Action Plan for the Development of a Gaming, Simulation and Animation Cluster in Miramichi, NB

Written by

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October 3, 2008

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1. Introduction

Enterprise Miramichi and its partners have formed a Gaming, Simulation and Animation (GSA) Cluster Development Committee in response to emerging opportunities and to a variety of recommendations found in three separate reports prepared in the region in the past 18 months or so. The purpose of the current project is to prepare a succinct and achievable action plan which incorporates the major recommendations from these studies, and presents the plan in a coherent and realistic manner. Furthermore, the action plan will provide some documentation on the power of GSA to reshape the community.

As noted in the project Terms of Reference, there have been three studies specifically related to GSA; collectively they have positive implications for this sector in the Miramichi. These include:

- Animation in Miramichi – Creating a Future (completed by the Rural and Small Town Programme from Mount Allison University)
- NBCC Miramichi Centre of Excellence Resource Proposal (completed by Heather Fowler, NBCC Miramichi)
- Research and Development Opportunities for the NBCC Miramichi (completed by Dr. Robert Dykes, McGill University).

These various reports included specific recommendations associated with community development and infrastructure, upgrades to the NBCC Miramichi campus, human resource development concerns, financing, and governance, among others.

This project will critically assess the recommendations from each report, seek further input from key players and observers on those recommendations, and provide a workable action plan linking the reports and other information.

2. Methodology

The project methodology includes the following: document review; consultations including telephone interviews and a meeting with stakeholders; plan preparation and submission. We have also secured agreement from Dr. Dykes to provide input into the project as it unfolds.

Project Startup
RSTP hosted a conference call with the GSA Cluster committee on July 28th, 2008, to discuss the parameters of the project, clarify elements in the proposal, confirm the workplan, confirm the nature of the final action plan, secure commitments for interviews and a face-to-face with the committee and others, and identify any other specific documents for review.

Document Review
This task involved a detailed review of the three main reports under consideration, plus other reports identified by the committee (see references section). These were assessed for the linkages

and feasibility in terms of possible action items. We also consulted related materials concerning the knowledge and new media sectors in general, with a view to identifying the necessary resources that may be required to implement some items, and to identify evidence of potential impacts of the sector for Miramichi (based on the experience of other similar communities or regions).

Furthermore, we assessed the potential and actual linkages to the following broader concerns and initiatives, so that the action plan will have coherence and relevance:

- The Government of New Brunswick's Centre of Excellence in Advanced Learning Technologies (serious gaming);
- The fact that the NBCC Miramichi is the prime source of skilled labour for GSA in the province;
- The opportunities presented by FOG Studios to work with the NBCC Miramichi; and
- The importance of research and development (R&D) and intellectual property (IP) as a significant element concerning investment and costs associated with the sector.

Consultations

There were two sets of consultations. The first invovled interviews with the author's of the reports, the GSA committee members, and others as identified. A total of eight interviews were completed. The focus of the questions largely concerned issues such as linkages with other possible action items, cost considerations, relative importance of some action items compared with others, and so on. The unstructured interview questions can be found in Appendix A. Information was collected from the following key people and exports in the field:

George Donovoan, Games Agent Corp
Gail Langdon, Fog Studios
Sam Punnett, FAD Research
Kenneth Pigg, University of Missouri
Michael Gurstein, Centre for Community Informatics Research, Training and Development
Robert Dykes, McGill University
Heather Fowler, NBCC Miramichi
Jerome Kashetsky, NRC British Columbia

The second was a stakeholders' meeting in Miramichi on September 18, 2008. The purpose of this was two-fold. First, we summarized key points and issues raised to date, including observations about the focus of the potential action plan and the major strategies and priorities. The second was a facilitated discussion seeking further input and idea development concerning the potential action plan and its elements. This was a critical task since it is through the collective discussion and nurturing of ideas that we feel we may be able to more clearly determine the key components of the action plan while understanding the possible resources that could be brought to them and the relative importance of the various items.

Analysis

We critically reflected on all of the information we collect in the document review and the interviews / meeting, to prepare the action plan. We assessed and identified opportunities for

linkages among the existing recommendations in the three reports in the context of where there may be the greatest likelihood of impact and success.

3. Technology Cluster Development

According to the National Research Council (NRC) a technology cluster is the growth of a significant concentration of innovative companies around a nucleus of research and development facilities (R&D) (NRC, 2007). They are fuelled by innovation and provide an ideal atmosphere for networking, industrial development, investment and commercialization to occur. Smaller companies spin off from the original R&D. The success felt by one company attracts others. Eventually a critical mass of skilled labour, capital and entrepreneurial drive creates a self-sustaining system. Components of successful clusters include innovative firms, incubation, mentoring, finance, skills and human resources, research and development, internet technology transfer, policy and regulations. Successful clusters need staying power and often take decades to mature. This process needs to be community driven and focused.

"Fundamentally, technology clusters are seen to be driven by the commercialization of science and technology and little else" (Jackson and Khan, 2003). "Studies suggest that regions which continuously engage stakeholders within a learning and action framework tend to succeed in cluster development" (Wolfe, 2002 in Jackson and Khan, 2003. In other words, there is a large importance placed on local community-driven innovation. A highly educated labour force is required along with top quality public services such as healthcare, transportation, policing and greenspace (Jasckson and Khan, 2003; Harrison et al., 2004). These elements will also attract and retain upper-middle class professionals.

According to Polese and Shearmur (2002), distance still matters in the knowledge economy when transporting people and goods. Thus knowledge industries tend to locate in or near large urban centres. The authors claim that small rural communities (under 10,000 people) can develop knowledge sectors but it is easier if they are within an hour's drive to an urban centre. Peripheral communities that have done well in the knowledge economy tend to have the same recipe for success: located on a major transportation axis, with a diversified regional metropolis, and a competitive wage structure and business environment.

Most examples of internet technology, animation or new media clusters in rural areas tend to be linked to universities or located near one. For example, smaller communities adjacent to Vancouver have been successful in the media industry but they are closely connected and feed off of activities in the nearby city (Michael Gurstein, pers. comm., August 14, 2008). However, from speaking with key informants, it is clear that a college that is able to conduct applied research may be just as beneficial in the creation of a cluster.

Muscle Shoals, Alabama, with a population of roughly 13,000 is well known for its sound studios and has developed a niche within the recording and music industries. Muscle Shoals Sound Studios was opened by former employees at FAME Studios. They were the first rhythm section to own their own studios and, eventually, their own publishing and production companies. It has been successful at keeping its niche state of the art. It is not part of a local

cluster but part of a much larger network in the music business (Michael Gurstein, pers. comm., August 14, 2008). Big names like Aretha Franklin, Rod Stewart, Paul Simon, Eric Clapton, and Lynyrd Skynyrd have recorded there. Further, a number of Rock, R&B and Country music celebrities have homes in the serene, mountainous rural area surrounding Muscle Shoals, an area known for its southern hospitality. This example is an interesting one to consider for Miramichi because the city could become part of a larger regional animation and gaming network throughout the province of New Brunswick. This is indeed already happening as NBCC Miramichi provides qualified, trained labour to firms in Gagetown, Fredericton and Moncton.

The history of Silicone Valley began with Stanford University leasing land to high tech companies and creating the Stanford Industrial Park in the 1950s, a time when industrial parks were at their peak (netvalley.com/svhistory.html). Silicon Valley remained a hot spot due to the presence of many engineers and venture capitalists. There was an inherent desire to play combined with engineering degrees. By having so many companies in the same park, they visited each other, and used each others products (Wikipedia, 2008).

According to Jackson and Khan (2003), the Ottawa technology cluster developed from government agencies and research institutes collaborating with the private sector on communications and computer systems in the early 1970s. The 1980s and 1990s saw home grown firms develop like Corel and Nortel and become global competitors. All along the way, there was a network of institutions that facilitated learning and action such as the Ottawa Centre for Research and Innovation. The Centre also worked with the City of Ottawa to promote better housing, encouraging venture capitalists to invest, built social networks, and advocated for transportation, policy reform and research. If a similar centre were to be established in Miramichi it could also advocate for these issues in the city (see the action plan in Section 6 for more detail).

Other examples of technology related clusters are agrifood in the Okanagan Valley, biotech in Saskatoon, mining and forestry in Timmins, pharma and neutraceuticals in Charlottetown and an ocean engineering cluster in St. John's. In each of these cases there are networks of public and private institutions supported by universities. However, these universities do not necessarily have to be in the same town. Furthermore, according to key informants, applied R&D activities and innovation could take place without universities, such as at colleges or industry-supported applied R&D centres. Research that is valuable and applicable to fast paced gaming and animation firms is more likely to be that of applied research – testing new instruments, new programs, new tools. There is not as much interest in long term academic studies. Local, community-based applied research that directly addresses needs of local industry would be most beneficial. Jackson and Khan (2003) conclude that an initiative is needed in Canada to promote community-based science and technology. For technology clusters to grow and be successful they need community economic development taking place in parallel locally. Furthermore, if there is a way to include the economically marginalized, then the cluster will be even more beneficial locally (Jackson and Khan, 2003).

4. Vision for a GSA Cluster in Miramichi

A proposed vision for a GSA cluster in Miramichi is:

Miramichi will grow and nurture its gaming, simulation, and animation sector into a competitive cluster.

5. Strategic Priorities

"The Miramichi does not know how close it is to a successful technology region. It has most of the key elements for success: a large anchor firm in Fatkat, a high calibre animation school and a beautiful wilderness setting" (Sam Punnett, pers. comm., Sept. 3, 2008). During consultations with experts from across North America, a variety of positive features of Miramichi were identified, providing a strong case for the potential of a GSA cluster. These features are:

- Low cost of living
- Low cost of housing
- Low cost of real estate (leading to lower overhead costs)
- Competitive salaries
- Lots of talented labour
- There is an airport (but currently does not offer flights)
- Moncton International Airport is within a 90 minute drive and offers frequent direct and well-connected national and international service
- Planned transit service
- Short commuting times
- A well renowned training institute (NBCC)
- Large successful anchor firm (Fatkat)
- Beautiful wilderness setting

Despite Miramichi's list of assets, there are also areas that require attention before a GSA cluster can be successful. However, no one that RSTP consulted with expressed that a GSA cluster in Miramichi would be impossible. The only cautionary notes were: (1) it may take at least 10 years or longer to develop a cluster, (2) not to base a cluster around one large company as it could close up or leave, and (3) it may be risky to focus only on Miramichi, but it could make more sense for Miramichi to be the hub of a larger provincial network of GSA activities. All three notes should not be seen as any reason not to implement the action plan. Parts of the plan are indeed achievable within the three year target and the cluster will continue to develop and grow over the next decade and beyond. There is no need to worry about basing a cluster on one large company as new companies are being actively pursued currently. Furthermore, with the establishment of a new media network in Miramichi, it will be evident that there are many smaller businesses operating in Miramichi in the new media and IT sectors. The option of being hub of a larger provincial network is already taking place to an extent with NBCC Miramichi providing training labour to firms in Gagetown, Fredericton and Moncton. The idea of being part

of a larger provincial network is inherent in this action plan. It only makes sense that the efforts of the Miramichi GSA Cluster Action Committee will benefit the rest of the province. Furthermore, its success will require the participation of the rest of the companies in the province.

As a result of consultations with experts in the field as well as a literature review, we have developed seven strategic priority areas. These areas and their goals are described below. Their corresponding proposed tasks, timelines, resources, lead and partners, and likelihood of success are provided in the action plan in Section 6.

1. Leadership

Goal: Have a champion and a GSA committee

First and foremost a champion and a committee are needed to implement the action plan and get the ball rolling. The committee should include government support and local stakeholders such as representatives from Enterprise Miramichi, NBCC, Fatkat, the City of Miramichi, Business New Brunswick, etc. These may need to be volunteer positions, and especially the lead or champion, until a GSA cluster becomes more established. The champion or leader must take on the role of advocate for the action plan and be carefully selected for his or her passion and dedication to GSA in Miramichi, as well as being well connected to the right people in government and in the investment community. Alternatively the champion could also be a paid position through the City of Miramichi's Economic Development Department.

2. Creation of a New Media Network

Goal: Identify businesses in the media sector and have them work together.

A new media network should be formed early on as a means of creating extensive community support, building awareness of the sector and local businesses, identifying stakeholders and having them meet altogether, and performing a needs assessment to see what resources they are lacking. There are many smaller businesses operating in Miramichi related to gaming and animation such as outsourcing businesses, sound design, videography, digital printing, etc (Heather Fowler, pers. com.., Sept. 2, 2008). Many of these are small home-based or part time businesses. One example is Vinland Studios, owned by Kevin Gallant. An association or network would help to identify these and others and get them working together. If they do not know that each other exists, how can they benefit from their services? By getting to know services that already exist in Miramichi and the surrounding area, existing businesses can naturally benefit from each other, fostering a natural cluster development process. This network could also be used to market the area to potential businesses. It appears there may be more going on in the media industry in Miramichi, than many people know about. Furthermore the network could work towards obtaining more community buy-in and changing the perception of Miramichi from mills, mines and manufacturing to gaming, animation and new media technologies.

3. Financial Incentives

Goal: To create a competitive business environment in order to attract and retain businesses in Miramichi.

More businesses are needed in order to create a cluster. Incentives to attract new business and retain existing firms could include tax credits on labour, production, marketing and R&D. As well, easier access to credit lines, cash back incentives for hire recent graduates, funding for game development, and capital funding are incentives used in other provinces like Ontario and British Columbia (Ontario Investment and Trade Services, 2007; Vancouver Economic Development Commission, 2008). Financial incentives by the New Brunswick government are needed first and foremost. GSA activities can take place anywhere, thus business owners will look for the least expensive locations to work. New Brunswick, and in particular Miramichi, must have something special to offer. It is thought that New Brunswick currently loses companies to Prince Edward Island and Nova Scotia for these reasons.

For example, Prince Edward Island Media Alliance (2008) fosters and encourages new game companies to establish in the province. "Under the guidance of mentors from PEI's video game companies, the graduates have four months to build a prototype, and one year to find game-development companies or publishers to purchase their prototype, or finance its full development… Eden added, 'While the goal of the four-month incubation period is to get the game prototype ready to be pitched for sale, if the grads would rather start their own company to complete and market their game, then we'd all welcome them to set up shop in our growing game sector here on PEI'"(Prince Edward Island Media Alliance, 2008).

Thus, there needs to be clear commitment from the Government of New Brunswick that it supports the GSA sector in general and cluster development in Miramichi specifically (Fog Studios, 2008).

4. Infrastructure and Services

Goal: Improve infrastructure and services such as high quality internet connections, transportation, marketing, and quality of life to help attract and retain businesses and their employees.

Attracting and retaining GSA and related businesses as well as their employees are of great priority. High quality internet connections are also needed such as a T-1 Line and fibre optics. Transportation is also important when meeting with clients. A local bus system will help to attract and retain young animation In order to attract and retain valuable employees, Miramichi must market itself as a hip city with the kind of life young gamers and animators want including funky stores, restaurants and entertainment options (Marlin et al., 2007). As Marlin et al. (2007) discuss in their report, the quality of place has a large influence on a community's success in the creative economy. Miramichi needs to be the kind of city that artistic and creative people want to live. It needs bustling streets, a vibrant nightlife with entertainment options, and a wide variety of places and events that help foster creativity and provide inspiration.

5. Educational Facilities

Goal: Increase resources and graduates at NBCC Miramichi.

NBCC Miramichi is a highly respected post-secondary institution in the world of gaming and animation but it requires more resources to be on the cutting edge of the GSA industry (Fowler, 2007). It requires more lab space, classrooms and computers to accommodate its growing admissions. To feed a future cluster it would also need to create more graduates to meet the demands of a local labour force. Training at the college also needs to be more in line with the needs of industry. GSA is fast paced and ever changing and often there can be a sixth month learning curve on the job (Marlin et al., 2007). Furthermore for a cluster to grow, future entrepreneurs must be nurtured. NBCC could offer more courses and support for entrepreneurs in partnership with Enterprise Miramichi (perhaps in a technology accelerator program) as well as offering university level degrees in association with a university, and internships and job placements with FOG Studios (FOG Studios, 2008). A post-secondary educational institution, such as NBCC Miramichi is needed that produces the trained work force needed for the growth of a technological cluster. NBCC Miramichi has been providing these trained professionals for over ten years. The basic need for a qualified workshop is one of the primary reasons a cluster works around post-secondary college (Heather Fowler, pers. comm., Oct. 1, 2008).

6. Applied Research and Development

Goal: Research and Development is central to a cluster and could be fostered at NBCC Miramichi, Fatkat or an independent industry-supported centre.

Applied R&D is often central in the development of a cluster. Applied R&D is required to maintain a competitive advantage and remain on the cutting edge of the industry. New ideas foster new growth. Many clusters develop near universities rather than community colleges. Universities are free to explore research avenues of their choosing whereas colleges normally react to industry needs for training. However, R&D, in the form of applied research, can and should take place at community colleges, such as NBCC. The creation and testing of new technologies fits well with instruction based on industry needs. It is beneficial for students to be instructed on the latest innovations and future technologies. Thus, R&D is an important priority in the action plan. Options for R&D in Miramichi could be (1) at NBCC Miramichi, or (2) a development department could be created at Fatkat, or (3) a new industry supported applied R&D centre could be opened.

There is a desire to participate in applied R&D at NBCC Miramichi (Heather Fowler, pers. comm., Sept. 2, 2008). However, for this to take place, more lab and classroom space are needed along with more computers. Current faculty devote the vast majority of their time to teaching and as enrolment increases, there is more and more need for classroom time and less for personal research. A PhD faculty member from a New Brunswick University could be partnered with, as the champion of a research centre at the college or as a partner or mentor. Colleges are often only able to respond to the training needs of industry rather than designing their own research agendas similar to universities.

An industry supported applied R&D centre would operate at arms' length from industry, the college and government so as not to be influenced or controlled, but free to explore innovative new technologies (Robert Dykes, pers. comm., July 15, 2008; Dykes, 2007). However, industry support is needed and more businesses would be needed to support the centre. Conferences could be organized to help facilitate networks and new partnerships. First, a leader or champion would be needed to see the centre come to fruition and investors would be needed for financing.

An applied R&D department could be created within Fatkat to develop new tools and local innovation. However, it may be risky for the cluster to house its R&D activities mainly in one business if this business were to close or leave town. However, R&D activities could take place at other up and coming animation and gaming businesses in the city. The development of a network of new media organizations will help to identify the potential businesses that may have the capacity of applied R&D activity.

6. The Action Plan

The action plan presented in Table 1 is based on information gathered from consultations with experts and pertinent literature. It identifies actions and their corresponding tasks, timelines, resources, leads, partners, and likelihood of success. Items in **bold** represent tangible, immediate and relatively easily accomplished actions which will help to move the plan forward quickly. Table 2 presents a timeline for the action plan.

It is important to note that the likelihood many items within the action plan depend on the successful accomplishment of other tasks. The "Likelihood of Success" column provides details about the need for other tasks to be accomplished first. For example, the creation of a Miramichi New Media Network and network meetings are very likely to be successful if a champion or leader is first identified. The leader will be the one to work toward the establishment of the network. A needs assessment is likely to be done if a network is formed. Attracting new businesses to Miramichi will be successful if previous items on the action plan are achieved such as obtaining financial incentives from government, and creating an attractive marketing strategy for the city of Miramichi. NBCC Miramichi requires more lab and classroom space along with more teaching staff and human resources. The likelihood of success will depend on obtaining funding from the provincial government such as Business New Brunswick. If more space and human resources are not obtained it could limit the natural ability of the cluster to grow and develop due to a limited supply of trained labour. It could limit the growth of businesses and limit the ability of Miramichi to attract new businesses if the workforce is not large enough. The likelihood of an arm's length applied R&D centre is dependent on attracting more businesses to Miramichi who will be able to fund and support the centre. Without R&D activities it may limit Miramichi's competitive advantage in the future. Thus, the action plan is intertwined. Many elements depend on each other for success. Table 2 highlights the fact that many tasks must be accomplished concurrently for optimal success.

Table 1 – Detailed Action Plan

Action Item	Tasks	Timeline	Resources	Lead and Partners	Likelihood of Success
Leadership					
Identify a champion or leader	**Search for a champion committed to seeing a cluster develop and succeed in Miramichi. This person may put many unpaid hours of work in or could be paid by the City of Miramichi. They must be dedicated and well connected.**	**Immediately (before November 2008).**	**Merely time from Brian, Jeff and Claude; possibly a salary from the City of Miramichi.**	**Partners: Brian Donovan, Jeff MacTavish, Claude Innes.**	**Very likely.**
Put a GSA Cluster Action Committee together	**Contact local and government stakeholders who would like to help take the lead on the creation of a cluster. Involve more local companies, not just Fatkat.**	**Immediately (before December 2008).**	**Time from the new champion.**	**Lead: The new champion Partners: Representatives from the City of Miramichi, Enterprise Miramichi, Business New Brunswick, ACOA, NBCC, Fatkat, etc.**	**Already achieved.**
New Media Network					
Create the Miramichi New Media Network (MNMN)	**Research GSA and related new media businesses and groups in the Miramichi area.**	**By early 2009.**	**Time of the champion and committee.**	**Lead: New Champion Partners: GSA Cluster Action Committee.**	**Very likely if Champion is found and committee is created.**
MNMN meetings	Have the association members meet regularly to find out who is doing what and how they could benefit form each other's services.	First meeting by March 1, 2009.	Time and meeting space, perhaps refreshments.	Lead: New Champion would become chair of the Association.	Very likely if Champion is found and committee is created.

Action Item	Tasks	Timeline	Resources	Lead and Partners	Likelihood of Success
Awareness Building Activities	**Cyber Socials, Business networking, conferences, "reverse trade shows", etc.**	**Immediately and ongoing. Could take place before formal association is created.**	**Funding for facilitators, space, catering, etc.**	**New Champion and GSA Cluster Action Committee**	**Very likely.**
Needs Assessment	Have association members meet to conduct a needs assessment.	By March 1, 2009.	Time and meeting space, perhaps refreshments.	Lead: New Champion Partners: Association members.	Very likely if Association is formed.
Issues Arising from Needs Assessment	(Depends on needs assessment results)	(Depends on needs assessment results)	(Depends on needs assessment results)	(Depends on needs assessment results)	(Depends on needs assessment results)
Financial Incentives					
Meet with New Brunswick government regarding commitment to GSA sector and cluster development in Miramichi	**Conversations with New Brunswick government – make the case for financial incentives (tax credits, funding, easier access to credit lines, etc.) in attracting and retaining businesses, and gain clear support for the sector.**	**Immediately (September – November 2008).**	**Time and travel to meet with government.**	**Brian Donovan, Jeff MacTavish, government representatives, etc.**	**Very likely (may have already taken place) .**
Creation of financial incentives (tax credits, etc.)	Government decision.	Preferably ASAP.	Government time and resources.	New Brunswick government.	Hard to tell. Will depend on success of above meeting.
Infrastructure and Services					
High Quality Internet Connections	**Fibre optic cables and T-1 Lines for high volume traffic.**	**Preferably ASAP.**	**Time and money.**	**NBCC is already looking at getting a T-1 Line.**	**Reasonably likely.**
Transportation - ground	**Establishment of public transit system.**	**Immediately.**	**Time, money, advertising, buses, drivers, etc.**	**Jeff MacTavish and committee.**	**Highly likely.**
Marketing	Market Miramichi as hip artsy city with a hub of animation and gaming activity.	Start immediately. The image will grow as the cluster develops.	Money and creativity.	Lead: City of Miramichi Partner: MNMN.	Pretty likely. Miramichi is already starting to change with new stores opening.

Action Item	Tasks	Timeline	Resources	Lead and Partners	Likelihood of Success
GSA Companies and supporting businesses	**Attract further GSA companies and supporting businesses. Focus perhaps on 2-3 smaller companies than one large one.**	**Continue to do so and once a champion is found and an association created, extra effort can be placed on this action. Results of the MNMN needs assessment may identify particular businesses that are needed and that would succeed easily.**	**Time and money.**	**Champion and MNMN along with other stakeholders such as the City of Miramichi, Enterprise Miramichi, Business New Brunswick, etc.**	**Highly likely if elements needed to attract these businesses are marketed to them effectively such as financial incentives.**
Hip stores, restaurants and entertainment for employees (see Marlin et al., 2007 for specific businesses)	Attract new establishments that young gamers and animators would want to frequent and that would foster the creative process – coffee shops, playhouses, funky clothing stores, etc.	Continue to attract these businesses.	Time and money.	City of Miramichi, Economic Development Department.	Likely as already new stores have come to the city.
Education Facilities					
More lab and classroom space, and computers	A lab which can hold 120 students with a divider to split into two classrooms as needed, refurbishment of existing labs, and more classroom space, and more computers.	Starting next fall (2009) and continuing.	$1,312,000 See Fowler (2007) for specific breakdown and more detail.	NBCC Miramichi with considerable financial assistance from both government and industry.	It is deemed to be critically needed for NBCC. Success will depend on obtaining government funding. If more space is not created it may limit the ability of the cluster to grow.
A Render Farm	Hardware and software needed (could be used by small companies in Miramichi as well, source of partnerships).	Once more lab space and computers have been acquired.	$90,000.	NBCC Miramichi.	It is deemed to be critically needed for NBCC.

Action Item	Tasks	Timeline	Resources	Lead and Partners	Likelihood of Success
Increased human resources	More industry professionals are needed to teach more courses, as well as support service staff to meet the need of an increased enrolment.	Starting next fall (2009) and continuing.	Significant financial investment from the government.	NBCC Miramichi local industry, Business New Brunswick.	It is deemed to be critically needed for NBCC. Success will depend on obtaining government funding. If more space is not created it may limit the ability of the cluster to grow.
Curriculum development to meet the fast paced needs of industry	Consultations with industry and local businesses to see what skills are required and to help decrease the need for costly on the job training. Internships with local businesses (eg. FOG Studios) could be arranged.	Starting next fall (2009) and on an ongoing basis.	Significant financial investment from the government.	NBCC Miramichi and industry.	Very likely if NBCC can set up consultations with industry experts and local government. With the formation of the MNMN, one task of the association could be to inform NBCC of their curriculum needs.
Incubator program for entrepreneurs	Create an incubator program to help support and create local entrepreneurs.	3 to 4 years.	$500,000.	NBCC Miramichi, NB Government, Enterprise Mirmaichi, and industry.	Hard to say. Need commitment from government and industry.
Applied Research and Development					
Option #1 – Centre of Research Excellence at NBCC	Applied R&D activities take place at NBCC. Some research used to be performed by faculty and some are interested to start again. But much time is involved in teaching. A PhD faculty member may be needed or at least partnered with.	Likely only once more classroom and lab space is made available, as well as more staff at the college.	Financial resources.	NBCC Miramichi.	If more faculty are hired and more lab space is created, research activities are more feasible.

Action Item	Tasks	Timeline	Resources	Lead and Partners	Likelihood of Success
Option #2 – Industry-supported Applied R& D centre	An applied research centre external to the government, able to create its own research mandate, offer conferences and learning events, as well as advocate for better housing, encourage venture capitalists to invest, build social networks, advocate for transportation, policy reform and research.	Timeline depends on willingness of local business community once enough businesses located in Miramichi.	Financial resources.	Industry and applied researchers.	Unlikely in the immediate future (1-3 years) without a substantial increase in the number of local companies to support the centre.
Option #3 – Applied Research and Innovation Department in Fatkat and other small companies	An applied research department opening at Fatkat to work on developing new technologies. A network of innovative minds working at various companies and institutions.	Depends on willingness and interest of Fatkat executives.	Financial resources and innovative minds.	Fatkat	Possibly likely, but only if senior staff at Fatkat want to invest the money into R&D.

Table 2 – Action Plan Timeline

	2008			2009												2010												2011								
Action Plan Task	**O**	**N**	**D**	**J**	**F**	**M**	**A**	**M**	**J**	**J**	**A**	**S**	**O**	**N**	**D**	**J**	**F**	**M**	**A**	**M**	**J**	**J**	**A**	**S**	**O**	**N**	**D**	**J**	**F**	**M**	**A**	**M**	**J**	**J**	**A**	**S**
Leader																																				
Committee	Already accomplished																																			
Network																																				
1st meeting																																				
Awareness building																																				
Needs assessment																																				
Meet with NB gov't																																				
Financial incentives																																				
Net connection																																				
Transit																																				
Marketing																																				
Attract business																																				
Rooms, labs, computers																																				
Render farm																																				
NBCC staff																																				
Curriculum																																				
Incubator																																				
R&D at NBCC																																				
Industry supported centre																																				
R&D at Fatkat	(Depends on interest and willingness of Fatkat)																																			

7. Budget

According to Sam Punnett (pers. comm., Sept. 3, 2008) budgets for cluster development are very hard to estimate. He explained that some stages could be done through shared office space, along with some small grants. He was part of the creation of New Media BC which started with one person wanting to create an association. She worked for months without pay but eventually attracted stakeholders and sponsors by identifying needs in the community. However, Gail Langdon (pers. comm., Sept. 3, 2008) provided some rough estimates. She believes to jumpstart the entire industry in Miramichi successfully that about $2 million would be needed, not including upgrades or additions to NBCC programs, equipment or space (estimated at nearly $2 million by Fowler, 2007). Langdon believes the likelihood of success of implementing a cluster plan in Miramichi within a year is very high if the right approach is taken which requires solid industry experience by a proven business development team (ie the GSA Cluster Action Committee).

8. Discussion – Implications for Transforming the Local Economy

Despite there still being little factual information in the literature "available that speaks directly to rural areas and the effects of ICT infrastructure development and utilization" (Pigg, 2007), there does appear to be great potential in a GSA cluster to transform the local economy according to experts consulted. Implications for Miramichi include a diversified economy, a stop to the current "brain drain", and improved infrastructure.

Assuming a successful cluster is developed, Miramichi would benefit from a diversified economy. Many different businesses within the new media sector would work together, using each other's services and also creating the need for spin off businesses including more restaurants, bookstores, tourism activities and more (Jerome Kashetsky, pers. comm., Sept. 3, 2008; Heather Fowler, pers. comm., Sept. 2, 2008).

A GSA cluster would also limit the current "brain drain" taking place in Miramichi. There is nothing for young people to do so they leave to pursue careers in larger centres. Most NBCC grads find employment outside Miramichi and often outside the province. There are not enough local jobs for them. Furthermore, those who have left to pursue work in the media field could return home.

According to Jerome Kashetsky (pers. comm., Sept. 3, 2008) there is enormous potential economic impact on the region from GSA. Miramichi could become a major player in the new media sector. He goes on to explain that a new media cluster in Miramichi would help develop the region economically by improving infrastructure (roads, airports, communications).

In summary, if the action plan is followed, a dedicated champion is found, and all stakeholders are willing to work together, then there will be a multitude of positive impacts on the local economy.

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Appendix – Interview Questions

Animation in Action
Unstructured Interview Questions

Introduction about the Study

I am a research associate with the Rural and Small Town Programme at Mount Allison University in Sackville, NB. Enterprise Miramichi (a regional economic development agency) has employed RSTP to develop a detailed action plan for the development of a Gaming, Simulation and Animation (GSA) cluster in Miramichi, NB. There is a desire for R&D (perhaps developing a centre of excellence or an applied research centre) and cluster development (attracting firms, growing new firms from within, etc). The action plan is to focus on the next 1 to 2 years, or short term achievable goals. Miramichi is a pulp and paper town of about 20,000.... where the primary sector is in significant decline, where there is a local Community College that offers the only animation and gaming programs in the province, and where there are 2 firms in the sector (one is a significant international player - Fatkat). The region is about 1.25 hours north of Moncton, NB.

RSTP is doing some research to find out what opportunities there are for a small city in a rural area to develop a GSA cluster including R&D, and what the necessary steps and elements would be in an action plan to begin developing a cluster in 1-2 years. As a gaming company in another region I am curious to know what you think would be the viability of a cluster in Miramichi, and what would be needed to achieve this. If you are willing, I would like to set up a time to talk in more detail this week (August 13,14,15) or anytime the week of August 25th. If you prefer, I have also listed the 11 questions below in case you would rather respond via e-mail. Feel free to answer only those questions which you have knowledge about.

Questions
1. What elements need to be present for an animation and gaming industry to succeed?

2. Are you aware of any animation and gaming clusters in small cities or rural areas?

3. What would be the benefits to developing a cluster in a small city or rural area? (For example, does it matter there is no local airport, have to go 1.5 hours to Moncton?)

4. What would be the benefits for developing an animation and gaming cluster in Miramichi, NB specifically?

5. What does Miramichi have going for it that makes it a good location?

6. What should be the main strategic priorities for a GSA cluster in Miramichi?

7. Some ideas that are floating around include:
-a centre of excellence at the local college (increasing lab space, upgrading labs, new equipment,

render farm, dedicated website, etc.)
-an industry supported applied R&D centre (a separate entity perhaps lead by the college but governed by a board of directors, the focus would be on educational benefits, socio-economic benefits to the community, and contributing long term to R&D)
-attracting more businesses (new external one, growing new ones from within the city, complementary firms such as sound production, as well the kinds of establishments animators and gamors would frequent such as pubs, comic book stores, clothing stores, etc.)
What do you think of these ideas?

8. What would need to take place in order to develop a research and development (R&D) centre focused on animation and gaming in Miramichi? (What would need to happen first, second, third?)

9. How much would these things cost? Who should take the lead? What sort of timelines would be involved? What might be the likelihood of success and why? What is the relative importance of individual action items compared to others? What linkages do you see with other possible action items?

10. Are you aware of any evidence for how the GSA sector may impact and transform the local economy?

11. Is there anyone else I should speak to while I work to develop an action plan to develop a GSA cluster in Miramichi?