products that make use of video, audio, graphics and alphanumeric text, and involving, along with other more traditional means of distribution, digital delivery over networks interconnected on a local or global scale”.<sup>4</sup>

New Media underpins digital business. This market segment includes digital products for personal entertainment, animation for public entertainment, graphics and interactive programs for education, internet-based approaches to finding and manipulating information, and (at the present time the most exciting possibility) the basis for e-commerce and the future development of e-business.

**Exhibit 2: New Media is fundamental to E-business**



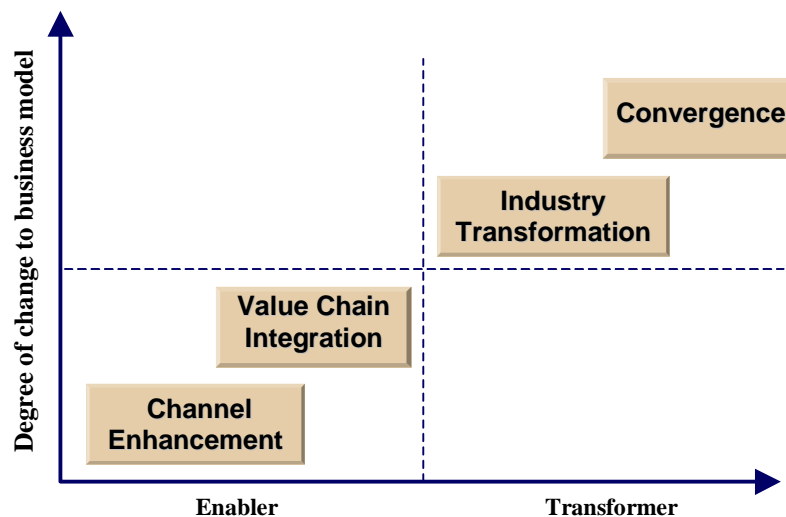
- ◆ As this chart suggests, with the exception of CD-ROM and game development, New Media plays a significant role in developing e-business solutions
- ◆ New Media constitutes the convergence of traditional media with digitization technologies
- ◆ It is the result of the convergence of computing technologies and telecommunications with the production of content
- ◆ The digital content is fundamental to e-business

<sup>4</sup> CRTC Final Report: New Media. Telecom Public Notice CRTC 99-14. Broadcasting Public Notice CRTC 1999-84. May 17, 1999.

## 5.1 E-business Economic Implications

There are a number of reasons why the Internet is becoming the medium of choice for business communications. Two examples are outlined below. Internet-based transactions help take “just-in-time” delivery to higher levels of efficiency. A well-known example is that of Dell Computer, a company that sells (US) \$15 million worth of computers from its web site everyday. This firm takes orders on-line and custom builds PCs according to the wishes of the consumer. Dell’s suppliers also have on-line access to information about order status, and hence can co-ordinate production efficiently. In current jargon, Dell’s use of the Internet has evolved into a “fully integrated value chain” (Exhibit 3). This essentially means Dell has the maximum opportunity to offer customers maximum choice commensurate with production efficiency. This opportunity would not be possible in the traditional supply chain model, and is dependent on the Internet.

**Exhibit 3: Role of E-business**



### ♦ Dramatically Lower Costs

A recent survey suggests that “the Internet is helping companies to lower costs dramatically across their supply and demand chains”<sup>5</sup>. Digital systems are providing companies with the ability to manage processes more effectively. Sometimes this involves improved physical manipulation of materials. For example, electronic fuel injection in automobiles is controlled by digital microprocessors that allow far more precise control of timing and quantities. These microprocessors are the basis for auto manufacturers to meet modern standards for performance, fuel economy and low emission standards. A much more significant advantage of digital systems, however, is the ability to manage large-scale process information or even to provide entirely new processes. For

<sup>5</sup> Business and the Internet. Economist. June 26, 1999.

example, the average cost per transaction in a paper-based banking system can be typically \$1.00; in an automated (e.g. ATM) environment, this cost is reduced to around 20 cents; but in an internet-based e-transaction, it can be as low as 1 cent. If an organisation has literally hundreds of thousands of transactions per day to conduct, then the cost savings from an internet approach is enormous, potentially millions of dollars saved each day.

- ◆ **More Dynamic Markets**

Internet-based e-business allows for more opportunities to exploit marginal cost pricing. An industry that continues to lead developments of marginal cost pricing is the airline industry. Airlines are very sophisticated in terms of the yield they receive from differential pricing structures. To illustrate, consumers have become familiar with seat sales, excursion fares, and advance-purchase pricing discounts for airline travel, beyond the usual pricing structure of first, business and economy class fares. Marginal cost pricing options will continue to expand with e-commerce and the development of on-line seat auctions. In this scenario, a company acts as an information intermediary, allowing consumers to bid on both pricing and conditions, i.e. “what airline is willing to take me to St. Louis next Saturday afternoon for \$200.00?”

Other industries could also conceivably exploit these concepts on an Internet basis. One example might be the electric power sector. Like airlines, power utilities are capital-intensive with wide variations in peak-to-valley loads. Real-time pricing using on-line transactions could help shave peaks and fill valleys, exactly as has worked for airlines. Similarly, industries that have surplus stock from a seasonal, fashion, or other perspective will be able to exploit marginal cost pricing to attract a wider clientele on-line. In these industries, an advantage is gained from the rapid change of prices in such an environment, as surplus items are liquidated, desirable items become more profitable.

## 5.2 New Media and E-Business

As technology races ahead with ubiquitous connectivity, faster and wider bandwidths, and more effective ways to provide content to the user, like streaming video, the importance of New Media in the e-business arena becomes paramount. The lines between information technology and New Media will fade quickly and, with the focus on the “customer”, the importance of providing compelling, to the point, visually-stimulating information will drive new development. New Media will truly be able to excite the senses in the presentation of concepts, products, information, learning, and all else that the human mind can conceive. Practitioners in the New Media industry will find their place in this brave new space.

PricewaterhouseCoopers’ ongoing research into the e-business phenomena provides us with the following trends:

- ♦ Taking the plunge. Despite some reservations, major companies are preparing to greatly expand their investment in e-business systems. The next three years will see rapid growth of companies using e-business to unfetter both their front- and back-end operations – and to improve the quality of their customer and supplier interactions. Relatedly, the separation between back-office e-business functions (logistics, accounts payable, etc.) and front-end (web-based ordering of products, supplies and services) will narrow until the current disconnect totally disappears.
- ♦ E-business vs. E-commerce. The transformational benefits of doing business electronically will attract increasing interest as companies realise the importance of not merely “doing business better” (e-commerce), but “doing business differently” (e-business). Increasingly, the efforts of market leaders will focus on transforming their fundamental value to the marketplace, rather than merely doing more with fewer resources.
- ♦ Customer is #1. Corporate e-business initiatives are accelerating the move of global businesses to “customer-centric” organisations. Priorities will focus on information sharing to better serve customers regardless of geography. Overall, companies will strive to optimise customer relationships, creating the loyalty that is the basis for efficient profit growth and competitive advantage – and further driving such offerings as “24x7” service and online support.
- ♦ Business solutions, not technology products. The realisation that a successful e-business is more about business and less about technology will continue to grow as more executives grapple with the pressure to meld electronic with traditional business structures. Among the growing priorities will be the newly-discovered tax, legal, risk and compliance issues that will increasingly allow companies that have thought ahead to outdistance rivals. The lack of clear policy directives in these areas will, for the present, add uncertainty to some complex issues.
- ♦ Senior management onboard. E-business is moving into the corporate boardroom, burrowing in with its promise to *build* business – not just streamline it. CEOs may find themselves managing the regrouping of company functions in response to increasingly flexible information and distribution channels and the disassembly of the value chain. Studies by PricewaterhouseCoopers and The World Economic Forum confirm that executives world-wide understand the sweeping implications of e-business and are becoming educated themselves on their options.

## 6.0 The Toronto New Media Cluster

Information on the structure and size of the Toronto New Media cluster has been derived from interviews and research. Over 60 interviews were conducted to cover all segments and all levels of the Toronto New Media cluster. Three major directories were also consulted to identify firms and other relevant organisations in the Toronto cluster. These three were:

- ♦ MultiMediator Strategy Group (MMSG) list of New Media firms;
- ♦ Interactive Multimedia Arts and Technologies (IMAT) Association 1998 Membership Directory (Toronto area members); and
- ♦ Bell Canada Multimedia Canada 1999-09-24

As well, we consulted the 1998 Digital Media Champions Group (DMCG) report “Playing to Win - The Digital Media Industry in Toronto” and a University of Toronto research thesis entitled “The Paradox of Technological Change: “New” Media in “Old” Urban Areas”.

### 6.1 Characteristics of the Toronto Cluster

- ♦ Productivity

The Toronto cluster is characterised by high productivity. To illustrate, a common benchmark for high-tech industries is revenue of \$100,000-\$150,000/employee, although there are variations around this figure (Exhibit 4). This is higher than the average for the Canadian economy as a whole. Preliminary analysis of the Toronto cluster from a MMSG survey<sup>6</sup> suggests \$110,000/employee – placing the cluster in the high-productivity group. The interview process confirmed that a figure of slightly over \$100,000/employee is reasonable. Accordingly, the revenue estimates per employee in the New Media industry would likely fall somewhere between software and computer services and ICT services.

**Exhibit 4. Representative Comparisons of Sales per Employee<sup>7</sup>**

	ICT*	ICT Services	Software & Computer Services
Revenues	\$100.2 billion	\$72.276 billion	\$13.55 billion
# Employees	473,928	376,542	173,700
Revenue/Employee	\$211,000	\$192,000	\$78,000

\*Information and Communications Technologies

<sup>6</sup> The Digital Media Industry Champions Group. *Playing to Win - The Digital Media Industry in Ontario*, 1998

<sup>7</sup> Industry Canada, Strategis website, see <http://strategis.ic.gc.ca/SSG/it05140e.html>



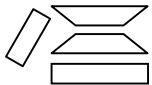
- ◆ Growth

The Toronto New Media industry is growing rapidly, typical of New Media clusters globally. The Internet and e-commerce solutions are now beginning to drive business in Toronto and throughout the world. There is also growth of entirely new interactive and digital delivery vehicles such as service kiosks, ATMs, etc. New Media typically has 20-50% annual growth globally<sup>8</sup>; our interview process confirmed 20-25% in Toronto.

- ◆ Total Output

Finding definitive values for the total commercial output of the Toronto New Media cluster is challenging, as the firms involved are typically small and/or privately-held. Consequently, there is limited publicly-available data on revenues and output available. We have used three approaches for estimating the size, in terms of total revenue, of the Toronto cluster. Each approach generated fairly consistent results, indicating that our projected totals are reasonable. From this research, we believe that the total output for the Toronto New Media cluster is approaching \$1 billion.

First, preliminary estimates from the MMSG national survey and the report published by the DMCG<sup>9</sup> suggest that 400 content creation New Media firms exist in the GTA. These reports also suggest that these firms employ approximately 4,000 to 8,000 workers. With these figures, the total commercial output for the Toronto New Media cluster ranges from \$400 million to \$1.2 billion at \$100,000 to \$150,000 revenue per employee. Second, PwC research of additional publicly-available information<sup>10</sup> would lead to a range of \$500 million to \$1.2 billion dollars for the total output of the Toronto New Media cluster. Third, during the interview process, interviewees were asked to estimate the output of their New Media efforts. Extrapolating from these responses, the output of the Toronto New Media cluster is approximately \$900 million to \$1 billion dollars.



## 6.2 Structure of the Toronto Cluster

The Toronto New Media cluster consists of 14 levels having specific functions within the cluster. Qualitatively, the structure of the Toronto cluster is rich due to the diverse areas of New Media involvement. This is demonstrated in the following pyramid maps

<sup>8</sup> Wall Communications. *Study of Mechanisms to Promote the Development and Distribute of Canadian Multimedia and other New Media Content and Services*. Prepared for Industry Canada, Canadian Heritage and the CRTC, March 31, 1998.

<sup>9</sup> The Digital Media Industry Champions Group. *Playing to Win - The Digital Media Industry in Ontario*, 1998

<sup>10</sup> Brail, Shauna. *The Paradox of Technological Change: "New" Media in "Old" Urban Areas*. Toronto: University of Toronto, Department of Geography, 1998.

(Exhibit 5) that differentiate each of the levels by function within the cluster and provide examples of New Media organisations.

Overall, the quality of the organisations within the Toronto cluster, as set out in the reference taxonomy, was considered high by the interviewees. Other factors seemed to be of more importance in explaining the low rate of growth.

**Exhibit 5: Markets Block**

POTENTIAL NEW MARKETS															
Real Estate Example: MLS	Business to Business Example: Extranet	Business to Consumer Example: Web Site	Education, Training Example: Distance Learning	Advertising Example: Banner Ads	Entertainment Example: Feature Films	Recreation Example: LBE	Public Sector Example: Information Kiosk	Non-Profit Example: Associations	Retail Example: E-commerce Web Site	Health Example: Tele-medicine Application	Information/Reference Example: Encyclopedia	Arts & Culture performances Example: Multi-media	Media Example: Weather forecasting	Science & Technology Example: R&D	Finance Example: Multimedia Tools
CURRENT EXTERNAL MARKETS															
Business to Business Example: Dofasco	Business to Consumer Example: Sony Music	Advertising Example: Levis	Entertainment Example: Disney	Recreation Example: Nintendo	Non-Profit Example: Greenpeace	Retail Example: FTD	Health Example: Monsanto	Arts & Culture Example: Canadian Museum of Aviation	Media Example: Nickelodeon	Finance Example: Nation's Bank					
CURRENT LOCAL GREATER TORONTO MARKETS															
Business to Business Example: Ford	Business to Consumer Example: Clearnet	Education, Training Example: U of T	Entertainment Example: NHL	Recreation Example: CN Tower	Public Sector Example: Ministry of Transportation	Non-Profit Example: United Way	Retail Example: Chapters	Health Example: Sick Kids Hospital	Information / Reference Example: Metro Reference Library	Arts & Culture Example: ROM	Cultural Industries Example: Publishing	Media Example: Balon	Science & Technology Example: Humming-bird	Finance Example: BMO	Advertising Example: McClaren

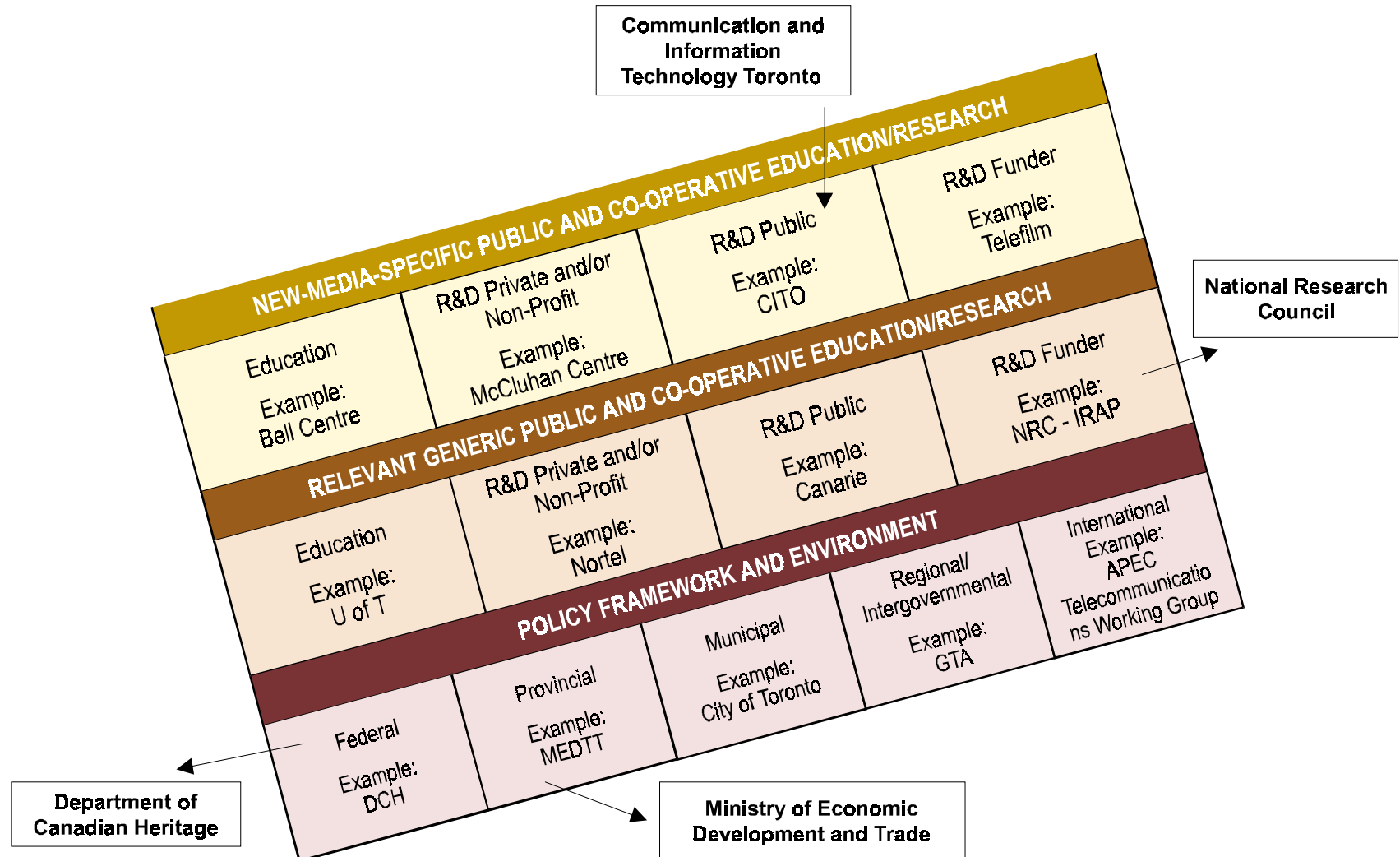
**Exhibit 5: Commercial Supply Block**

NEW MEDIA INTEGRATED CONTENT PRODUCTIONS																
Feature Films Example: Viacom	Specialty TV Programs Example: YTV	Broadcasting Example: Baton	On-Line Broadcasting Example: Virtually Canadian	Book Publishing Example: General Stoddart	News-paper & Mag. Pub. Example: Toronto Star	New Media: Example: H+a	Game Publishing: Example: Arc Media	Location-Based Entertainment Example: Vivid Group	On-Line Services Example: Sympatico	Information Services/ Directories Example: E-library	Government Services Example: Ministry of Transport	Courseware Products Example: Sheridan College	E-Commerce Example: Toronto.com	Advertising Example: Grey Interactive	Financial Services Example: iMoney	New Media Communications Example: Microforum
NEW MEDIA CONTENT PRODUCTION SEGMENTS-COMPANIES																
Animation Example: Nelvana	Audio Example: Good Media	Design/Graphics Example: Devlin	Instructional Design Example: Oberon Interactive	Transactional Web Sites (e-commerce) Example: CyberPlex	Information Web Sites Example: Hype!	Business Communications (Internal) Example: Bratch	Business Communications (External) Example: Electra Media	Software Title Development Example: Studio X	Educational Example: Bytes of Learning	Writing Example: Infinet Communications	Virtual Reality Example: Vivid Group					
NEW MEDIA CONTENT FREELANCERS OR INDEPENDENT CONTRACTORS																
Multi-skilled Contractor Example: Individuals	Producer Example: Individuals	Project Management Example: Individuals	Creative Design/Graphics Example: Individuals	Animation Example: Individuals	Audio/Sound Example: Individuals	Technical Programming Example: Individuals	Writer/Editor Example: Individuals	Researcher Example: Individuals	Sales/Marketing Example: Individuals							
NEW-MEDIA-RELATED SOFTWARE TOOLS AND SERVICES																
Content Libraries Example: Masterfile	Authoring Tools - Suppliers Example: Adobe	Authoring Tools - Developers Example: Alias	Digital Editing/ Conversion Example: Command Post	Operating Systems Example: IBM	Custom Code Development Example: SHL	Application Infrastructure Example: Novator	Management Systems - Suppliers Example: Lotus	Management Systems - Developers Example: Bulldog	Internet Broadcasting Example: Media Tribe	Strategy/ Consulting Example: MMSG	Production Testing/ Usability Example: SurveySite	Internet Marketing/PR Example: Environics	Talent Reps/Agencies and Recruitment Example: WebStaff	Internet Advertising Networks Example: DoubleClick Canada		
NEW-MEDIA-RELATED HARDWARE PLATFORM SUPPLIERS AND TECHNICAL SUPPORT																
Workstations Example: Apple	Peripherals Example: Hewlett Packard	Digital Video Hardware Example: ATI	CD-ROM Discs, Cartridges, Laser Discs - Makers Example: Sony	Delivery Kiosks/Hardware Example: King Systems	Systems Integration Example: PricewaterhouseCoopers LLP	Distributors/Product Representatives Example: Amiware										

**Exhibit 5: Infrastructure Block**

NEW MEDIA SPECIFIC BUSINESS ASSOCIATIONS AND INFRASTRUCTURE													
Trade Associations Example: IAB Canada	New Media or Related Associations Example: IMAT	Equity Venture Financing Example: BCE	Commercial Financing Example: Royal Bank	Project Financing Example: Telefilm	Internet Service Providers Example: UUNET	Web Site Hosting Example: Netcom	Digital Networks Infrastructure Example: Cisco	Marketing/Packaging Example: MMSG	New Media Product Distributors Example: Ingram	New Media Product Retailers Example: Indigo Books	Recruitment Example: Ward Associates	Demonstration Facilities Example: SMART Toronto	Training Example: DM Stadium
NEW MEDIA SPECIFIC PUBLIC INFRASTRUCTURE													
Promotion, Coordination Example: OFDC			Networks Facilities Example: Ontario Hydro				Public Policy Example: Ministry of Energy Science and Technology			Economic Development Example: The Ontario Digital Media Small Business Growth Fund			
GENERIC SUPPORTING PUBLIC AND BUSINESS INFRASTRUCTURE													
Procurement Example: Merx	Advocacy Example: Toronto Board of Trade	Management Support Example: Law Firms	Promotion, Coordination Example: SMART Toronto	Supporting Regulatory Agencies Example: CRTC	Long-term Financing Example: Banks	City of Toronto Assistance Example: Economic Development	Provincial Government Example: Min. of Economic Development & Trade	Federal Government Example: Human Resources Development Cda.					

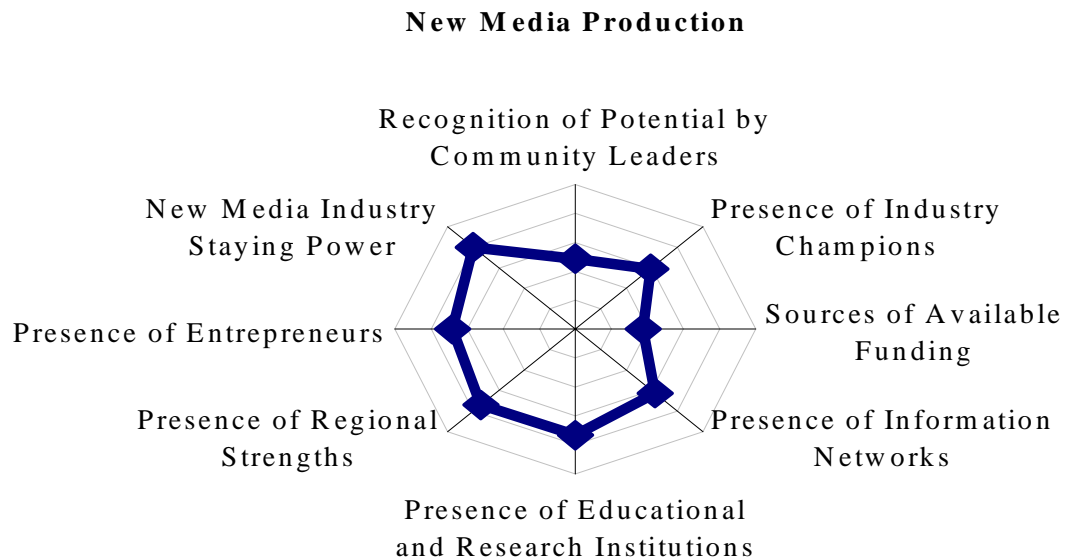
**Exhibit 5: Support Block**



### 6.3 Eight Success Factors

Interviews were conducted to characterise the cluster against each of the eight success factors that PricewaterhouseCoopers LLP has found significant in local urban cluster development. Interviewees were asked to rank Toronto by world class standards for New Media in the eight dimensions. Exhibit 6 portrays the average results of the responses.

**Exhibit 6. Average Rating by Interviewees**



These cluster survey results make clear that there is some optimism about the cluster. Staying power is given the highest rating. Presence of regional strengths and presence of education and research institutions are also rated high. However, the survey also demonstrates that the existing cluster has weaknesses that must be addressed. Most players remain very concerned about their ability to obtain financing. A somewhat “middling” rating for half of the eight factors shows a lack of enthusiasm about the performance of the Toronto New Media cluster in terms of: presence of industry champions; presence of information networks; presence of entrepreneurs (all rated between 6 and 7); and recognition by community leaders (rated between 5 and 6).

Views of the eight success factors were also calculated on a cluster segment basis. (The appropriate diagram is included at the end of each segment section). There was enormous consistency. The results by each cluster segment showed that the strengths and weaknesses identified were felt throughout the cluster by all players and were not specific to any cluster segment. This consistency further shows that a cluster with strong linkages and communications is beginning to evolve.

## 6.4 Interview Results

We conducted 60 interviews that covered all segments of the Toronto New Media cluster. The interviews have been organised below according to the segments on the Toronto cluster map (refer to Exhibit 1), which are as follows:

- ◆ Markets (Markets block),
- ◆ New Media Production (Commercial Supply block),
- ◆ Infrastructure (Infrastructure block), and
- ◆ Support Framework (Support block).

The Markets block includes current local GTA markets as well as current external markets and potential new markets. The Commercial Supply block includes those companies involved in content production and the New Media tools required for production. The Infrastructure block includes public and private organisations involved in the building and growth of the industry financially and creatively. The Support block includes organisations that provide education, research and policy frameworks for the industry. The following tables summarise the results of the interviews for each segment.





### 6.4.1 Markets

PricewaterhouseCoopers LLP research has identified 16 different market segments currently being exploited in the local market area by the cluster; we can identify 11 external market segments currently being exploited.

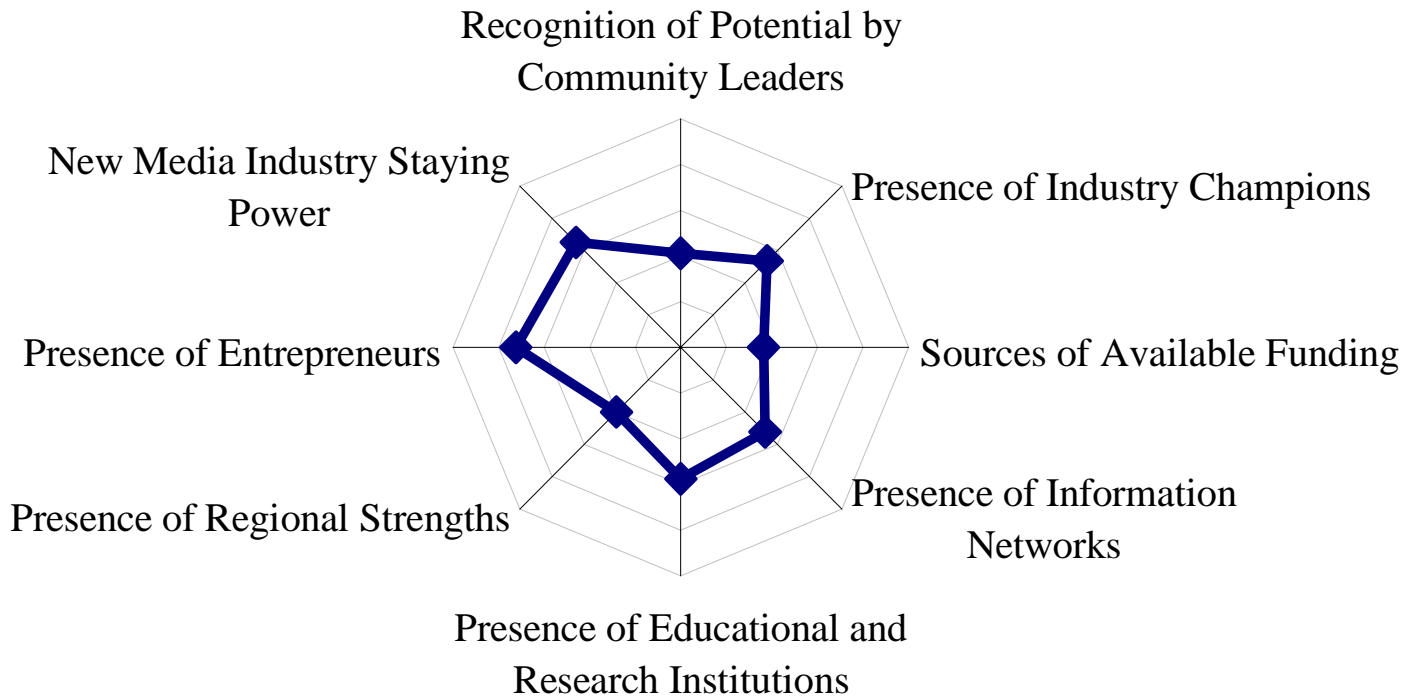
The cluster is addressing most New Media markets – those relating to e-business, those relating to entertainment and games, those relating to animation, etc. The external markets are not quite as broad, in terms of differentiation, as the local markets, but this is a common phenomenon from general cluster experience – the local markets become a lead from which suppliers subsequently exploit progressively more distant customers.

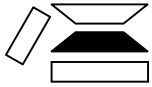
SUBJECT	COMMENTS
COMPANY INFORMATION	<ul style="list-style-type: none"> <li>◆ Currently, there are a number of local markets for New Media content companies.</li> <li>◆ Many of these organisations are in the information and communications industries. New Media constitutes another vehicle for content delivery for these organisations. Within these firms, the New Media group is still small.</li> </ul>
CUSTOMERS, SUPPLIERS	<ul style="list-style-type: none"> <li>◆ On-line customers are not entirely dissimilar to customers who use other vehicles of communication.</li> <li>◆ The on-line service is used to promote other traditional services. Customers use the websites to discuss and ask questions about the traditional product offerings.</li> <li>◆ This block is in the process of developing transaction capabilities on their websites. Interviewees did not report much success, in terms of profit, in this area, but most felt that future opportunities were promising. Critical success factors include a high comfort among Canadians about the security of the web and a deep understanding of the web customer, who is generally young and savvy.</li> <li>◆ These companies use local suppliers. Non-Canadian suppliers are used when the on-line business decisions are not being made by the Canadian subsidiary.</li> <li>◆ Some interviewees indicated that they rely on RFPs, while others thought the process was too slow given the pace of change for on-line businesses. Interviewees consistently felt that there were problems with the quality of proposals that they received. Pricing was also a major issue. It was felt that the project pricing varied considerably within the industry, and it was difficult to assess “value for money.” Many indicated that they were unlikely to consider proposals with prices that seemed either too high or too low.</li> </ul>

SUBJECT	COMMENTS
PARTNERSHIPS, COMPETITORS	<ul style="list-style-type: none"> <li>◆ Some organisations are entering into partnerships as a way to differentiate themselves from their competitors in their on-line offerings.</li> <li>◆ At this stage, new on-line competitors have not truly emerged.</li> </ul>
INNOVATION, NEW IDEAS, R&D	<ul style="list-style-type: none"> <li>◆ New ideas come from everywhere. They come from within the organisation, from customers, and from suppliers.</li> </ul>
CHALLENGES, SUCCESSES	<ul style="list-style-type: none"> <li>◆ Building New Media divisions within an organisation is a major challenge. As most companies are still losing money from their web investments, they must first prove a profitable web business is possible.</li> <li>◆ It can be challenging to get customers to know web businesses. Many customers still think of these organisations only in terms of the traditional services they provide.</li> <li>◆ Developing successful projects is another challenge. Many organisations find it difficult to find contractors that can deliver high quality projects on time and within budget.</li> <li>◆ While websites are still not generating the revenues that companies would like, most feel they have made significant gains in the last few years.</li> <li>◆ It is often felt that developing transaction-oriented Web sites sets up a conflict between this method and traditional methods of reaching the client. This channel conflict is often deeply-felt and hotly-debated within organisations. Careful and credible measurement of the Web audience often establishes the differentiation between channels.</li> </ul>
WEAKNESSES OF THE TORONTO CLUSTER	<ul style="list-style-type: none"> <li>◆ Toronto's New Media cluster is not characterised by co-operation within. Companies will outsource when required, but there are few collaborative projects. "Coopetition"(co-operation among competitors) does not yet exist in Toronto.</li> </ul>

**Exhibit 6.1**

**Markets**





## 6.4.2 Commercial Supply

Qualitatively, the Commercial Supply block of the Toronto cluster is excellent. There are 17 differentiated examples at the highest level of the block – New Media Integrated Content Production. The “New Media Content Production Segment – Companies” level is well represented with 12 different production segments, and the “New Media Content Freelancers or Independent Contractors” has a comparable representation at 10 different skill sets. The interviews indicated that the range of software tools and services available, and the supply of platforms and technical support was quite adequate.

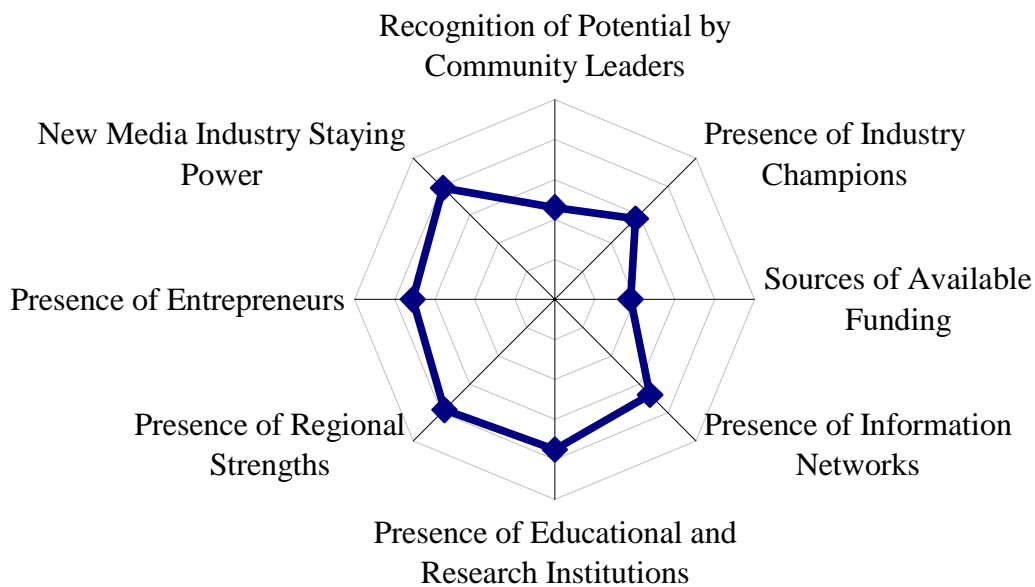
SUBJECT	COMMENTS
COMPANY INFORMATION	<ul style="list-style-type: none"> <li>◆ New Media Production companies range from individuals doing contract web design work, to New Media production firms such as Extend Media and ICE, to large content firms such as Netstar, to technology firms such as Sony, Hewlett Packard and Adobe. This segment includes five distinct types of companies, which are:               <ul style="list-style-type: none"> <li>◆ New Media Integrated Content Productions</li> <li>◆ New Media Content Production Segments – Companies</li> <li>◆ New Media Content Freelancers or Independent Contractors</li> <li>◆ New Media Related Software Tools and Services</li> <li>◆ New Media Related Hardware Platform Suppliers and Technical Support</li> </ul> </li> <li>◆ The first three sub-groups are content creators, while the last two are tools creators.</li> <li>◆ When New Media is only part of a company’s overall business, few employees are devoted to New Media specifically. It was difficult for these firms to determine the number of full-time employees (FTEs) because job categories and responsibilities are not clearly defined. Nonetheless, it remains a small part of these companies’ workforce, likely less than 10%.</li> <li>◆ For New Media firms, the size varied anywhere from one FTE to 180. These companies also rely on independent (i.e. contract workers) contractors to a large extent.</li> <li>◆ Reported revenues per employees vary from \$75,000 to \$300,000. Many agreed that \$100,000 per employee sounded correct for the industry as a whole, but many also indicated that they were a little higher than that figure and that the revenue per employee has risen in recent years.</li> </ul>

SUBJECT	COMMENTS
PARTNERSHIPS, COMPETITORS	<ul style="list-style-type: none"> <li>◆ Few of these companies have entered into partnerships. There seems to be a belief within the Toronto industry that partnerships will become increasingly important.</li> <li>◆ Most saw other New Media firms as their main competitors. Some were optimistic about how they differentiated themselves in the marketplace.</li> </ul>
SKILLS, EDUCATION	<ul style="list-style-type: none"> <li>◆ Many are hiring students from the community colleges, including Sheridan and Centennial College. Sheridan has the highest recognition. Few are hiring from the universities. Some interviewees stated that their hiring focuses on experienced hires.</li> <li>◆ Some interviewees felt that while college graduates were available, it was difficult to find experienced, skilled and mature New Media professionals.</li> <li>◆ These students have the appropriate technological and creative skills. However, business, marketing, sales and project management skills are lacking.</li> <li>◆ Few interviewees stressed the importance of in-house training. Most were looking to hire employees who already had the required technical, creative and business skills.</li> <li>◆ Brain drain seems to be an issue that concerns people, but few have experienced the phenomenon.</li> </ul>
FINANCING, VC FINANCING, PUBLIC SUPPORT	<ul style="list-style-type: none"> <li>◆ For many of the larger companies in this segment outside financing is not an issue. The New Media division is considered an investment by the organisation or international parent.</li> <li>◆ There is an impression that little venture capital is available in Canada. Canada is perceived to be 18 months to 2 years behind the United States in this regard.</li> <li>◆ There is both a lack of awareness and an uncertainty about the benefits of the Ontario Interactive Digital Media Tax Credit. At time of writing this program was not in operation yet, but some interviewees did not know this was available to them and, some felt that a tax credit would not really help their situation. Despite this criticism of the specific tax credit, some believe that tax incentives are good and that more are needed.</li> <li>◆ The New Media Content Production Segment consistently finds financing challenging. The interviewees rate availability of financing a 2 on a scale of 1 to 10. These firms have not been successful in securing venture capital or bank financing. They expressed a need to inject capital into their organisations to fuel growth.</li> </ul>

SUBJECT	COMMENTS
INNOVATION, NEW IDEAS, R&D	<ul style="list-style-type: none"> <li>◆ Most interviewees believed that the Toronto New Media industry was innovative. The interviewees expressed that innovation and new ideas come from:                             <ul style="list-style-type: none"> <li>◆ organisations/firms,</li> <li>◆ customers,</li> <li>◆ clients,</li> <li>◆ talented people, and</li> <li>◆ partnerships.</li> </ul> </li> <li>◆ Some believed that the United States was more innovative than Canada.</li> </ul>
CHALLENGES, SUCCESSES	<ul style="list-style-type: none"> <li>◆ It can be difficult for creators to maintain ownership of their intellectual property.</li> <li>◆ New Media products are having success in the Toronto cluster. Many interviewees believe that their organisations had made significant progress. One interviewee stated that their Canadian arm had twice the revenue per employee as their American counterpart.</li> </ul>
WEAKNESSES OF THE TORONTO CLUSTER	<ul style="list-style-type: none"> <li>◆ Toronto is not as collaborative as other locations. Most believed co-operation was within the cluster weak.</li> <li>◆ There is a belief that Toronto lacks an organised network to share information. Many were familiar with IMAT and SMART Toronto, but believed that they still had not found the appropriate organisation or outlet to assist them in networking and developing new relationships.</li> </ul>

**Exhibit 6.2**

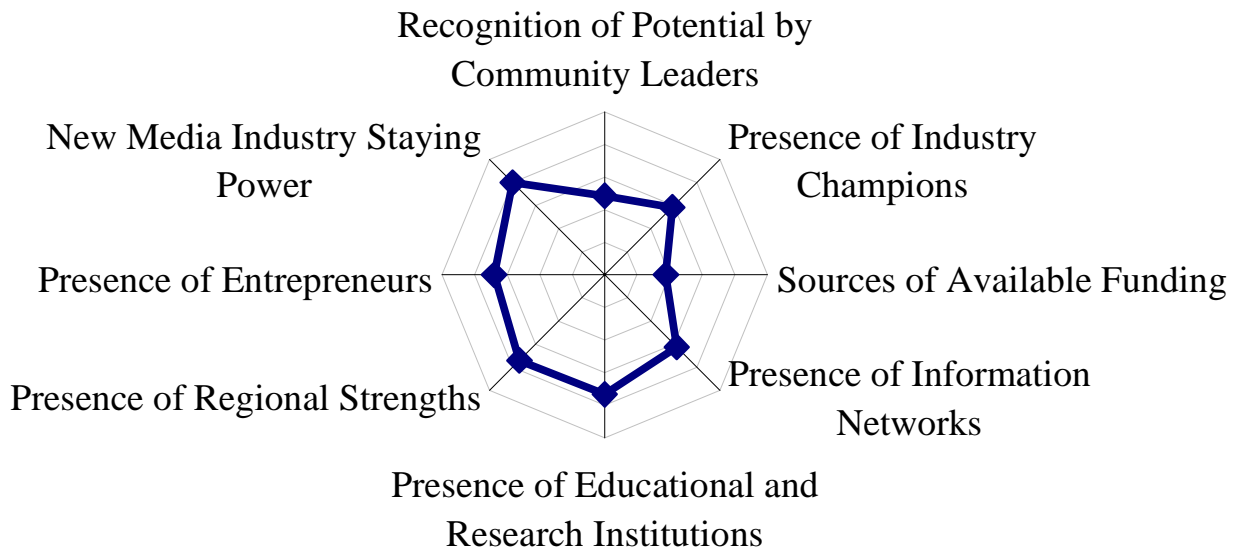
**New Media Content Production**



Out of interest, we further subdivided the Commercial Supply block into New Media Production (content creators) and New Media Tools. As can be seen in the two webs below, the results did not vary significantly, reflecting consistency between parts of this block.

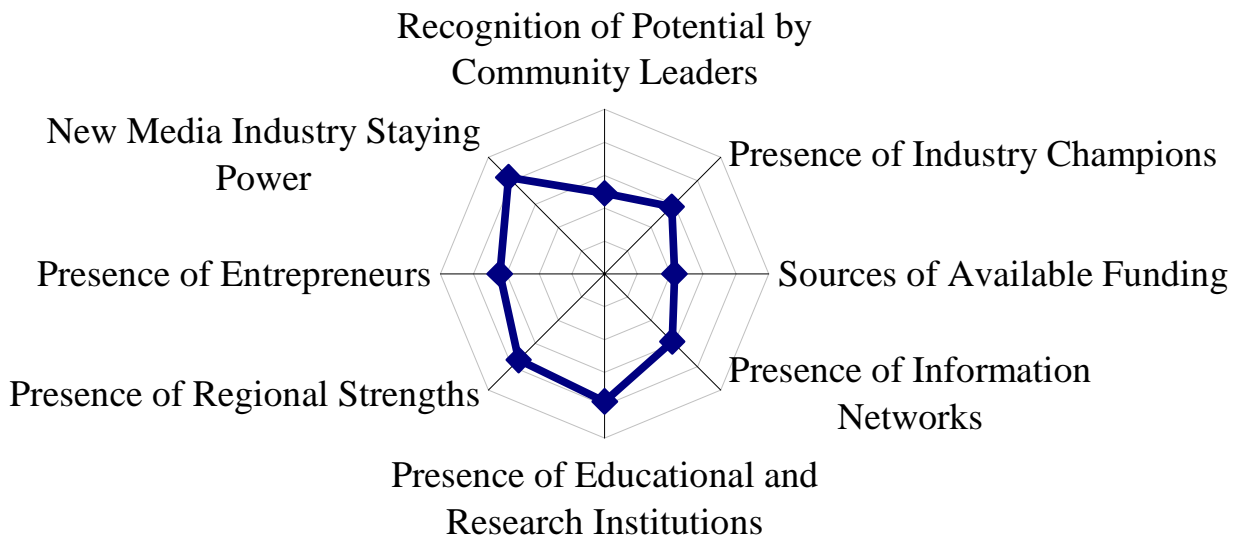
**Exhibit 6.2.a**

**New Media Production**



**Exhibit 6.2b**

**New Media Tools**



### 6.4.3 Infrastructure



The Infrastructure block was ranked good, or even excellent, during the interview process in terms of a range of organizations, from those who provide physical connectivity such as fibre-optics to educational facilities. However, one major concern was the availability of financing for content creation. This was the area that all interviewees felt was Toronto's greatest weakness.

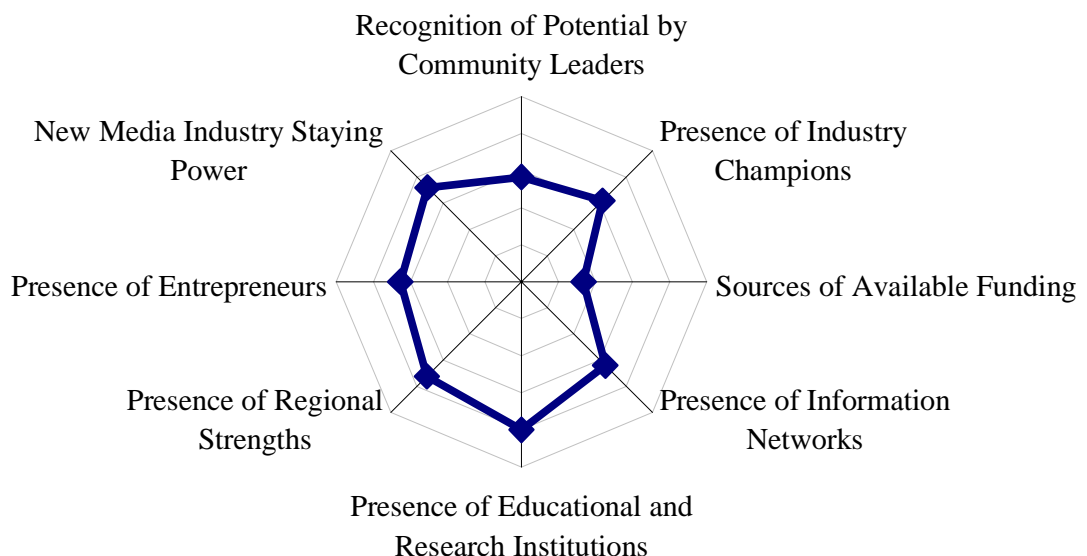
SUBJECT	COMMENTS
COMPANY INFORMATION	<ul style="list-style-type: none"> <li>The organisations in this block serve and represent the New Media industry as an entity and therefore play a key role in its development and growth.</li> <li>This block advises New Media companies on Ontario tax credits, funding, venture capital, business solutions and developing plans to advance innovative ideas.</li> </ul>
CUSTOMERS, SUPPLIERS	<ul style="list-style-type: none"> <li>The customer of this block is the New Media industry in general. Companies range from content creators to technology companies. The focus is primarily on companies with high growth and high quality. Internet companies seem to make up the majority of this cluster's customer profile.</li> <li>Other customer groups served by this block are the government and the general public.</li> <li>The suppliers are the economic and political policies that determine the framework on issues such as tax credits.</li> </ul>
PARTNERSHIPS, COMPETITORS	<ul style="list-style-type: none"> <li>A network is the key to survival and growth of this block.</li> <li>Partnerships form a web throughout the cluster, as linkages are made with government organisations and associations, and strategic alliances are made with major banks and lending partners.</li> </ul>
SKILLS, EDUCATION	<ul style="list-style-type: none"> <li>Business skills are repeatedly identified as highly valuable, yet lacking within the industry. Some of the business skills/experience valued by this cluster include proven success in business, ownership of a business, and experience with a multinational corporation.</li> <li>Technical skills are also held in high regard by this block.</li> </ul>
FINANCING, VC FINANCING, PUBLIC SUPPORT	<ul style="list-style-type: none"> <li>A concern was raised that there is not enough funding available for content creation. Content-oriented projects are not considered valid R&amp;D, although respondents felt that maybe they should. New technology, however, qualifies as valid R&amp;D on a company basis.</li> <li>The concern was also raised that there is not enough commercial lending in the industry. A business case is needed for commercial lending, but few prepare business plans.</li> <li>On a whole it was felt that government organisations could play a</li> </ul>



SUBJECT	COMMENTS
	larger role, particularly in terms of investing in industry infrastructure.
INNOVATION, NEW IDEAS, R&D	<ul style="list-style-type: none"> <li>◆ Innovations in this block come from the New Media industry.</li> <li>◆ Innovation also comes from the education system that develops the skill pool.</li> <li>◆ Innovation is dependent upon research and research funding.</li> </ul>
CHALLENGES, SUCCESSES	<ul style="list-style-type: none"> <li>◆ The meaning and criteria of R&amp;D needs to be re-defined. Traditional “white coat” laboratory R&amp;D may not apply to the majority of New Media projects, particularly in content creation.</li> <li>◆ There is a lack of communication between the Infrastructure block and the content producer companies of the New Media Production block. The Infrastructure block focuses on New Media technology and tools companies.</li> <li>◆ Networking is important to the growth and success of this cluster; however, partnerships remain fairly limited and there is limited communication. Most programs from this block are still discovered through word of mouth rather than from formal advertising or networking.</li> </ul>
WEAKNESSES OF THE TORONTO CLUSTER	<ul style="list-style-type: none"> <li>◆ This block has good links with the New Media technology and tools companies, however it lacks strong linkages to the other blocks in the cluster.</li> </ul>

**Exhibit 6.3**

**Infrastructure**



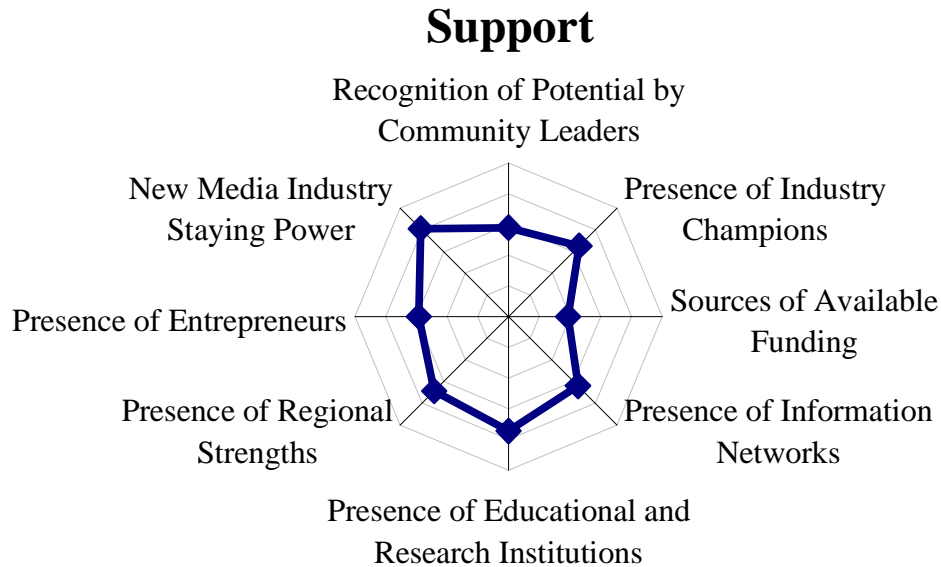
## 6.4.4 Support



The Support block was also ranked as good, or even excellent, during the interview process.

SUBJECT	COMMENTS
COMPANY INFORMATION	<ul style="list-style-type: none"> <li>Generally this block organises information and knowledge about the New Media industry through education and training, college and university research support, events organisation and promotional tools.</li> </ul>
CUSTOMERS, SUPPLIERS	<ul style="list-style-type: none"> <li>Customers of this block are students, corporations who provide internship programs, investors, the New Media industry and the general public.</li> <li>Suppliers are academics, the government and the New Media industry.</li> </ul>
PARTNERSHIPS, COMPETITORS	<ul style="list-style-type: none"> <li>Many educational institutions have linkages with New Media firms to provide internship programs, sponsorships and technology loans. The students get experience and access to the latest technology and in turn, the companies receive easy recruitment of new graduates and advertising.</li> <li>There are also linkages in this cluster between organisations that fund research and educational institutions.</li> </ul>
SKILLS, EDUCATION	<ul style="list-style-type: none"> <li>This block emphasises the diverse skills required for this industry. The skills identified ranged from technical skills such as engineering and programming, to creative and artistic skills for content production, to management skills.</li> <li>Generally, it was found that the colleges focused on content and the universities focused on computer and software skills.</li> <li>Repeatedly, Toronto was identified to have world-class educational institutions in the field of New Media. Toronto's educational strength is in content production.</li> <li>It is estimated that 30-50% of animation graduates move to the US, while 80-90% of web-related graduates stay in Ontario.</li> </ul>
FINANCING, VC FINANCING, PUBLIC SUPPORT	<ul style="list-style-type: none"> <li>There are a variety of government programs that provide assistance to New Media firms.</li> <li>The Interactive Digital Media Small Business Growth Fund, announced in the 1998 budget, focused on providing funds to alliances of New Media firms for and broad-based industry initiatives.</li> <li>For many educational institutions, student fees and public support provide the majority of funding.</li> <li>Research funding, outside of government programs, is available for educational institutions mostly in the area of digital media research.</li> </ul>

SUBJECT	COMMENTS
INNOVATION, NEW IDEAS, R&D	<ul style="list-style-type: none"> <li>◆ Innovation was described as the blend of content and creativity.</li> <li>◆ It was generally agreed that new ideas came from education and research. Those companies that have the capital to invest in these areas will develop the most creatively and technologically. This is the reason why many large US firms are successful.</li> <li>◆ Due to the smaller size of the Toronto industry and its New Media players (in comparison to US counterparts), partnerships are as important as raising investment for R&amp;D.</li> <li>◆ Generally organisations within this block believe that innovation and new ideas are developed within large wealthy companies. However, some believe that innovation and new ideas are developed primarily by smaller companies.</li> </ul>
CHALLENGES, SUCCESSSES	<ul style="list-style-type: none"> <li>◆ Toronto's strength is its artistic talent.</li> <li>◆ Toronto has developed international recognition for its educational programs in New Media.</li> <li>◆ Canada has a higher internet penetration than the US.</li> <li>◆ Toronto's weakness is its low level of entrepreneurial spirit and lack of organisation. Toronto has the largest concentration of New Media firms in Canada; however, they are not organised.</li> <li>◆ In Toronto, there is a considerable amount of contract and fee-for-service work contributing to the instability and tight revenue margins within the industry.</li> <li>◆ Local firms and consumers often buy products and services from US suppliers.</li> </ul>
WEAKNESSES OF THE TORONTO CLUSTER	<ul style="list-style-type: none"> <li>◆ Toronto is recognised internationally for its education and training in New Media; however, the New Media companies are not internationally-recognised.</li> </ul>
OTHER	<ul style="list-style-type: none"> <li>◆ The evolution of the New Media industry in Toronto has some similarities to the evolution of the IT industry in Toronto. In the IT industry, exports were a key part of its growth. Due to the nature and size of the Toronto market, the same situation will apply to the New Media industry. To sustain adequate revenue, the companies must export.</li> </ul>

**Exhibit 6.4****6.5 Validation Results**

Our partner in this project, MultiMediator Strategy Group (MMSG) was contracted to conduct an electronic survey. An email, with a link to the survey, was sent out to 350 New Media companies in the Greater Toronto Area. Responses were received from 52 companies. The purpose of this exercise was to provide quantitative information to complement, and validate, the more qualitative results from the personal interviews.

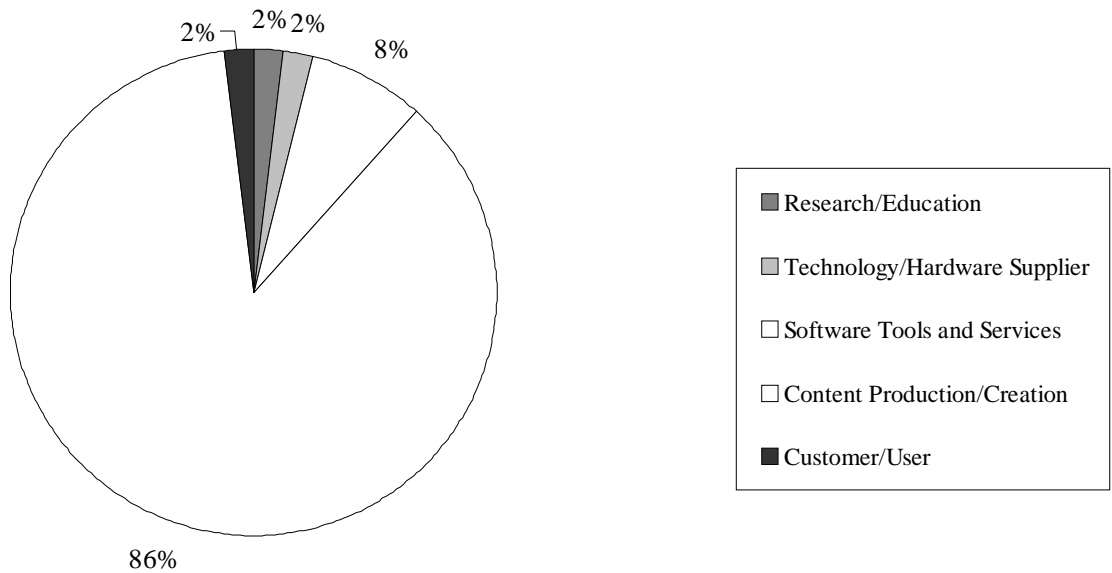
Participants in the survey were asked to answer seven questions:

1. What are the most important customer-groups to your organisation?
2. What is the location of your clients, on a percentage basis?
3. What Human Resource issues are of concern to your organisation?
4. How would you rank the importance of seven drivers of the Toronto New Media industry cluster?
5. How would you rank the importance of seven barriers facing the Toronto New Media industry cluster?
6. How many New Media-specific workers do you employ?
7. How would you classify your organisation?

The majority of respondents were content production/creation organisations (Exhibit 7), with an average of eight New Media-specific employees each (Exhibit 8). As found in the interview process, the majority of clients are located in Canada, and especially in Toronto (Exhibit 9). The complete results are available in tabular form in Appendix B.

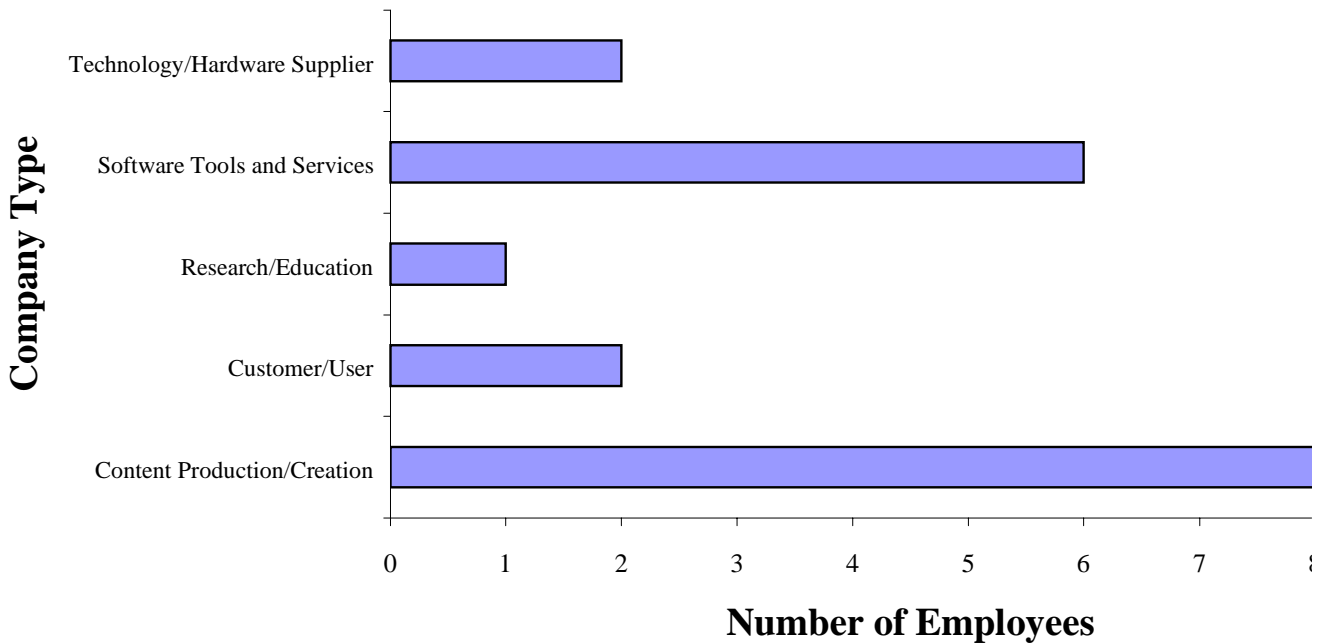
**Exhibit 7**

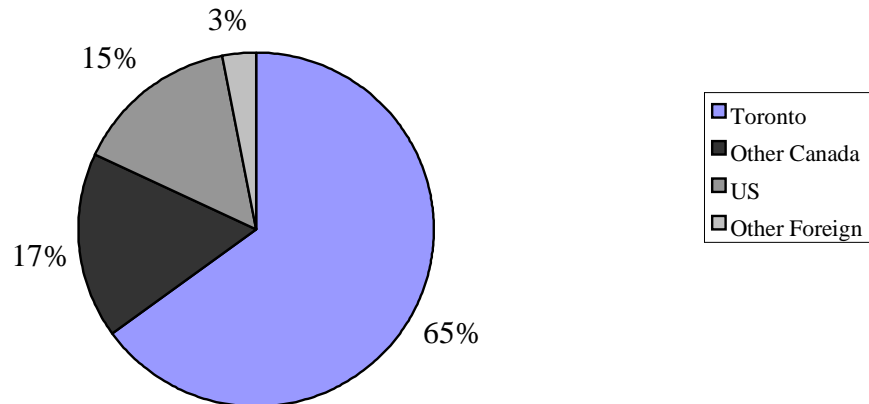
**Company Classification of Respondents**



**Exhibit 8**

**Average Number of New Media Specific Employees**



**Exhibit 9****Geographic Distribution of Clients**

Not surprisingly, different companies have different customer priorities. However, most respondents considered business-to-business and business-to-consumer interactions of highest priority. This highlights the link between e-business and New Media. New Media is connected to e-business wherever there is a need for designed content, likely interactive, or tools to create e-business applications. New Media content is no longer just for entertainment; instead, new applications will improve business communications and strengthen consumer relationships.

Another important consumer group, especially for content production/creation and research/education respondents, was media organisations. This can be attributed to the strong focus on the entertainment industry by many of these firms. For the remaining consumer groups, how they were rated depended heavily on the product base of the respondent and an average is therefore not meaningful.

Interestingly, opinions regarding human resource issues were not consistent with those disclosed by the interviews. For example, although the interviewees rated management skills as the #1 issue to their organisation, only 45% of the e-survey respondents rated this as of concern. The reason for this disparity may be found in the positions of the individuals surveyed; i.e. the interviews were conducted at the upper level of management, while project managers completed the survey.

Loss of workers to the US was also of greater concern to survey respondents than to the interviewees. However, several of the individuals who commented "I hear it's a problem", did not actually know of any employees in their firm who had left for the United States. There is no way to justify the results from the survey without further examination.

There were varying views on the drivers of the Toronto New Media industry cluster. Most respondents rated the opportunity for a creative outlet and the presence of a high growth market as most important. What was not considered important by many was the

opportunity to develop a global business, which although consistent with the interviews, does not bode well for the future of the Toronto cluster. Further examination of the low rating of financial rewards is also merited. Why is this not an important driver to the cluster? What is keeping employees in Toronto – the standard of living, stock options? It is possible that respondents are more concerned with long-term issues and felt that financial rewards dealt only with short-term challenges.

Consistent with the interviews, survey respondents rated availability of private financing and unstable market demand as the two greatest barriers facing the Toronto New Media cluster. As the Canadian government caps public funding, access to private funds is becoming increasingly important. This is especially true for educational facilities, which must replace hardware and software continually to remain up-to-date with the industry.

## 6.6 Focus Group Results

A focus group, drawn of local thought leaders, was used to test our recommendations for encouraging the growth and development of the Toronto New Media cluster.

The main conclusions that emerged were as follows:

1. The Greater Toronto Area lacks a marketing strategy for its New Media cluster. Such a strategy would necessarily include more than one approach. To illustrate, successful business-to-business marketing requires a different approach than business-to-consumer marketing. As well, a marketing strategy for external markets (e.g. offshore) has to be differentiated according to the prospective client; business-to-business, education, and animation/entertainment, etc.
2. Financing is a critical issue. The focus group specifically identified taxation as a limiting factor. This industry, being based on small firms and individual start-ups, is particularly sensitive to individual taxation and capital gains taxes and relies on returns from growth as opposed to returns from profits. Another issue is the difficulty of attracting experienced and skilled entrepreneurs to the New Media cluster, owing to the current level of perceived risk. As well, large Canadian companies are not embracing New Media as an investment opportunity for future growth.

The focus group suggested several approaches to overcoming these barriers:

1. Develop a trade association with a dedicated mandate for marketing the Toronto New Media cluster. Toronto should be presented as an e-business centre within the global economy (one suggestion offered was “e-Toronto”). The marketing strategy would be segmented in terms of specialised niche products and services and market segments, and should also highlight success stories from the GTA.
2. Provide tax-credit-based support to the industry. Canada is a risk-averse culture, which inhibits investment into such infant industries as New Media. Tax credits for product and service development exist and are valuable to New Media organisations,

- but the benefit for individual and company “angels” to invest in the cluster needs to be clarified in this regard.
3. Focus on the strengths of the cluster. The specific priorities and strengths of the cluster, as identified by the focus group, are animation, special effects, post-production editing and development, technical expertise, and educational facilities.
  4. Develop e-business initiatives aimed at strengthening the Toronto cluster. E-business innovation is a particular priority for the Toronto cluster in light of the emerging trends in the global economy as described in section 5. This should be developed on the basis of specific niche products and services.

## 6.7 Dynamics of the Toronto Cluster

### 6.7.1 Linkages

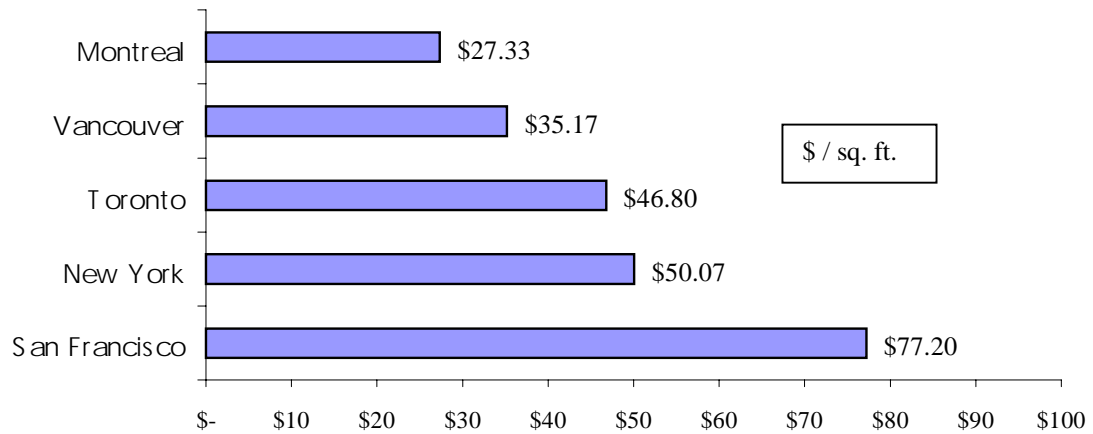
The hallmark of successful clusters is the presence of linkages between firms and supporting organisations. There are opportunities for developing good linkages within the Toronto cluster. For example, using available hardware and software tools, an integrated content creation can be developed by employing local freelance individuals and company-level content-segment producers. The eventual product would build on the differentiated supply levels to provide an optimum blend of creativity, competitive costs, and quality output.

However, the linkages between commercial firms within the cluster were less clear in practice. For example, a major integrated content production company, which in cluster theory means a firm offering major opportunities for creative cluster suppliers, scarcely ever sought content creation from local suppliers. Its role was to provide low-cost, skilled Canadian labour for entertainment and other programming for the firm’s US parent company. The output of this integrated producer was not the culmination of progressive value-added products and services within Toronto. Therefore, according to the theory and criteria of clusters, both the firm itself and the local Toronto cluster are missing mutually advantageous opportunities to add value and profits.

### 6.7.2 Costs and Financing

Toronto is cost competitive compared to other major New Media centres in North America. For example, office space rental costs are cheaper in Canada than in New York and San Francisco (Exhibit 10).



**Exhibit 10 - Comparison of 1998 Office Space Rental Costs**

Toronto is also cost competitive against US New Media centres in terms of salaries and wages, telecommunications, hardware supply, and the cost of other equipment or programs.

Some of the funding available for New Media projects is described in the chart below (Exhibit 11).

**Exhibit 11. Sources of New Media Funding**

Name	Type	Funding Amount	Rules
Telefilm Multimedia Fund	Fund	\$30-million over five years	Available to all Canadian New Media development, production and publishing companies to support high quality, original, interactive Canadian New Media works. Priority given to small and medium-sized companies.
Ontario Interactive Digital Media Small Business Growth Fund	Fund	Up to \$1 million per project	Invested to foster the growth of the digital media industry. Total: \$10 million
Ontario Interactive Digital Media (IDM) Tax Credit	Tax credit	20% refundable	Labour – based tax credit for the creation of original interactive digital media products in Ontario Est. Total: \$10 million
Bell Broadcast and New Media Fund	Fund	Maximum \$250,000  (per project)	Grants up to 50% of project cost. Must be associated with a television program. Total: N/A
Canada Council	Fund	Up to \$35,000  (per project)	Production grants to New Media artists Total: N/A
Canadian Independent Film and Video Fund	Fund	Dev't: up to \$10,000  Proto: up to \$30,000  Prod: up to \$50,000  (per project)	Educational/information New Media projects. Development grants, prototype grants and production grants available Total: N/A
SHAW Children's Programming Initiative – Conway Fund	Fund	Maximum \$30,000  (per project)	Development loans for New Media projects based on children's programming. Up to 25% of the budget. Total: N/A

Exhibit 11 does reveal that there are some creative and positive financing options available in the GTA for New Media. However, on a per project basis, the sums involved

appear to be relatively small. Some of the funding is also limited to tax credits rather than direct support. Finally, the total sums of money available annually from each source are also relatively limited.

These funding sources are relatively new and at least some are not yet fully-operational.

The barriers to entry are low. Only limited capital requirements are needed to start a New Media business. For example, best available estimates suggest that as little as 20 cents in working capital per \$1 of sales may be required for New Media firms. This would parallel service industries in general. However, in high-tech manufacturing such as telecommunications, a common rule of thumb is that \$1 in working capital is required per \$1 of sales. In capital-intensive processing industries such as electric power generation or aluminium smelting and processing, capitalisation is typically \$10 per \$1 of sales. Accordingly, New Media is a very unusual and promising industry because, based on these figures, it offers high productivity in output with relatively low investment capitalisation.

## 6.8 Strengths of Toronto Cluster

Toronto, as the business centre of Canada, is positioned to take advantage of the global nature of the New Media market. Toronto's business community increasingly understands the need to be part of the "Wired World". The investment the Canadian Government is making (through Industry Canada) in creating a "Connected Canada" provides a competitive advantage. Canada ranks number one with 192 communication networks per million population versus the U.S. ratio of 114 per million. Half of Canada's information technology producers are in Ontario and 60% of those are in the Greater Toronto Area. Approximately 75% of Ontario's New Media firms are located in the City of Toronto<sup>11</sup>.

Toronto also offers a high quality of life. Many interviewees indicated that they remain in Toronto because it is cosmopolitan and safe<sup>12</sup>.

Toronto has a highly-educated and skilled workforce. Specifically in New Media, Toronto maintains a talent pool of highly creative and technical people. A broad base of skilled entry-level people exists in Toronto. Most trained individuals maintain and upgrade their technical skills through the availability of appropriate courses and training programs in the GTA. However, there are gaps in certain specific high-tech skills that are in high demand, such as advanced Java skills. Nevertheless, overall Toronto is home to world-class educational facilities in New Media.

A competitive regulatory environment exists, as evidenced by the CRTC's decision not to impose regulations on the Internet at this time. This decision displays regulatory support for the growth of New Media services in Canada. The reason for the decision was the

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<sup>11</sup> Communication and Information Technologies Ontario Survey 1997 and the 1998 DMCG Report

<sup>12</sup> See also: "Why New Media Belongs in Toronto" ([www.city.toronto.on.ca](http://www.city.toronto.on.ca))

concern that any attempt to regulate Canadian New Media might put the industry at a competitive disadvantage in the global marketplace. The CRTC is one of the first regulators in the world to clarify this position<sup>13</sup>. Clear regulatory standards on the issue of New Media puts Toronto in a competitive position globally, as companies now have a clear understanding of the environment in which they must conduct business.

At the global level, e-commerce issues are dealt with through current World Trade Organisation (WTO) agreements. The Declaration on Global Electronic Commerce urged the General Council to establish a comprehensive work programme to examine all trade-related issues relating to global electronic commerce, while also taking into account the economic, financial, and development needs of developing countries.<sup>14</sup> The work programme will involve the relevant WTO bodies. The General Council plans to produce a progress report of the work programme including any recommendations for action, which will be submitted at the third session. Without prejudice to the outcome of the work programme or the rights and obligations of Members under the WTO Agreements, it has been declared that Members will continue their current practice of not imposing customs duties on electronic transmissions. This declaration will also be reviewed at the third session. Work is also being undertaken in other international forums, such as the Organization of Economic Cooperation and Development (OECD), Asia-Pacific Economic Cooperation (APEC), Free Trade Agreement of the Americas (FTAA) and other international organisations.

## 6.9 Weaknesses of Toronto Cluster

The small size of firms within the Toronto cluster remains an issue. Many entrepreneurs and very small operators exist who are either incapable or unwilling to grow their businesses effectively, because these small firms at present have limited access to resources.

The industry still has questionable profitability. As one interviewee stated, “low margins are the squeeze between having to do contract work and the pressure of overheads”. Interviewees also described the Toronto cluster as “unstable”, “volatile”, “skittish”, and “stop-go”.

There is a lack of investment, or at least a perceived lack of investment, in the Toronto cluster due to the disconnection between financial sources and industry recipients. Financiers are perceived to be unwilling to take necessary risks in this sort of industry, or to provide “Smart financing” (mentoring).

Old models of R&D funding criteria do not adequately capture the potential of New Media companies. Traditional “white coat” laboratory R&D does not apply to the majority of New Media projects, particularly in content creation. Over-dependence on

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<sup>13</sup> (May 17<sup>th</sup> News Release)

<sup>14</sup> WTO, WT/I/274, 30 September 1998, *Work Programme on E-Commerce*.

contract-driven services business models also limits overall cluster growth, even if many firms are successful with it.

There is an apparent disconnection between the supply side and demand side of the cluster. Buyers and sellers must develop clear concise communication about what is expected and what is being delivered. When the buyer is looking to convey such subtleties as mood, organisation culture, sense of community and more in their electronic link to their clients, a close relationship needs to be developed. The most effective connection between buyer and seller must at a minimum be collaborative teaming and may need even closer partnerships to properly capture the essence of the need.

There are only a limited number of leading-edge Canadian firms so far in e-business. For example, e-commerce relies on transactions using communications and credit cards for payment. However, credit card use is approximately 50 times greater in the US than in Canada, although the US economy is only ten times larger than Canada's and, according to a senior executive in the Canadian telecommunication equipment sector, the take-up of toll-free call numbers is 53 times greater in the US than in Canada if true, this inevitably limits Canadian-based exploitation of e-business.<sup>15</sup>

Interviews suggest that there is a strong requirement for business skills in the supply component of the cluster. This may be inhibiting the industry's ability to market itself and obtain funding. Interviewees specifically mentioned marketing, financial planning, account management and selling, and project management skills as being in demand, and difficult to find.

Issues of intellectual property remain a concern. Contract work, which remains a mainstay of Toronto's content creators, often limits the right to retain intellectual property. Without ownership of intellectual property, New Media companies have limited opportunities to create profitable business models.

Finally, there is a lack of recognition inside and outside the Toronto cluster of its strengths in New Media. The issue is self-identification, as New Media players neither see Toronto as an important New Media centre, nor see themselves as part of this cluster. Toronto also lacks organisation, marketing and branding of its New Media products and services to develop an international identity and reputation.

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<sup>15</sup> Confidential interview

## 7.0 Benchmarking

### 7.1 Canadian Benchmarks

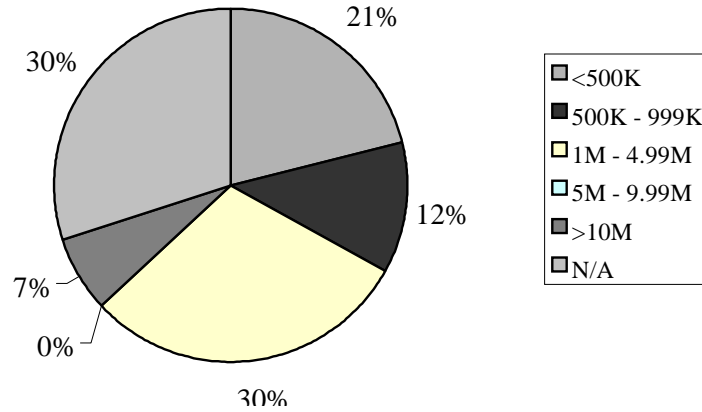
#### 7.1.1 Vancouver, BC

British Columbia has all of the core ingredients required for a thriving New Media industry: digital technology; content development/production and delivery systems, as well as the infrastructure to support it; telecommunications networks; high quality science and creative talent; advanced academic centres and professionals specialising in knowledge-based industries.

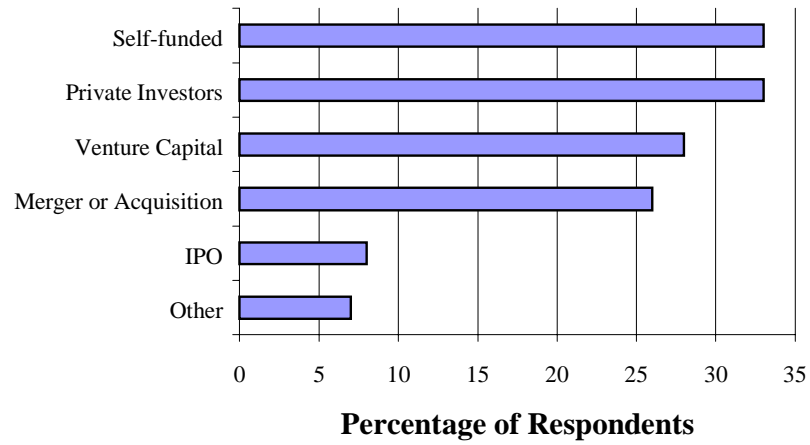
There are an estimated 70 New Media firms in the Vancouver cluster. In a 1999 survey of the Vancouver cluster by PricewaterhouseCoopers LLP, it was determined that of the 42 firms surveyed the total output for 1998 was approximately \$557 million, representing close to 30% growth in revenues from 1997. Assuming a proportional output for the entire Vancouver market, the total output for this cluster was close to \$1 billion in 1998. In other words, Vancouver, with a population size of half of Toronto, is able to generate equivalent revenues from New Media. However, the total revenue figure for Vancouver is significantly skewed by a very small number of large companies. In fact, more than 50% of New Media firms in Vancouver have revenues of less than \$0.5 million (Exhibit 12). Nevertheless, the Vancouver cluster is acknowledged as highly successful, particularly for New Media products such as games.

Most New Media firms in Vancouver are private companies, and capitalisation is an acknowledged issue for growth (Exhibit 13). Of those businesses involved in the PricewaterhouseCoopers survey, 50% will rely on government assistance in the coming year. Exhibit 14 highlights some of the available government funding to this cluster.

**Exhibit 12 - 1998 Revenue for Vancouver  
New Media Cluster**



**Exhibit 13 - Financing Strategies for Next Year  
(year 2000)**

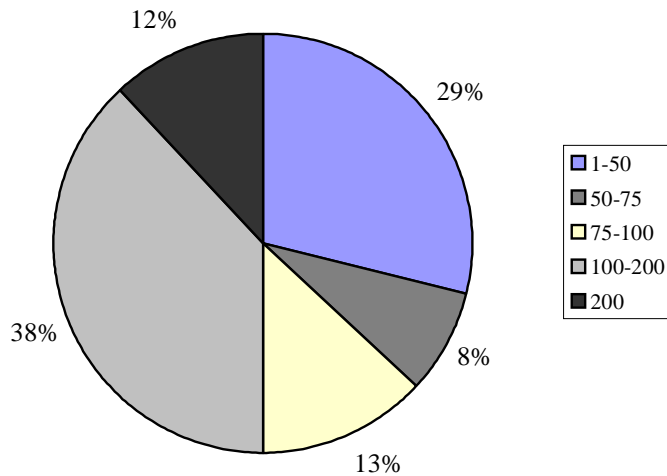


**Exhibit 14. New Media Funds Available in Vancouver**

Name	Type	Amount per project	Rules
BC Tel New Media and Broadcast Fund	Fund	Maximum \$200,000	Loans of 10-45% of budget for BC Producers
BC Arts Council Project Assistance for New Media Artists Program	Fund		Development and production funding for BC New Media artists

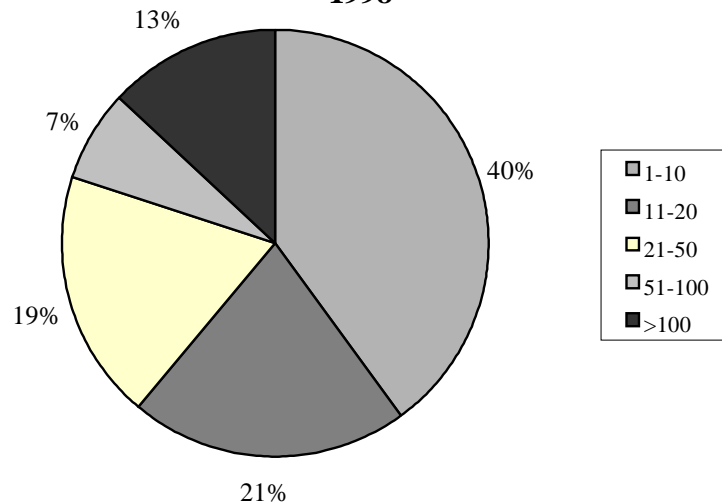
Vancouver New Media firms employ about 3,000 people<sup>16</sup>, with more than 50% of businesses expecting to double their workforce in the next two years (Exhibit 15). Of these firms, 40% employ less than 10 people and only 20% employ more than 50 (Exhibit 16). Of the surveyed companies, 95% of employees have a post-secondary education and 72% earn over \$40,000. These results are in line with our findings in the New Media clusters in the other cities, that is a pattern of high growth and productivity expected in the New Media industry.

**Exhibit 15 - Projected Workforce for Year 2001**



<sup>16</sup> Extrapolating from the PricewaterhouseCoopers survey - 1999.



**Exhibit 16 - Number of Employees at Dec. 31, 1998**

Nonetheless, the general theme is that the Vancouver cluster overall is still typical of New Media clusters in being relatively immature, unproven and generally populated by under-capitalised companies driven by well-educated young people. Vancouver has the talent and core infrastructure to play a key role in the future of Canada's New Media industry, however, the absence of competitive regional policies for strategic growth and the lack of risk capital will likely constrain the rate of overall expansion.

### 7.1.2 Montreal (Quebec)

Montreal is the home for numerous world leaders and innovators in sectors such as cellular telephony, wireless transmission, fibre-optics, software and New Media. Some of the world leaders of information technologies and New Media include CAE Electronics, CogniCase, Discreet Logic, Matrox, Softimage, Speedware and Ubi Soft. A significant proportion of the Canadian information technology industry is concentrated in the Montreal area, which according to cluster theory provides a solid foundation for the growth of the industry.

There are 5,000 businesses and 400,000 employees in Quebec for the whole field of information technology, with annual revenues of \$20 billion for 1998<sup>17</sup>. The Quebec New Media industry, for the most part located in Montreal, is made up of 600 companies with an estimated 4,300 employees. The New Media industry in Quebec has grown at approximately 20% annually between 1990 and 1996. As an example, although there were less than ten New Media production companies in 1994, Quebec was home to approximately 150 production houses three years later. The emergence of this cluster is also reflected in the average age of these companies, which in 1997 was little more than

<sup>17</sup> Study by PricewaterhouseCoopers for TechnoCompetences - 1999

seven years. More than half of these companies has less than 10 employees and 53% had revenues of less than \$500,000 in 1997.

There are several reasons why Montreal has such a solid foundation to support the development of the New Media industry.

- ♦ The New Media industry has become a high priority for the Quebec provincial government. The government has implemented a number of policy and program actions to support the growth of this sector. Some of the initiatives include direct investment from the public sector of several million dollars annually, the extremely liberal tax credit regime for R&D, that can include New Media firms, and the acknowledged position of New Media as one of three “high priority” industries in Quebec. Exhibit 17 highlights some of the available government funding to this cluster.

#### Exhibit 17. New Media Funding Available in Montreal

Name	Type	Amount	Rules
CESAM Multimedia Consortium Multi Experimentation Fund	Fund	Maximum \$50,000 (per project)	Grants up to 49% of start-up costs to develop New Media projects
Fond de l' autoroute de l' information (Information Highway Fund)	Fund	Maximum \$550,000 (per project)	Grants up to 50-75% of eligible costs for the creation of French-language web sites
SODEC – Programme d' aide a la production de titres multimedia	Fund	Up to 25% of eligible project costs	Investments for Quebec, French-language New Media projects, excluding stand-alone web sites
CDTI	Tax Credit	40%	Tax credit for specialised equipment purchases during the first three years
Quebec Multimedia Production Tax Credit	Tax Credit	40-50%	Tax credits for eligible labour

- ♦ Quality teaching establishments which ensure the development of a skilled labour force. Montreal has a diversified and high-quality education network able to work successfully in the fields of research and teaching. Moreover, many educational establishments offer training programs concentrating on the New Media sector to better meet the particular needs of the industry. In addition to teaching establishments, Montreal has developed several research centres and specialised agencies, including the Cite du Multimedia.

- ♦ Knowledgeable work force. Montreal has know-how in market niches with high potential, notably system integration, person-machine interfaces, voice recognition, multilingualism, imaging technologies and geomatics.
- ♦ A telecommunication and cable-distribution network at the tip of technology. The telecommunication and cable-distribution industries of Quebec offers network and communication services among the most powerful in the world. These same companies are positioning themselves as global competitors by massively investing in the technical infrastructures of their network. As an example, Bell, Teleglobe, Cogeco, Videotron and QuebecTel have in the past two years invested \$70 million dollars for fibre-optics and optical-electric components and another \$120 million dollars for switches. All these investments increase the capacity of the network to move New Media products.
- ♦ An attractive environment. Quebec, and in particular Montreal, possesses various assets to stimulate the development of industry, such as a lower cost of living and a quality of life higher than many other great metropolitan areas of the world.

## 7.2 American Benchmarks

### 7.2.1 New York

The New Media industry in New York and the tri-state area can only be described as mature, vibrant and an economic boon to the city. The industry had approximately Cdn \$8.5 billion total output in 1996/1997, split 50/50 between the City and the surrounding “tri-State” area<sup>18</sup>. Revenue growth is approximately 25% annually and employment growth is also close to 25% annually. With many of the largest companies in the world headquartered in New York, the New Media cluster in Manhattan flourished early and attributes it’s genesis to the concentration of advertising and publishing firms there. Today, advertising and publishing continue to contribute strongly to the New Media cluster with additional growth opportunities coming from the financial district and the area around Wall Street. Technology, particularly the Internet, is driving major new opportunities to connect clients directly with their financial institutions, allowing them to conduct business in totally new ways, and while New Media represents a supplementary component of this opportunity, it promises to fuel substantial growth in this cluster.

New Media content constitutes the critical component of the industry in New York. Fully 60-65% of the revenue generated in the New Media industry comes from content design and development.

### 7.2.1 Strengths of the Cluster

- ♦ Location

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<sup>18</sup> PricewaterhouseCoopers New York New Media Study - 1999

New Yorkers love to describe their city as being the “centre of the universe” as it relates to headquarter sites, financial markets, international business and government connections, communications, visibility in the business community and more. The location of the New Media cluster serving this natural and plentiful supply is by far the paramount driver.

- ◆ The New York New Media Association (NYNMA)

The importance of this vital component of the cluster was described in some detail by most of the interviewees. The New York New Media Association has become a leading, successful proponent for the cluster, supported by both the private and public sectors, and incorporating the maximum possible range of functions among its members, including benefits programs, accounting and law. The charter members and five original sponsors were and still are highly-active spokespeople for the cluster and enthusiastically support the varied programs. Collectively, they have reportedly spent uncountable, but tireless hours setting policy, increasing membership, developing real value-add programs and lobbying to ensure the business and infrastructure communities including policy makers, know that NYNMA is the overall co-ordinating body for the cluster. The NYNMA now has 4500 members, 15 sponsors and list of active programs that when viewed from a member’s perspective, speak to all of the barriers to growth and prosperity in this industry including funding, education, resourcing, marketing opportunities, business support and infrastructure challenges like wired space. Public/private partnerships are vital to the growth and development of the industry and for the availability of ready capital. NYNMA prides itself on organising and nurturing these relationships.

Another important initiative is the New York New Media Industry Survey done in 1996, updated in 1997 and being updated again this year. The real value of this survey according to the President of NYNMA is to maintain a careful watch on the economic value that this cluster contributes to the city and to provide vital information for the effective promotion of the cluster.

One of the most interesting facts that we learned from our interviews, was the high degree of support and active involvement by the association members. It is not unusual to see 500-plus members out to a meeting and the NYNMA trade show recorded 3000 people in attendance. Support at these levels means a very strong collective voice for this cluster.

- ◆ Financing

One of our interviewees described the financing for this industry as a “wall of money”. Financing and venture capital have not always been abundant in New York; however, the maturity of the industry, the market and business savvy of the entrepreneurs in the New Media cluster and the very visible success of many of the growth companies in this cluster have fuelled the availability of substantial capital with the appropriate risk/reward levels for the industry.

The **Angel Investors Program** provides an opportunity for financing of those firms which are generally not candidates for venture financing due to the size of the financing they are pursuing and/or their stage of development (this program is only for companies that are both in the New Media industry and in the New York tri-state area). The New York New Media Association identified the need for such a group and took the lead in organizing the program. NYNMA's role is to provide administrative support to the program, to serve as a conduit of information flows between entrepreneurs and investors, and to create awareness of the program among entrepreneurs and investors. NYNMA will have no role in investment decisions and will not make any investment recommendations either explicitly or implicitly.

The Program aims to provide financing in the amount of \$100,000-\$1,000,000 per project. Firms will be selected to present to the investor group by a committee of investors that are active in the New Media sector. The committee will select those firms that it believes have outstanding proposals and offer investors an exceptional opportunity.

Among the factors that will be considered by the committee are:

- ◆ the strength of the management team;
- ◆ the size, growth prospects and competitive dynamics of the market being addressed; and,
- ◆ the quality of the business plan and business model contained therein.

**NYC Discovery Fund** provides venture capital to technology firms in return for a share in the eventual profits. The focus of the Fund is on technology and new-media companies. The Fund began with a total of \$75 million in capital: \$45 million from the federal Small Business Administration and \$30 million from other investors, including \$10 million from the Economic Development Corp. In total, the Fund has invested \$48.3 million in 11 companies. The companies in which the Fund owns equity employ more than 500 people in New York City and continue to grow.

- ◆ Access to New Media Talent

The image and credibility of the New Media industry in New York is a natural drawing card for talented people who want to work in what is arguably the most dynamic New Media environment in North America. Hence, one of the key attributes of this cluster is the availability of editorial and artistic talent. In addition, the NYNMA has established an education special interest group that

manages an internship program that is funded through grants from private sources and industry. This program will ensure a continuing flow of young talent to the cluster.

### 7.2.1 Threats to the Cluster

- ◆ Cost of Living/Quality of Life

The largest barrier to growth of the cluster is the quality of life, cost of living and cost to do business. While the cost of office space appears reasonable compared to other large US cities, the cost of personal space is very high and can be a deterrent.

- ◆ Technology Infrastructure

The age and density of the downtown core in Manhattan presents particular challenges for increasing bandwidth to the buildings in this area. One successful program to alleviate some of the infrastructure challenges was to re-wire an area around Wall St. that in the early 90's had a vacancy rate approaching 50%. The program provided tax incentives that ultimately reduced the cost per square foot to \$15. The cost to wire the space was amortised in the rent and created affordable, flexible, wired space. This has attracted technology and New Media companies.

### 7.2.2 San Francisco

The San Francisco Bay Area is widely regarded as the place where New Media began. The industry began there as a provider of entertainment software delivered on CD-ROM, but has re-invented itself into something that seems far more sustainable. The cluster remains a world-wide focal point of the industry. San Francisco is uniquely situated to take advantage of the technical convergence of computers and communications.

Technology constitutes the most critical component of the industry. The New Media companies in San Francisco produce some content, but predominantly make tools.

The City is home to well over 400 New Media firms, which are mainly located in the "Gulch" area that stretches from South of Market to Potrero Hill. The clustering of the New Media firms within a defined area has created an environment where content development and technical innovation is fostered.

This industry has experienced phenomenal growth. It has had more than a 50% increase in jobs in the last 5 years. In 1998, more than 400 companies employed 47,250 people.<sup>19</sup>

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<sup>19</sup> Coopers & Lybrand, San Francisco New Media Study.

### 7.2.3 Strengths of the Cluster

- ◆ Proximity to Silicon Valley

The proximity to Silicon Valley is an advantage for the San Francisco New Media industry. There is much collaboration between the Valley and the City. The synergies between the New Media cluster in the City and the high tech cluster in the Valley are vital to the success of this cluster.

The San Francisco and Silicon Valley clusters are in a sense extensions of each other. Talent can easily move from one to the other. Partnerships also exist between companies in San Francisco and ones in the Valley.

One of our interviewees stated that the “Silicon Valley is absolutely important for the entire region. The region is a poster child for Michael Porter. The San Francisco industry exists because of the Silicon Valley.”

- ◆ San Francisco offers good quality of life

San Francisco is an extremely culturally-diverse city. People are not only attracted to the urban experience of the City, but also the outdoors experience offered by the proximity to the mountains and the ocean. There is also a good public transportation system. Some employees from the Silicon Valley come to San Francisco because they prefer the City to the suburbs.

- ◆ Entrepreneurial attitude in Bay Area

The Bay area has always attracted people who are entrepreneurial. The area embraces people who are different. This reality has characterised the area since the Gold Rush. The current success with New Media in San Francisco has brought about a gold rush of information investment.

- ◆ Highly-developed communication networks

The city has demonstrated its commitment to the New Media industry by building extensive relationship networks in both the private and public sectors.

- ◆ Venture capital is abundant

Many companies who received venture capital and angel financing are San Francisco-based. The ability to receive financing has been key to the success of these firms.

- ◆ Educational institutes are strong

The San Francisco Bay Area is home to some of the best educational institutions in the world. The venerable Stanford University and University of California at Berkeley constitute excellent recruiting grounds for good talent as do a number of other institutions in the area, including San Francisco State, Academy of Art College, and California College of Arts and Crafts. One of our interviewees stated “Stanford engineers created the Silicon Valley.” The importance of educational and research networks cannot be underestimated. They have acted and continue to act as drivers for the development of the Silicon Valley and perform the same function for the New Media industry in San Francisco. Courses are offered at business schools in New Media. The fact that these institutions are integrating New Media into the curriculum demonstrates that this is an increasingly important industry. Once people finish school they stay in the area because of the networks they have created. As stated by one interviewee, “In this industry, the networks give you intelligence as they are the main source of transferring knowledge.”

- ◆ Local markets

San Francisco provides an important market for local companies. The strength of the financial industry and tourism in the City create a number of ready-made consumers for New Media products.

- ◆ Supporting industry is in San Francisco

The supporting industries are in San Francisco and therefore encourage the development of the New Media industry. Accompanying New Media development is the emergence of lawyers and accountants with skill sets in this area.

- ◆ There is a high degree of “Coopetition”

One interviewee stated that “In San Francisco coopetition is not a theory, but a practice.” There is a high degree of coopetition in this cluster. There is a high degree of exchange between businesses. New Media workers gather in the cafes and restaurants around South Park and discuss business.

- ◆ Incentives are appropriately targeted

**San Francisco Partnership**, which is a privately-funded non-profit organisation, has played a role in fostering this industry. This organisation initiated the expansion of two tax credit programs for businesses, including the Targeted Employment Area, a valuable state hiring tax credit for businesses, located in an



Enterprise Zone, and the extension of the New Jobs Tax Credit from two years to four.<sup>20</sup>

Sega of America moved its headquarters, Sega Soft Networks and Sega Entertainment to the “Gulch.” Sega’s relocation brought up to 800 jobs and many other opportunities to the San Francisco area. The Partnership report states:

A team from the San Francisco Partnership, the Mayor’s Office of Economic Development and the Treasurer’s Office was instrumental in landing the Sega deal. The Partnership helped Sega with tax code interpretations and application of the New Jobs Tax Credit and State Enterprise Zone incentives.<sup>21</sup>

The Partnership also established the San Francisco **New Media Campus**, a 12,000 square-foot building located at 123 Townsend devoted to the New Media industry with an incubator, resource centre and wired offices. “The campus serves as an opportunity for companies involved in New Media, information technology and software development to concentrate in one central location with affordable rent, sophisticated telecommunications and business development services.” The campus will house:

- ♦ A 20,000-square-foot Women’s Technology Cluster that will accommodate 20 to 25 women-owned information technology start-ups.
- ♦ Epicentre, a business-to-business demonstration centre that will allow the industry to show off its latest innovations and provide New Media-oriented meeting space not currently available in San Francisco.
- ♦ Office space for start-ups and more mature companies.<sup>22</sup>

The intent of this Campus is to create an environment of “coopetition”. The Campus should encourage more positive interaction among individuals in the industry. There is already a fair amount of coopetition taking place in this cluster; however, the Campus should encourage it even further.

**MDG.org**, the interactive media trade association, is a non-profit membership-based organisation that nurtures and stimulates business development within San Francisco Bay Area’s interactive media industry through networking, promotion, education and market development. The mainstay of MDG.org’s mission is to bring prospective partners together, and provide an array of projects, programs and services that meet the business development needs of its interactive media member companies. Seventy per cent of MDG.org’s membership are Internet companies, online design and strategy firms, infrastructure companies, and offline

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<sup>20</sup> 1999 Investor’s Update, The San Francisco Partnership, Growing Business and Jobs

<sup>21</sup> Ibid

<sup>22</sup> proposed at time of benchmarking

design and development firms. Twenty-five percent provide professional services, and the remaining 5% represent MDG.org's strategic partners in industry, government, education, and affiliate organisations.

MDG.org has a database that provides business-to-business matching opportunities and referrals. It also holds regular seminars, workshops, and special events on a broad range of industry and business development issues.

The effectiveness of this organisation may be variable. It functions well as a provider of basic education and networking; however, some interviewees indicated that it does not support the needs of all business interests.

#### 7.2.4 Threats to the Cluster

- ◆ Volatility

Four to five years ago the industry was almost entirely CD-ROM companies. There is rapid turn-over – 65% of those CD-ROM companies who were in business in 1993-1994 are either not around, have merged or have entirely changed their business model. Now there are more companies that do kiosks, animated commercials and Internet products. The focus is changing again. More and more companies are focusing on e-commerce. At first the focus in e-commerce was business-to-consumer, but it is increasingly business-to-business. Despite the increase in breadth and depth, the cluster remains very volatile. A number of small companies continue to come and go. Larger companies are absorbing many smaller companies. It is increasingly difficult for start-ups to remain in San Francisco because of the high cost. The barriers for entry for new start-ups are increasing: it is increasingly difficult to have new ideas and be competitive.

- ◆ Cost

San Francisco is an expensive place to do business. Real estate costs are high. It also is an expensive place to live.

- ◆ Labour Shortage

It is very difficult to attract and retain highly-skilled technical workers. This problem is especially difficult in San Francisco because it is competing with the Silicon Valley for this high-priced talent. One of our interviewees stated “the Silicon Valley has been a distraction from a talent perspective.”

### 7.3 Benchmarking: A Comparison

San Francisco and New York are illustrations of true clusters with educational institutions, local markets, readily-available skilled and experienced labour, and supporting industries in place. There are two important differences between these cities. First, San Francisco is a tool and products-based cluster, whereas New York is a content-based cluster. Second, New York companies rely on public/private partnerships, whereas San Francisco is experiencing an “Information Age Investment Gold Rush” (i.e. private funding)

Vancouver resembles San Francisco in that the bulk of the output revenues for New Media are derived from product sales. For example, Vancouver’s successful export of games parallels San Francisco’s tools and games exports. Montreal appears to be a hybrid: it has both product development and content creation services.

While there is some variation in these benchmarks among leading North American locations, San Francisco, New York, and Vancouver provide at least \$500 million output per 1,000,000 urban area population (Exhibit 18). (Comparable figures were not available for Montreal.)

**Exhibit 18. Approximate Revenues Generated from New Media (1998)**

CITY	TOTAL AREA POP’N	NEW MEDIA REVENUE (Cdn\$)	APPROX. N.M. REVENUES PER MILLION POP’N	COMMENTARY
San Francisco	3,000,000	\$10 billion (US \$7 billion)	\$3 billion	Global leader in New Media
New York	15,000,000 (tri-state area)	\$8.0 billion (1997) (US \$5.7 billion)	\$500 million	1996-97 figures. Would likely be 25-30% higher in 1999, i.e. approx. \$700 million/million pop’n
Vancouver	1,000,000	\$900 million to \$1 billion	\$900 million	Extrapolated from \$557 million survey figure. May be somewhat optimistic.
Toronto	4,500,000	\$1 billion	\$250 million	Significantly less than other three cities.

Unlike the other clusters we examined, Toronto has less than \$250 million in New Media revenues per million population, or less than half of New York or even Vancouver, and only about 10% of San Francisco.

The research in this study, and PricewaterhouseCoopers' experience with New Media, suggests that the Toronto cluster is smaller than it should be. Toronto, as the corporate headquarters for the country, fulfil much the same role within Canada as New York does in the United States. One would then expect Toronto to contain the widest range of services and offer the best opportunities to gain economies of scale.

Federal government policy generally supports New Media; for example "Connected Canada" featured the expansion of the digital infrastructure throughout the country. Canada claims to be the most digitally-connected country in the world, meaning development and encouragement of New Media capabilities – which are the logical exploiters of these connections – is harmonious with federal priorities. Industry Canada has also recently established an "e-business" directorate, dedicated to encouraging all aspects of information technology, including New Media.

The provincial government also has initiatives underway for New Media, most notably the recently-developed Tax Credit regime. The City of Toronto is also in the forefront of digital connectivity, being at least 99% wired. The City of Toronto itself has developed initiatives on New Media, for example, the "New Media Village" which offers virtually-unlimited bandwidth capacity.

Nevertheless an issue for Toronto is the significance of New Media to the growth and development of the economy. If New Media is vital to the digital age, then Toronto represents Canada's best opportunity to succeed, and should be developing at a comparable rate to other leading-edge New Media clusters. At present it is not.

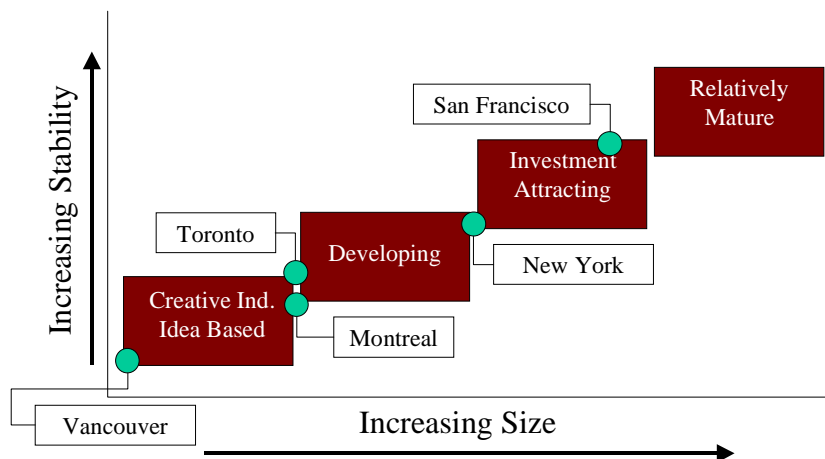
The benchmark comparisons demonstrate a pattern in terms of the evolution of firms within a cluster (Exhibit 19). At any given time, a cluster will have a mix of firms at different stages of evolution. Obviously, the more "relatively mature" firms within a cluster, the more stable the cluster. None of the benchmark clusters appear to have a majority of firms in this stage yet. Even San Francisco, admittedly the most developed cluster in our benchmarking exercise, has the highest proportion of firms in the "investment-attracting" stage, as evidenced by the large flow of venture capital entering this cluster. The anecdotal evidence from field research and the results from relevant PwC surveys suggest that sustainable profitability is an issue to all New Media clusters.

**Exhibit 19. Evolution of Firms**

STAGE	SIZE OF FIRM	PROFITABLE ?	FINANCING	STABLE GROWTH
1. Creative Individual/Idea Based	Very small, 1-5 persons	No	Private sources, Family, "Angels"	No
2. Developing	Small, 3-10 persons	No	"Angels", Private sources	Maybe
3. Investment-Attracting	Small-to-medium 10-50	Usually Not Yet	Venture Capital (VC), some Initial Public Offerings (IPOs)	Yes
4. Relatively Mature	Medium-to-large 50+	Yes	IPO, VC	Yes

The diagram below shows the evolution of firms within the clusters under investigation in this study.

**Evolution of Firms**



Toronto, with relatively more firms at stages 1 and 2, is likely to undergo a consolidation phase that will lead to the maturation of the industry. The pace of this maturation, which is a necessary pre-condition for sustainable profitability, can not be predicted, as it is

dependent on financing. Toronto should be demonstrating comparable levels of accessible financing to those in New York, San Francisco, Vancouver and Montreal, yet, at present, it does not.<sup>23</sup>

## 7.4 An Important Historical Analogy?

A comparison with the machinery and equipment sector, a generation ago, is very revealing and highlights how serious this apparent digital content gap will become if left unaddressed.

For physical machinery, such as materials handling, mechanical power transfer, plastics and moulds, machine tools, metal rolling and welding, even sawmill and pulp and paper equipment, Canada has traditionally run trade deficits in virtually every sub-sector.

This is serious because the machinery and equipment sector is typically a leading indicator. As the business cycle rebounds from a downturn, purchases of new machinery tend to lead the growth of the economy overall. But in Canada's case, the machinery and equipment tends to be imported, causing deterioration in Canada's balance of payments and putting downward pressure on the exchange rate. This makes the imported machinery even more expensive. This lack of a domestic sector has long been recognised as a structural weakness in the Canadian economy.

For example, Canada is virtually alone among G-7 countries to not have a turn-key factory capability. Canada has some limited strengths in specific machinery, such as injection-moulding equipment, but lacks a "total systems" capability. Moreover, the Canadian machinery and equipment sector has low R&D spending, and a negative trade balance even for such Canadian export sectors as forest product machinery and equipment.

Is Canadian New Media pointing the same way? If New Media truly is the "machinery and equipment" of digital business, then the emerging digital content gap in Toronto is even more serious than the broad direct and indirect economic aggregates indicate. The Toronto (and even Canadian) economy will not be able to participate in the digital transformation that is emerging as successfully as it ought to be able to do to its own advantage.

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<sup>23</sup> For more comparative data please see Appendix D.

## 8.0 Conclusions

We have summarised our conclusions in relation to the taxonomy (see Exhibit 1) developed to analyse the Toronto New Media cluster.

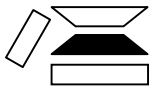


### 8.1 Markets Block

Toronto's markets for the New Media cluster include telecommunications, banking, the public sector, and manufacturing. There is a large market potential as many of these organisations recognise the significance of New Media to their future commercial activities. Unfortunately, while the abilities of the New Media cluster are recognised, few of these companies are using local sources enough.

A digital content gap is emerging. If the GTA, with a total population of approximately 4.5 million, met the benchmark standards of Vancouver or New York then the total New Media output would be at least twice current estimates. This results in a direct gap of at least \$1.0 billion annually. There is also an indirect and induced economic loss of at least another \$1.0 billion, amounting to a total lost output of \$2.0 billion or more annually.

At approximately \$100,000 annual output per employee, this digital content gap means a direct loss of over 10,000 high potential jobs in the GTA. The loss from indirect and induced sources, such as supporting services and manufacturing, could be as high as 20,000, amounting to a total potential job loss of 30,000. Depending upon economic assumptions and trends, the total potential loss could be even higher.



### 8.2 Commercial Supply Block

The quality of the output of individual organisations is good. There is a balanced mix of products and services, such as animation, web sites, emerging e-commerce programs, etc. However, the cluster lacks profile in the market block.

The barriers to entry are low; therefore, the cluster can and should continue to develop creative individuals and firms.

The commercial supply block continues to be in the formative stage. Organisations will gain experience with delivering fee for service solutions rather than products or services. In doing so, they will also gain needed experience in writing business plans, developing marketing strategies, completing sales, and developing broad product spectrums.

The commercial supply block is currently very dependent on the local market. Estimates suggest that 65% of their business is within the GTA. One reason for this is that these firms are small and believe they cannot mount credible marketing campaigns in foreign markets.

Intellectual property is also an issue. Project-based sales usually do not allow for commercial firms to protect their intellectual property. Firms must better understand the importance of protecting intellectual property and create contracts that enable them to own their intellectual assets.

The commercial supply block also suffers from fragmentation. This limits the ability of the cluster to develop more complex value-added products and to market itself globally. While the industry has many positive attributes, it is still an infant industry. The “coopetition” that is manifested in San Francisco and even New York, has yet to manifest itself in Toronto.



### 8.3 Infrastructure Block

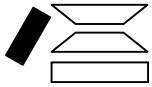
Toronto’s physical infrastructure is world-class. A full spectrum of business support services, including finance and trade associations, is available.

With the number of associations and sub-groups speaking on behalf of the New Media cluster, it is difficult to achieve and ensure a unified voice. Therefore, organisations in the commercial supply block may not be benefiting from the available infrastructure. In order to lead and co-ordinate the efforts of all, and to prevent duplication of marketing support to the New Media, reduce redundancies, and provide a springboard for new initiatives, an overall coordinating body should be identified.

A full range of financing options is available from the Toronto infrastructure; however, this funding is either inadequate or is not targeted to New Media firms. There is particular weakness in the accessibility or availability of “angel” financing, “smart” venture capital, and “early day” or start-up financing.

A financing gap also appears to be emerging within the cluster. If the figure for the digital content output gap of \$1 billion is accepted, then closing the financing gap will require significant new investments. If the Toronto New Media cluster wishes to enhance the output of products rather than services, a still higher rate of capital investment than the present average, is required. The limitation on capital financing is a major issue for the infrastructure block to address.





## 8.4 Support Block

There are several positive elements, in terms of policy development, for New Media, among all these levels of government - federal, provincial, and municipal – as evidenced by “Connected Canada”, Telefilm’s new media program, the Ontario Interactive Digital Media Tax Credits, and the Toronto New Media Village.

The regulatory environment is positive – the CRTC has said that it will not regulate the Internet; e-commerce is a priority at the WTO at present.

Toronto-area education is considered world class, at both the college and university levels. Examples include the University of Toronto, York University, Sheridan College, The Bell Centre for Creative Communications at Centennial College, and others. Sheridan College receives 30 applicants, and Centennial College 13 applicants, for each seat in their New Media programs. Sheridan has embarked on a major expansion of the Oakville facilities, to accommodate growth and R&D. It will be important for these world-class educational institutions to keep pace with the growth of the cluster. As New Media programs require relatively capital-intensive training, education budgets will need to be increased.

## 9.0 Action Items

We have listed the recommended action items in four broad categories: synergy and linkages; communications, marketing and branding; financing; and skills development.

### 9.1 Synergy and Linkages

We recommend building positive relationships between the organisations and firms within the cluster through specific projects that will link these parties together.

This must involve both the private and public sectors initially.

For example, a government e-procurement project would be sufficiently large and complex, that it could be the basis for a development process to allow cooperation among suppliers. Such projects would connect New Media suppliers and potential customers in a positive, value-added chain. These projects must be specific in terms of objectives and goals; a solely educational approach is not sufficient.

### 9.2 Communications, Marketing and Branding

We recommend developing a strategy for raising the awareness and profile of the capabilities of the Toronto New Media cluster.

A trade association is required to provide overall coordination and a unified voice for the cluster. SMART Toronto currently has a mandate for both Technology and New Media in Toronto. In carrying out this role, SMART Toronto has demonstrated an ability to act as a coordinating body for the broad set of initiatives supporting both these mandates and has developed strong relationships with many of the stakeholders. SMART Toronto is well-positioned to be tasked with the overall coordination mandate.

The marketing component of this new mandate would work in two ways: to enhance recognition of Toronto's cluster with potential markets, and to enhance self-identification within the cluster.

As well, this marketing function would benefit from a specific marketing theme, such as the "e-Toronto" concept suggested previously by the focus group. This initiative could include marketing materials that build on and advertise Toronto as a connected city ideal for New Media development. It would also be responsible for communicating with target markets.

A strong communications, marketing and branding strategy requires a clear understanding of the changing dynamics of the cluster. We recommend that this study be updated annually for the next two years and regularly beyond that with a frequency based on prevailing market conditions. The focus should be on the following:

- cluster size in terms of number of firms,
- type of firm and their contribution to the cluster,
- typical measures of growth in the cluster (revenues, number of employees, etc),
- cluster dynamics (interaction between companies in the cluster),
- how the cluster has changed from one study and the next (delta change), and
- feedback on specific programs and initiatives.

### 9.3 Financing

We believe significant new financing should be funnelled into the Toronto New Media cluster.

The City of Toronto with private sector partners should take leadership roles in facilitating the provision of financing and, to find financing from all levels of Government. Initially the support from the public sector will encourage investment from the private sector in this relatively high-risk, “infant industry” environment.

We recommend a specific program to help redirect the flow of “angel” financing to the New Media cluster. The first action step is to conduct a detailed review of the New York New Media Association’s Angel Funding Program with the intent of establishing a similar program in Toronto.

Similarly, we recommend a specific program intended to redirect more traditional financing to the New Media Cluster. This requires the co-ordination and administration of a program to bring lenders and borrowers together, to educate both parties to understand the requirements of each other and finally to consult with the entrepreneur regarding business plan development and planning. These two programs aimed at bringing financing and the Toronto New Media entrepreneurs together, will require public sector support in the form of seed funding.

There is a lack of angel financing for proof of concept/beta testing. “Angel” funders need to be excited about the potential of this industry and must be willing to take on risk. The newly-mandated co-ordinating body and the industry itself should co-ordinate to instil this excitement.

### 9.4 Skill Development

In order for the cluster to develop the critical business skills that it needs, action should be taken on three fronts

- The local colleges, private training companies and universities should consider increasing New Media-specific business components to their curricula. Additionally, this group should continue to review their entrance selection commensurate with the changing needs of the evolving cluster.

- This education group should, along with the industry it serves, develop partnerships for the express purpose of educating and training New Media professionals in business skills.
- Consideration should be given to incentives to assist all three parties, Educators, New Media businesses, and employees, in developing skills in the business of New Media.

## APPENDICES

## Appendix A – Census of New Media Firms

The census of New Media firms generated for this study is as follows.

### New Media Integrated Content Productions (Level 1) – 59 companies

Type of Production	Company Name
Feature Films	<ul style="list-style-type: none"> <li>• Alliance-Atlantis</li> <li>• Viacom</li> <li>• Ego Film Arts</li> </ul>
Broadcasting (Radio TV)	<ul style="list-style-type: none"> <li>• Baton</li> <li>• Canwest</li> <li>• Chum-City</li> <li>• Alliance-Atlantis Broadcasting</li> <li>• Nelvana</li> <li>• TVOntario</li> <li>• CTV Network</li> <li>• Communications Nova Scotia</li> </ul>
On-Line Broadcasting (RadioTV)	<ul style="list-style-type: none"> <li>• Virtually Canadian</li> <li>• Groove Society</li> </ul>
Book Publishing	<ul style="list-style-type: none"> <li>• McGraw-Hill Ryerson</li> <li>• General Stoddart</li> <li>• McLelland &amp; Stewart</li> <li>• Harlequin Enterprises</li> </ul>
Newspaper & Magazine publishing	<ul style="list-style-type: none"> <li>• Toronto Star</li> <li>• Canoe (Sun Media)</li> <li>• Maclean Hunter</li> <li>• Marketing Magazine</li> </ul>
New Media Publishing	<ul style="list-style-type: none"> <li>• H+a</li> <li>• Activus Corporation</li> </ul>

Type of Production	Company Name
Game Publishing	<ul style="list-style-type: none"> <li>• Arc media</li> <li>• Dreamcatcher Interactive</li> </ul>
Location-Based Entertainment	<ul style="list-style-type: none"> <li>• NTN Interactive Network</li> <li>• Playdium Entertainment</li> <li>• Vivid Group</li> </ul>
On-Line Services	<ul style="list-style-type: none"> <li>• Sympatico</li> <li>• AOL Canada</li> <li>• Rogers @ Home</li> </ul>
Information Services – Directories	<ul style="list-style-type: none"> <li>• Alta Vista Canada</li> <li>• TUCOWS Interactive</li> <li>• City Search</li> <li>• Canada One</li> <li>• Canada.com</li> <li>• Tele-Direct</li> <li>• E-library</li> <li>• Globe Information</li> </ul>
Government Services	<ul style="list-style-type: none"> <li>• Ministry of Transportation</li> </ul>
Courseware products	<ul style="list-style-type: none"> <li>• Sheridan College</li> <li>• York University</li> <li>• Interactive Image Technologies Ltd.</li> <li>• Interlynx</li> </ul>
Advertising	<ul style="list-style-type: none"> <li>• Modum Media Poppe Tyson</li> <li>• Initiative Interactive</li> <li>• Grey Interactive</li> <li>• Communique</li> </ul>
New Media Communications	<ul style="list-style-type: none"> <li>• Microforum</li> <li>• ICE</li> </ul>

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Type of Production	Company Name
E-commerce	<ul style="list-style-type: none"><li>• ChaptersGlobe</li><li>• MegaDepot</li><li>• Toronto.com</li><li>• Bid.com</li><li>• E-commerce, a division of Callpro Canada</li><li>• Internet Frontier</li></ul>
Financial Services	<ul style="list-style-type: none"><li>• Imoney</li><li>• E*Trade Canada</li><li>• GlobalFund</li></ul>

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**New Media Content Production Segment – Companies (Level 2) – 87 companies**

Type of Production	Name of Company
Animation	<ul style="list-style-type: none"> <li>• Nelvana</li> <li>• Bertuss-Lapsa Limited</li> <li>• Disney</li> <li>• Core Technologies</li> <li>• Origo.com</li> <li>• Group of One Studio</li> <li>• Spin</li> <li>• UrbanCore Media Group</li> <li>• Digimata</li> <li>• Diginiche Interactive</li> <li>• Topix/Mad Dog</li> <li>• CommandPost</li> </ul>
Audio	<ul style="list-style-type: none"> <li>• Good Media</li> <li>• Sound Ideas</li> <li>• Smiley Guy Studios</li> <li>• CBC</li> <li>• Gravity: Weight of the World Productions</li> <li>• SCI-FI Music Canada</li> <li>• Sound Media</li> <li>• Black Diamond</li> <li>• Cherry Beach Sound</li> <li>• Independent Producers</li> </ul>

Type of Production	Name of Company
Design/Graphics	<ul style="list-style-type: none"> <li>• Devlin</li> <li>• Random Media Core</li> <li>• Ove Design</li> <li>• Blue Cat Design</li> <li>• Triangle Studio Inc.</li> <li>• ICE</li> <li>• Digital Ink</li> <li>• Mystique Creative Inc.</li> <li>• Huder Multimedia</li> <li>• Tudhope</li> <li>• Adcom Inc</li> <li>• Anikk Communications</li> <li>• Independent Producers</li> </ul>
Instructional Design	<ul style="list-style-type: none"> <li>• Oberon Interactive</li> <li>• BGM Imaging</li> <li>• Blue iris multimedia group Ltd</li> <li>• OFFICEally Yours</li> <li>• Rubicon Communications</li> <li>• TKO Visual Communications</li> <li>• Mindfarers Inc.</li> <li>• Market Street Interactive</li> <li>• Link Multimedia</li> <li>• Knowledge Connection</li> <li>• Irwin Publishing</li> <li>• Independent Producers</li> </ul>
E-commerce (Transitional Web Sites)	<ul style="list-style-type: none"> <li>• CyberPlex</li> <li>• Shareline Systems Ltd.</li> </ul>
Information Web Sites	<ul style="list-style-type: none"> <li>• Hype!</li> <li>• Medius Communications</li> </ul>

Type of Production	Name of Company	
Business Communications (Internal)	<ul style="list-style-type: none"> <li>• Bratch</li> <li>• Bowne Internet Solutions</li> </ul>	
	<ul style="list-style-type: none"> <li>• Caught in the Web</li> <li>• Sierra Communications</li> <li>• Electra Media</li> <li>• Byte Size Media</li> <li>• McGill Multimedia</li> </ul>	
Software Title Development	<ul style="list-style-type: none"> <li>• H+a</li> <li>• CCI</li> <li>• Sienna Software</li> <li>• Fast Forward Media Inc.</li> <li>• LaserMedia</li> <li>• New Media Architects</li> <li>• Pixel Productions</li> <li>• Studio X</li> <li>• Arcanium</li> <li>• Cipher New Media</li> <li>• Frameworks Communications</li> <li>• Rollercoaster Studios</li> <li>• Splashwirks</li> <li>• Digital Rain</li> </ul>	
	Independent Producers	
	Educational	<ul style="list-style-type: none"> <li>• Bytes of Learning</li> <li>• CCI</li> <li>• Oberon Interactive</li> </ul>
		<ul style="list-style-type: none"> <li>• Inifnet Communications</li> </ul>
		<ul style="list-style-type: none"> <li>• Vivid Group</li> <li>• Immersion Studios</li> </ul>

**New Media Content Production Segments – Independent Contractors (Level 3) - 48**

Title	Title
Multi-skilled contractor	<ul style="list-style-type: none"> <li>• InfoManiac Productions</li> <li>• Independent Producers</li> </ul>
Producer	<ul style="list-style-type: none"> <li>• Independent Producers</li> </ul>
Project Management	<ul style="list-style-type: none"> <li>• Independent Contractors</li> </ul>
Creative/graphics	<ul style="list-style-type: none"> <li>• Media Solutions Inc.</li> <li>• MacDonald Design</li> <li>• The Vivid Group</li> <li>• Independent Producers</li> </ul>
Animation	<ul style="list-style-type: none"> <li>• Independent Producers</li> </ul>
Audio/Sound	<ul style="list-style-type: none"> <li>• Independent Producers</li> </ul>
Technical/Programming	<ul style="list-style-type: none"> <li>• Motions Works Group</li> <li>• MPSL Group</li> <li>• Independent Producers</li> </ul>
Writer/Editor	<ul style="list-style-type: none"> <li>• Independent Producers</li> </ul>
Researcher	Independent Contractors
Sales/Marketing	<ul style="list-style-type: none"> <li>• Bullcan</li> <li>• Extra bytes</li> <li>• St. John Group</li> <li>• Independent Contractors</li> </ul>

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**New Media Related Software Tool Developers and Suppliers and Service Providers  
(Level 4) – 100 companies**

Type of Production	Name of Company
Content Libraries	<ul style="list-style-type: none"> <li>• The Image Bank</li> <li>• Energy Film Library</li> <li>• Miller Comstock</li> <li>• Masterfile</li> </ul>
Authoring Tools - Suppliers	<ul style="list-style-type: none"> <li>• Adobe</li> <li>• Media Outfitters</li> <li>• Medialinx</li> <li>• Macromedia</li> <li>• WAVE Internet inc.</li> <li>• Microsoft</li> <li>• Silicon Graphics</li> <li>• Dataway Multimedia</li> <li>• Independent Producers</li> </ul>
Authoring Tools – Developers	<ul style="list-style-type: none"> <li>• Inline Internet Systems</li> <li>• Alias</li> <li>• Australian Trade Commission</li> <li>• Side Effects Software</li> <li>• Digital Renaissance</li> <li>• CanDoo Creative Concepts</li> <li>• SoftQuad</li> <li>• Independent Producers</li> </ul>
Digital Editing/Conversion	<ul style="list-style-type: none"> <li>• Command Post</li> <li>• Microforum</li> <li>• Juxta Productions Inc.</li> <li>• Devlin Applied Design</li> </ul>

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Type of Production	Name of Company
Operating Systems	<ul style="list-style-type: none"><li>• Microsoft</li><li>• Apple</li><li>• IBM</li><li>• Sun Microsystems</li></ul>
Custom Code Development	<ul style="list-style-type: none"><li>• North American Media Engine</li><li>• SHL</li><li>• Digital Renaissance</li><li>• Cyberplex</li><li>• Caught in the Web</li></ul>
Application Infrastructure	<ul style="list-style-type: none"><li>• Novator</li><li>• Digital Renaissance</li><li>• Apollo Entertainment</li></ul>
Management Systems - Suppliers	<ul style="list-style-type: none"><li>• Microsoft</li><li>• Lotus</li></ul>
Management Systems - Developers	<ul style="list-style-type: none"><li>• Bulldog</li><li>• Devlin (Decision Room)</li></ul>
Internet Broadcasting	<ul style="list-style-type: none"><li>• Planetcast Presentations</li><li>• Media Tribe</li></ul>

Type of Production	Name of Company
Strategy/Consulting (including legal)	<ul style="list-style-type: none"> <li>• MMSG</li> <li>• Creative Artistic Services</li> <li>• FAD</li> <li>• UUNET Canada</li> <li>• Yfactor inc.</li> <li>• TICAR</li> <li>• Everyday Life Consultancy and Communications</li> <li>• Schwartz Levitsky Fromstein</li> <li>• PW Harrison &amp; Son</li> <li>• Quantum Leam Inc.</li> <li>• Partners Imaging</li> <li>• Neray Marcom Inc.</li> <li>• Lang Michener</li> <li>• Mayer, Robert A. Arun Malhotra &amp; Associates</li> <li>• Barrister &amp; Solicitor</li> <li>• Maritz Canada</li> <li>• M B Z Productions</li> <li>• KPMG Corporate Finance</li> <li>• The Long Group Version 2.0 Inc.</li> <li>• Knowledge Systems</li> <li>• Transactive Services Consulting</li> <li>• ICD Canada</li> <li>• Marketing Event Management Jazz</li> <li>• Above the Competition</li> <li>• NorthStar Communications</li> <li>• Wallace Avenue Studios</li> <li>• Deloitte &amp; Touche</li> <li>• Techuman Systems</li> <li>• Design Communications</li> <li>• Cyberplex</li> <li>•</li> <li>•</li> <li>• Deutsche Telekom</li> </ul>

Type of Production	Name of Company
Products Testing/Usability	<ul style="list-style-type: none"><li>• Devlin Applied Design</li><li>• SurveySite</li><li>• Microforum</li></ul>
Internet Marketing/PR	<ul style="list-style-type: none"><li>• Environics</li><li>• Benchmark</li><li>• Gallop &amp; Gallop Worldwide Ltd.</li><li>• Carswell- Thomson Professional Publishing</li><li>• Bronskill</li><li>• Greater Knowledge Ink</li><li>• Communications</li><li>• MMSG</li></ul>
Internet Advertising Networks	<ul style="list-style-type: none"><li>• DoubleClick Canada</li><li>• ClickThrough Interactive</li><li>• Virtual Billboard Network</li></ul>
Talent Reps/Agencies and Recruitment	<ul style="list-style-type: none"><li>• WebStaff</li><li>• New Media Links</li><li>• Creative Force Network</li></ul>



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**New Media Related Hardware Suppliers and Technical Support (Level 5) – 64 companies**

Product	Company
Workstation	<ul style="list-style-type: none"> <li>• Apple</li> <li>• SGI</li> </ul>
Peripherals	<ul style="list-style-type: none"> <li>• Kodak</li> <li>• Hewlett-Packard</li> <li>• Sony</li> <li>• Canon</li> <li>• Panasonic</li> </ul>
Digital Hardware	<ul style="list-style-type: none"> <li>• ATI</li> <li>• Panasonic</li> <li>• Avid</li> <li>• Edipix</li> <li>• Leitch</li> </ul>
CD-ROM Discs, Cartridges, Laser Discs – Makers	<ul style="list-style-type: none"> <li>• Sony</li> <li>• High Road Productions Inc.</li> <li>• Lawrence Marshall Productions</li> <li>• Linden Communication Group</li> <li>• Mentorium</li> <li>• Purple Fridge Communication</li> <li>• KAO Infosystems</li> <li>• Dotty.com</li> <li>• NuCom Technology Associates</li> <li>• Another Place</li> <li>• Brian Bobbie Productions</li> <li>• Communications Clarinda</li> <li>• Crave Media</li> </ul>

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Product	Company
CD-ROM Discs, Cartridges, Laser Discs – Makers – Content	<ul style="list-style-type: none"><li>• ARC Media</li><li>• Armantus Inc.</li><li>• Armsworth Multimedia Productions</li><li>• Ava Communications</li><li>• Philips</li><li>• AVK Services</li><li>• AZTECH New Media Corporation</li><li>• Aludra Software</li><li>• U-EDIT</li><li>• VCR Active Media</li><li>• Digital Waves</li><li>• Sunbird Pictures Inc.</li><li>• Ovation Digital Productions</li><li>• The Wing Group</li><li>• ConnAd Inc</li><li>• 'netXcursions</li><li>• Di Tursia</li><li>• AFV Multimedia</li><li>• Viewz</li><li>• Media Duplication Corporation</li><li>• Genisoft</li><li>• Mediaweavers</li><li>• Eolas Interactive</li></ul>

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Product	Company
Delivery Kiosks/Hardware	<ul style="list-style-type: none"> <li>• King Systems</li> <li>• Lumina Corporate Communications</li> <li>• McGill Multimedia</li> <li>• Visual Encounters by Toni Hamel</li> <li>• Pageactive Inc</li> <li>• Ontario Science Centre</li> <li>• AMPK Software Ltd.</li> <li>• Mystus Interactus</li> <li>• O'Hara Systems Inc</li> </ul>
Systems Integration	<ul style="list-style-type: none"> <li>• PWC etc.</li> </ul>
Distributors/ Product Representatives	<ul style="list-style-type: none"> <li>• Forefront Graphics</li> <li>• Amiware</li> <li>• IC Technology</li> <li>• Compugen</li> </ul>

**Total Number of Companies from Level 1 to 5                      358**

## New Media Specific Business Associations and Infrastructure

Type	Name
Trade Association	<ul style="list-style-type: none"> <li>IAB Canada (Internet advertising Bureau)</li> </ul>
New Media or Related Associations	<ul style="list-style-type: none"> <li>IMAT (Interactive Media Association of Toronto)</li> <li>SMART Toronto</li> <li>AIMS (Association of Internet Marketing Sales)</li> <li>Toronto Webgirls</li> <li>TIDA (Toronto Internet Development Association)</li> <li>ITAC Ontario (Industry Technology Association Canada)</li> <li>YTA (York Technology Association)</li> </ul>
Equity Venture Financing	<ul style="list-style-type: none"> <li>BCE</li> <li>Quebecor</li> </ul>
Commercial Financing	<ul style="list-style-type: none"> <li>Royal Bank</li> <li>BDC</li> </ul>
Project Financing	<ul style="list-style-type: none"> <li>Telefilm</li> <li>Bell Broadcast &amp; New Media Fund</li> <li>OFDC (Ontario Film Development Corporation)</li> </ul>
Internet Service Providers (New Media services)	<ul style="list-style-type: none"> <li>Bell</li> <li>PSInet</li> <li>Netcom</li> <li>SPRINT</li> <li>AT&amp;T</li> <li>Rogers @ Home</li> </ul>
Digital Networks Infrastructure	<ul style="list-style-type: none"> <li>Nortel</li> <li>Cisco</li> <li>3COM</li> <li>Newbridge</li> </ul>

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Type	Name
Marketing/Packaging	<ul style="list-style-type: none"><li>• Multimedia Trade Shows</li><li>• Fireworks Creative Inc.</li><li>• MMSG (MultiMediator)</li></ul>
New Media product Distributors	<ul style="list-style-type: none"><li>• Ingram</li><li>• Merisel</li><li>• Beamscope</li><li>• City-Rom</li></ul>
New Media Product Retailers	<ul style="list-style-type: none"><li>• Future Shop</li><li>• Business Depot</li><li>• Indigo Books</li><li>• CD-Rom Store</li></ul>

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Type	Name
Web Site Hosting	<ul style="list-style-type: none"><li>• Internet Direct</li><li>• Netcom</li><li>• 3<sup>rd</sup> Eye New Media</li><li>• PSInet</li><li>• VooDoo Logic Interactive Multimedia</li><li>• Web Feat Multimedia</li><li>• Web-Learning inc.</li><li>• Webworks Worldwide Incorporated</li><li>• Valis Video</li><li>• Virtual Learning Inc</li><li>• Publishing Factory</li><li>• Internet Frontier</li><li>• Rich Media</li><li>• Shuttle Space Studio</li><li>• Spun Web Designs</li><li>• Tarantula Interactive</li><li>• Treefrog Interactive</li><li>• Tri-Media Marketing and Publicity</li><li>• Sharp Media Corporation</li><li>• Onroad Communication</li></ul>

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Type	Name
Web Site Hosting – Cont'd	<ul style="list-style-type: none"><li>• Plexus Interactive</li><li>• Plum Studios</li><li>• Primitive Features</li><li>• North American Media Engines</li><li>• E-side Design and Communication</li><li>• Engine X</li><li>• Metamorph Interactive Communications</li><li>• Modern World Communications</li><li>• Megapix Communications</li><li>• Linx Communications</li><li>• Liquid Reality</li><li>• Marshall Fenn Communications</li><li>• Matrix Multimedia</li><li>• Media Synergy</li><li>• Intonex Corporation</li><li>• Key Frame Interactive</li><li>• HTM Interactive</li><li>• Inform Interactive</li><li>• Graffitis Studios Inc.</li><li>• Enviser Corporation</li><li>• Click Innovations</li><li>• Design Vision</li><li>• @Dot.Dot internet solutions</li><li>• E.S.P. Graphics</li><li>• Cyber segue incAOL Canada</li><li>• Business success associates</li><li>• Cameron interactive communication</li><li>• Cattails multimedia</li></ul>

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Type	Name
Web Site Hosting – Cont'd	<ul style="list-style-type: none"> <li>• Cattails multimedia</li> <li>• Bratch Innovation</li> <li>• Alex Technologies Inc</li> <li>• Good Media</li> </ul>
Recruitment (Non-New Media)	<ul style="list-style-type: none"> <li>• Ward Associates</li> </ul>
Demonstration Facilities	<ul style="list-style-type: none"> <li>• New Theatres</li> <li>• DX-Design Exchange</li> <li>• SMART Toronto</li> </ul>
Training	<ul style="list-style-type: none"> <li>• DM Studios</li> <li>• International Academy of Design</li> <li>• D B Visual</li> <li>• CIMDI</li> <li>• Jentek Company</li> <li>• Face to Face</li> <li>• I-Line Multimedia</li> <li>• Helicon systems inc.</li> <li>• Educom Training Systems inc.</li> <li>• Biographix Corporation</li> <li>• Apotex Inc</li> <li>• NCM Consulting Inc.</li> <li>• Omega Performance</li> <li>• Spadina Fishworks</li> <li>• Loop Enterprises</li> <li>• Interaxys New Media</li> <li>• Metamage</li> <li>• Fraser &amp; Beatty</li> </ul>



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Type	Name
Training – Cont'd	<ul style="list-style-type: none"><li>• TK &amp; Associates</li><li>• Hoogovens Technological &amp; Operational Assistance Inc</li><li>• Humber Digital Imaging Training Centre</li><li>• Toronto Image Works</li><li>• Henry Computer Associates</li><li>• George Brown College</li><li>• Fourth Wave Technologies</li><li>• First Interactive</li><li>• Confederation College</li><li>• Digital Training Inc</li><li>• CFA Communications</li><li>• Independent Contractors</li></ul>

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**New Media Specific Public Infrastructure**

Title	Title
Promotion/Co-ordination	<ul style="list-style-type: none"> <li>• Ontario Ministry of Energy, Science and Technology (MEST)</li> <li>• Ontario Ministry of Economic Development and Trade (MEDT)</li> <li>• Ontario Ministry of Citizenship, Culture and Recreation</li> <li>• DFAIT</li> <li>• Telefilm</li> <li>• HRDC</li> <li>• CITO</li> <li>• Ontario Film Development Corporation (OFDC)</li> <li>• Industry Canada</li> <li>• New Media Trainers Alliance</li> </ul>
Network Facility	<ul style="list-style-type: none"> <li>• CBC</li> <li>• New Media Village</li> </ul>
Public Policy	<ul style="list-style-type: none"> <li>• Ministry of Energy, Science and Technology (MEST)</li> <li>• Workplace Safety and Insurance Board</li> <li>• Ministry of Citizenship, Culture and Recreation</li> </ul>
Economic Development	<ul style="list-style-type: none"> <li>• Ministry of Economic Development and Trade (MEDT)</li> <li>• Ontario Digital Media Small Business Growth Fund</li> <li>• Ontario Film Development Corporation (OFDC)</li> </ul>

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**Generic Supporting Public and Business Infrastructure**

Title	Title
Procurement	<ul style="list-style-type: none"> <li>• MERX</li> </ul>
Directions	<ul style="list-style-type: none"> <li>• Toronto Board of Trade</li> </ul>
Management Support	<ul style="list-style-type: none"> <li>• Law Firms</li> <li>• Accounting firms</li> </ul>
Promotion/Awareness	<ul style="list-style-type: none"> <li>• GTMA</li> <li>• SMART Toronto</li> </ul>
Long Term Financing	<ul style="list-style-type: none"> <li>• Banks</li> </ul>
City of Toronto Assistance	<ul style="list-style-type: none"> <li>• Enterprise Toronto</li> </ul>
Provincial Governments	<ul style="list-style-type: none"> <li>• MEDT, MEST,</li> </ul>
Federal Governments	<ul style="list-style-type: none"> <li>• IC, DCH, DFAIT, HRDC</li> </ul>

**New Media Specific Public and Co-operative Education/Research**

Type	Name
Education	<ul style="list-style-type: none"> <li>• Bell Centre</li> <li>• Sheridan College</li> <li>• Addison Wesley Longman LTD</li> <li>• Charismagics Inc.</li> <li>• TVOntario</li> <li>• Edge Interactive</li> </ul>
R&D Private and or Non profit	<ul style="list-style-type: none"> <li>• CyberPlex (in house R&amp;D)</li> <li>• Digital Renaissance (in house R&amp;D)</li> <li>• Sheridan College</li> <li>• ATI Technologies</li> <li>• McCluhan Centre</li> <li>• Cultech/Intercom Ontario</li> </ul>
R&D Public	<ul style="list-style-type: none"> <li>• NFB</li> <li>• NRC</li> <li>• CBC</li> </ul>
R&D Funder	<ul style="list-style-type: none"> <li>• CITO (Communication &amp; Information Technology Council of Ontario)</li> <li>• Stentor New Media Fund</li> </ul>

**Generic Public and Co-operative Education/Research**

Type	Name
Education	<ul style="list-style-type: none"> <li>• Ryerson</li> <li>• UofT</li> </ul>
R&D Private and/or Non Profit	<ul style="list-style-type: none"> <li>• Nortel</li> </ul>
R&D Public	<ul style="list-style-type: none"> <li>• Canarie</li> </ul>
R&D Funder	<ul style="list-style-type: none"> <li>• National Research Council - IRAP</li> </ul>

## Appendix B – Validation Questionnaire

### 1. Please identify the most important customer groups for your organisation?

Company Type	Education/ Training	Entertainment	Recreation	Public Sector	Non-Profit	Retail	Health	Information Reference
Content Production/Creation	3	3	3	3	3	3	3	3
Customer/User	4	5	2	2	1	4	3	3
Research/Education	4	4	4	5	3	3	5	1
Software Tools & Services	3	3	4	4	3	3	3	2
Technology/Hardware	5	3	5	1	5	2	5	3
Supplier								
Not available	1	1	1	1	1	1	1	1
All Types	3	3	3	3	3	3	3	3

Company Type	Arts and Culture	Cultural Industries	Media	Science and Technology	Finance	Advertising	Other: Business to business	Other: Business to consumer
Content Production/Creation	3	3	2	3	3	3	2	2
Customer/User	3	2	5	3	2	5	3	3
Research/Education	2	1	2	2	2	2	2	3
Software Tools & Services	4	4	3	2	2	3	2	2
Technology/Hardware	3	3	5	5	5	3	1	1
Supplier								
Not available	1	1	1	1	1	1	1	1
All Types	3	3	2	3	3	3	2	2

**2. Please indicate the location of your clients (approximate on a percentage basis).**

Company Type	Toronto	Other Canada	US	Other Foreign
Content Production/Creation	65	17	14	4
Customer/User	100			
Research/Education	100			
Software Tools & Services	51	30	18	1
Technology/Hardware Supplier	40	20	40	
All Types	65	17	15	3

**3. Which of these Human Resource issues are concerns to you (percentage of respondents indicating concern)?**

Company Type	Creative Skills	Technical Skills	Management Skills	Sales/Marketing Skills	Multi-Skilled Workers	Experienced Workers
Content Production/Creation	69	78	51	62	60	51
Customer/User						
Research/Education	100	100		100	100	
Software Tools & Services		25		25		
Technology/Hardware Supplier			100			
All Types	60	70	45	57	53	43

Company Type	Workers leaving to other Toronto jobs	Workers leaving to other Canadian jobs	Workers leaving to US jobs
Content Production/Creation	22	7	29
Customer/User			100
Research/Education			
Software Tools & Services	25	25	50
Technology/Hardware Supplier			
All Types	21	8	30

4. From previous interviews, we have identified a number of positive influences that drive the Toronto New Media industry cluster. Please rank the importance of these influences *in order* from 1 to 7, with 1 being the most important.

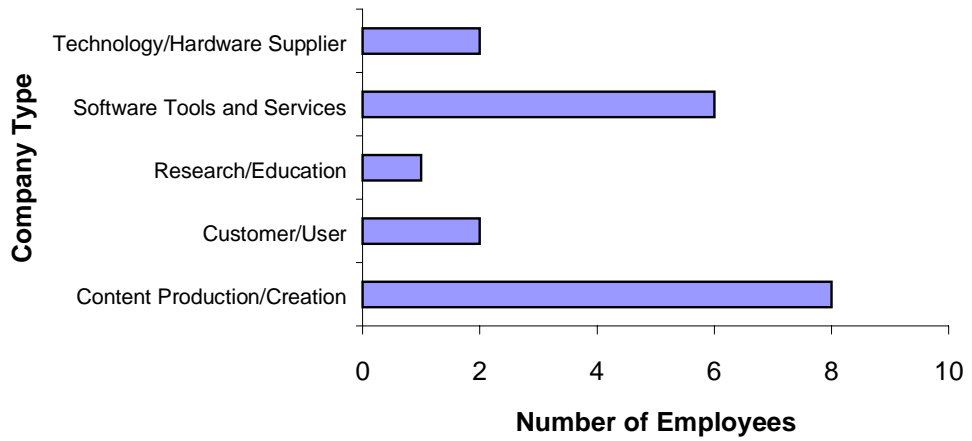
Company Type	Creative Outlet	Develop Technical Skills	Alternative Work Environment	High Growth Market	Financial Rewards	Develop Global Business	Other
Content Production/Creation	3	4	4	3	4	4	6
Customer/User	6	5	4	5	4	3	1
Research/Education	1	2	3	4	5	6	7
Software Tools & Services	3	3	5	3	5	4	6
Technology/Hardware	3	2	1	5	4	6	7
Supplier							
Not available	1	2	3	4	5	6	7
All Types	3	4	4	3	4	4	6

5. From previous interviews, we have identified a number of barriers facing the Toronto New Media cluster. Please rank the importance of these barriers *in order* from 1 to 7, with 1 being the most important.

Company Type	Public Financing	Private Financing	Unstable Mkt Demand	Rely on Contract Work	Diff. Retaining IP	Commun. Diff. Vendor/Cust.	Other
Content Production/Creation	4	3	3	3	4	4	5
Customer/User	3	3	5	7	4	4	2
Research/Education	2	1	3	4	6	5	7
Software Tools & Services	2	2	4	3	5	5	7
Technology/Hardware	7	5	6	2	3	4	1
Supplier							
Not available	1	2	3	4	5	6	7
All Types	4	3	3	4	4	5	5

6. **How many New Media-specific workers (full-time equivalent) are there in your organisation?**

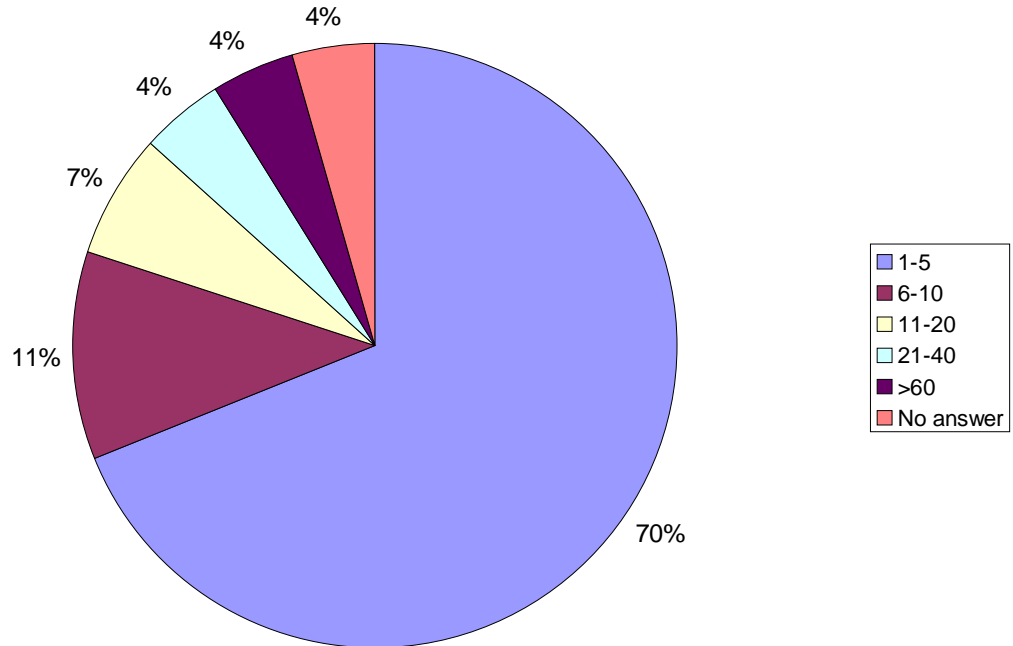
**Average Number of NM Specific Employees**



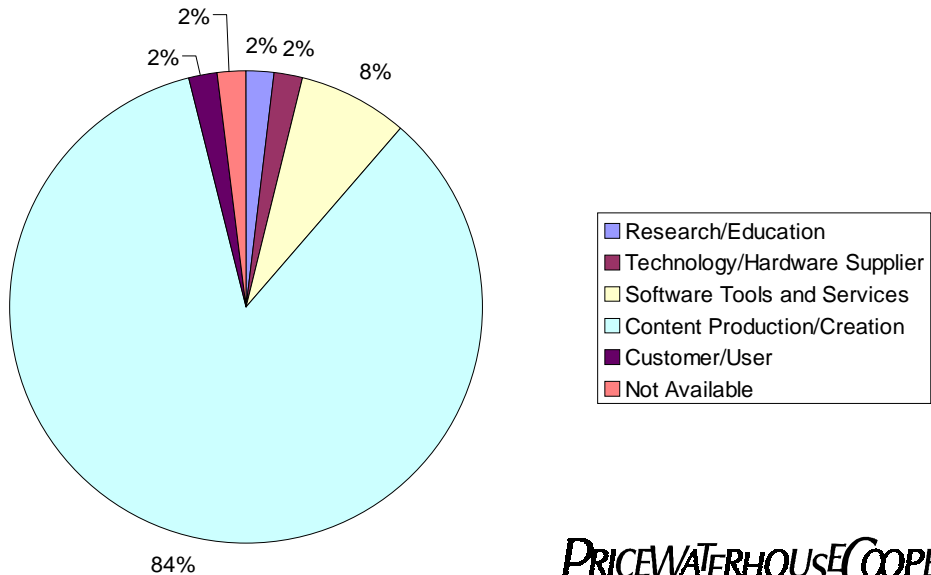


7. Please classify your company?

**Number of NM Specific Workers - Content Production/Creation Company**



**Type of Companies**



## Appendix C – Further Information Regarding Montreal (Quebec)

Quebec has been the most aggressive province in trying to attract New Media businesses by supporting high-tech innovation and research. In addition to measures already mentioned, the government recently announced plans to open the Centre National Des Nouvelles Technologies du Quebec (CNNTQ) and Cité de l'Optique, modelled on Montreal's Cité du Multimédia.

### Public Funds

In its recent budget, the Quebec government decided to uphold its commitment to the development of information super highways. It was announced that an additional investment of \$60 million from the Fonds de l'autoroute de l'information, in instalments of \$20 million per year for three years would be provided mainly to fund Quebec content on the Internet.

CESAM Multimedia Consortium Multi Experimentation Fund provides grants up to 49% of start-up costs to a maximum of \$50,000 to develop multimedia projects.

Fonds de l'autoroute de l'information (Information Highway Fund) provides grants up to \$550,000 (50% - 75% of eligible costs) for the creation of French-language web sites. Provided by the Minister of Culture and Communications (Quebec)

### Tax credits

A tax credit was announced for the production of multimedia titles, which will enable Quebec firms to obtain assistance on up to 30% of expenses related to content creation, including an additional premium of up to 10% for the production of French language content. This is in addition to the tax credits presently offered by the Quebec government:

- ♦ Quebec Multimedia Production Tax Credit: Refundable tax credit for multimedia productions: The Quebec government grants a 40% refundable tax credit (and an additional 10% credit if the title is available in French) for labour costs incurred to produce multimedia titles, of which at least 75% are titles intended for mass marketing. The tax credit is 35% for all other categories of titles.
- ♦ Information Technology Development Centres (ITDCs): Aside from the tax advantages applicable to research and development (R&D) and the accelerated depreciation of investments in Quebec, the information technologies industry can benefit from the tax advantages offered by Information Technology Development Centres.
- ♦ Improved Tax Assistance: Small and Medium size businesses (SMBs) that increase their R&D activities compared to their average expenditures for the preceding three years may benefit from a 55 % tax credit on their additional expenses instead of the normal 40% rate. SMBs that choose the super-deduction

option may take advantage of an additional 190 % deduction, as the super-deduction rate rises from 460 % to 650 %.

- ◆ Welcome to Foreign Funds: To encourage international companies to grant research contracts to their Quebec subsidiaries, the funds that these subsidiaries receive from outside Canada to engage in R&D do not off-set their expenses when calculating the super-deduction or the Canadian and Quebec tax credits.

In Quebec, for taxation years starting after June 30, 1999, Quebec businesses may choose between claiming a refundable tax credit or using a super-deduction in their income calculation. The tax credit remains the best choice for a non-profit enterprise while the super-deduction allows a profit-making business to reduce its taxable income.

*The Tax Credit:*

- ◆ On salaries: The Quebec government allows a basic 20% refundable tax credit on salaries allocated to R&D. For small businesses, the basic rate of 20% increases to a refundable tax credit of 40% of the first \$2 million in R&D salaries. This may be of particular interest to corporations in their start-up phase, as they are not required to become profitable before benefiting from this credit.
- ◆ On eligible expenses: The Quebec government offers a 40% refundable tax credit on 80% (effective rate of 32%) of all expenses incurred on behalf of the business, whatever its size, by a recognised research centre (university, hospital, public research institute); or to carry out pre-competitive research when the work is carried out by a R&D consortium.

*The Super-Deduction:*

- ◆ On salaries: The Quebec government allows large enterprises whose assets are over \$50 million a 230 % super-deduction on salaries associated with R&D. SMBs will enjoy a super-deduction rate of 460 % of the first \$2 million in R&D salaries. For companies whose assets are between \$25 million and \$50 million, the 460 % rate is reduced linearly to 230 %.
- ◆ On eligible expenses: The Quebec government offers a 460 % super-deduction on 80% (effective rate of 368 %) of all expenses incurred on behalf of the business, whatever its size, by a recognised research centre (university, hospital, public research institute); or to carry out pre-competitive research when the work is carried out by a R&D consortium.

## APPENDIX D – Comparison of Area Population

