

**Steering on Black Ice:
The Continuing Search for Sustainable Livelihoods
in the Ottawa Tech Sector**

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When you hit a patch of invisible “black ice” on the road, it is usually too late to do anything other than steering away from the ditches and oncoming cars—and hoping for the best. If you slide off the road, you will have to rely on the goodwill of other drivers to help you until the tow-truck arrives and you can resume your journey. In the final analysis, the only real guarantee you can succeed in steering on black ice is for the odds to be in your favour that the community will come to your aid.

Introduction

In most countries of the developed world, the jury is still out on whether technology clusters are capable of generating sustainable livelihoods for large numbers of households. In technology centres across North America and Europe, the question remains open—and serious. How does a technology cluster rebuild itself after a radical collapse? How do technology workers, their households and the communities in which they live develop the *resilience* necessary to prevail in the face of such adversity? What strategies and tools can be created and effectively applied in support of this struggle for sustainable livelihoods? This paper examines Ottawa’s recent experience in coping with tech-cluster adversity—in trying to steer on the “black ice” of uncertainty and volatility in the tech sector. The lessons of this experience may be of use to technology clusters elsewhere.

Picking Up the Pieces After the Tech Wreck

Before the technology bubble burst in 2001, and powered by computers and telecommunications, the sector delivered hundreds of thousands of well-paying jobs, notably to highly skilled engineers and programmers, across North America and Europe. Along with these knowledge

workers also came hundreds of thousands of lower skilled employees, including secretaries, clerks and laboratory assistants. In cluster centres like Palo Alto, Boston and Austin, local economies boomed through big-ticket purchases on homes and cars by tech employees. Economic multipliers pulsed through these centres, enabling the services, retail, financial, construction and real estate sectors to flourish. Tax revenues filled the coffers of municipalities. Charitable donations increased sharply.

Then the tech wreck hit. The sector unravelled, and shrunk with astonishing speed. Large, anchor companies in telecom, photonics, software and semi-conductors shed tens of thousands of workers, high- and low-skilled alike. Smaller, supplier firms lost their markets, and failed. Venture capital investment in the sector fell dramatically. The volatility and unpredictability of the tech sub-sectors—together with the non-transferability of some technology skills *across* those sub-sectors—made it extremely difficult for knowledge workers to anticipate and move toward job opportunities. In contrast to the buoyant optimism several months earlier, tech workers suddenly faced the spectre of long-term unemployment, and many experienced depression. Financial and emotional stress ate away at family stability. Homes were mortgaged or sold, and households tapped their core savings to cope with the downturn. Some disillusioned knowledge workers abandoned the sector altogether, migrating to lower-paid professional or service jobs. Without tech-driven multipliers, other sectors faltered. Tax revenues and charitable donations shrank markedly, putting further pressure on governments and charities to respond to the social consequences of the “wreckage.”

This pattern describes the Ottawa experience. From a high of more than 70,000 workers during the boom, Ottawa's technology cluster now employs about 45,000 people, according to Statistics Canada. But not only was there a dramatic drop in jobs in absolute terms, there was also a decline in the *quality* of employment. Much more tech employment in Ottawa now is part-time, lower paid, with fewer benefits, and often in risky start-ups.¹ In 2004, only five of 33 publicly traded tech companies in Ottawa posted share prices in the double digits. A dozen high-profile companies shut their doors. Venture capital investments were minimal and slow. Semiconductor sales were flat. With a high Canadian dollar, those technology firms still active in the region sought to limit their operating costs by not taking on new staff. The ten percent office vacancy rate was the highest in seven years, with the most elevated levels located in the west-end suburb of Kanata. Tight municipal finances resulted in sharp budget cuts to community agencies, and many charities experienced loss of income from a drop in donations. Additional pressure was placed on the local community foundation and other donors to compensate for this funding loss, which they could only fulfill to a limited extent. Residents were spending more of their income than two years earlier on essentials like housing, furnishing, savings and taxes. Perhaps most disturbingly, there was unprecedeted demand in 2004 on food-bank services in the region. Fully one-fifth of Ottawa-area food-bank users hold a post-secondary degree, and many of these are likely former knowledge workers (Kristal-Schroder, 2004). The local media extensively chronicled the region's economic downturn and its effects (see, especially, Bagnell,

¹ Recent national research by Statistics Canada suggests that the most devastating effects of the downturn were concentrated in information and communications technology (ICT) manufacturing. In contrast, the numbers of businesses in ICT services remained relatively stable. And the sector continues to attract a relatively large number of new businesses each year, in spite of the downturn (see Beckstead and Brown, 2005). It is likely that, in Ottawa at least, these new entrants are primarily start-ups that have emerged following the shedding of jobs by the largest companies.

2005a, b; Goff, 2004a, b, c; 2005 a, b, c, d, e; Hill, 2004a, b, c, d; Hum, 2005; Mayeda, 2005, 2004a, b, c; O'Neill, 2004, 2005; Sutcliffe, 2004, 2005).

One of the least impressive features of the Ottawa experience was the way in which politicians, business leaders and some media editors tended to minimize, or obscure, the scale and negative effects of job loss in the tech sector. Apparently not able to break their habit of boosterism honed during the tech boom, these public voices would accept a number no higher than 5,000 net unemployed tech workers. Aided by the efforts of the Ottawa Centre for Research and Innovation, the City's economic arm, to present the most positive tech employment numbers possible, and in the absence of comprehensive, ground-level survey data, this figure was maintained in public discussions for several years.² However, as activists among unemployed tech workers organized themselves, and began to speak out publicly, a more realistic and accurate discourse eventually emerged. In early 2005, a full five years after the peak of the bubble, an Ottawa Citizen article used Statistics Canada data to confirm that the tech sector had lost 27,000 net jobs since downturn began. Ottawa's largest anchor firm, Nortel, alone shed 15,000 jobs during the period. This perspective lent new credibility to activist claims that there are 10,000 to 15,000 unemployed or underemployed technology workers in Ottawa today.

While this picture obviously is not pretty, Ottawa has some key assets that are helping the region navigate through this challenging period. Being a capital city, Ottawa is home to the

² On the size of the current labour force in the technology sector, OCRI puts that figure, as of early 2005, at 67,800—though this includes non-technology workers and support staff in tech firms. In contrast, Statistics Canada, using different criteria, estimates that technology employment in the region reached only 45,500 by that date (Goff, 2005e). Both groups agree, though, that there has been a dramatic fall in tech jobs since the bubble burst. Yet, presumably to promote the region, OCRI's president publicly predicted that tech-sector employment will climb to 100,000 jobs by 2008. This prediction was greeted with wry scepticism in many quarters (see Sutcliffe, 2005). It also served to maintain the ambiguity in public discourse on this issue.

headquarters of most federal-government departments and agencies. When the bubble burst, some tech workers quickly moved over to work in the public sector, with its solid job security and attractive salaries and benefits. Moreover, government is an important purchaser of the products and consulting services of computer, software and telecom companies. In particular, terrorism and the Iraq war have fuelled government procurement in tech-related security and defence products. Further, a robust construction program by the federal government has strengthened that sector. At the same time, as the tragic events of 9/11 recede in time, Ottawa's tourism sector, which relies on mobile American clientele, is beginning to revive. Finally, the region is home to some 1,600 vibrant small and medium-sized businesses, half of which hired new staff in 2004.

Still, the Ottawa economy remains stalled in low gear, and tech prospects are not particularly bright. Layoffs continued in Ottawa's larger firms in 2005, notably Mitel, Nortel, and Alcatel. Forecasts for the middle of the decade call for modest growth in retail but minimal growth in manufacturing, which in Ottawa is primarily technology-based. Some analysts project that the Ottawa tech sector will not fully rebound until 2010—a very long time for unemployed and underemployed knowledge workers and their families. As the region continues to pick up the pieces after the tech wreck, all sectors—business, government, labour and the non-profit sector--must recommit to work even harder to find a viable way forward. It turns out that rebuilding the technology cluster in Ottawa is not actually a sprint. It is really more of a marathon.

So, who has been doing what? In the non-profit sector in Ottawa, there is widespread agreement on the importance of taking an asset-based, rather than a needs-based, approach to community

revitalization. That is, the economic, social, environmental and human assets of all segments of the community must be mapped and mobilized in order to build an effective local development and poverty-reduction strategy. And most non-profits would consider knowledge workers to be assets. However, while they have tried in some ways to respond to the needs of unemployed technology workers, nonprofits like the Community Foundation, the Social Planning Council, the Ottawa Community Loan Fund and the Ottawa Food Bank have been necessarily preoccupied with the City's budget cuts to community groups. Of necessity, these organizations have concentrated their efforts on the very needy and hard-core poor, among whom are new immigrants, single-parent women, disaffected youth and the homeless. At the same time, links between the non-profit sector and the technology labour force were never strong during the boom period, and these parties have not been able to easily forge a close alliance in the new circumstances (see Jackson and Khan, 2003). In the aftermath of the downturn, however, local community resource centres, particularly these in the western part of the city, began establishing working groups and programs targeted specifically to the needs of technology workers.

In contrast, for most of the period since the bubble burst, the Ottawa Centre for Research and Innovation (OCRI), the municipality's economic development arm, has tried to promote the tech sector as if it were business as usual. In fact, the tendency of the OCRI leadership has been to continue to sell the region internationally as if the boom was still on, a position that frequently rang hollow both at home and abroad. Trade missions to America, Asian and European cities to attract companies to set up operations in Ottawa, and to promote joint ventures with local firms, remained an important part of OCRI's work. However, important as they were, any modest successes in these areas were not, to say the least, sufficient to replace the critical mass of

businesses and jobs that were eliminated in the downturn. At the same time, OCRI encouraged its Entrepreneurship Centre to assist the many new technology start-ups that emerged out of the tech wreck. This was useful but, again, came nowhere near to replacing the thousands of lost jobs, either in quantity or quality.

A New Adjustment Tool: The Ottawa Talent Initiative

However, as a result of the organizing efforts of former tech workers themselves, OCRI eventually agreed to host a new project—the Ottawa Talent Initiative (OTI)—to promote more effective and broad-based training and adjustment of this labour force. OTI began operations in 2004. As its mission statement says, OTI is “a grass roots organization composed of unemployed technology workers and community volunteers working together to create positive change for the unemployed and underemployed technology workers in the Ottawa area” (Ottawa Talent Initiative, 2004). A review of this initiative provides insights and lessons on the challenges faced by a technology cluster seeking to rebuild itself, as well as the possibilities of specific rebuilding strategies. We turn to this case study now.

Origins. When large-scale layoffs began in early 2001, laid-off workers formed a variety of peer-networking groups to support each other in job searches, business start-ups and mentoring. By 2003, however, group members realized they faced a much larger problem and needed to coordinate their efforts. In mid-2003, a town hall meeting on the tech downturn was organized by the Western Ottawa Community Resource Centre (WOCRC). In October 2003, a large networking group, Cabin Global, hosted another public event intended to generate hope among laid off workers. Expecting 50 participants, the organizers were surprised when 400 people

showed up. Newspaper articles were now regularly bringing the negative effects of the tech layoffs to public attention (O'Neill, 2003a, b). Although politicians were still not drawn to the problem, some did pay attention when approached by key stakeholder groups.

Subsequent discussions among key peer groups representing unemployed tech workers resulted in the establishment, in January 2004, of the Ottawa Talent Initiative. The OTI name was chosen for those groups that had been meeting since November 2003. A team was established, varying from eight to 12 members at any one time, to prepare a Community Action Plan (CAP) for an adjustment strategy for the region. The next month OTI held a large public meeting, the Ottawa Talent Forum, that drew some 500 unemployed and under-employed technology workers, as well as leaders from community agencies, government and business. Input into the Action Plan was sought from the Forum attendees. The Ontario Ministry of Training, Colleges and Universities provided \$15,000 to OTI to develop the Plan, routing these funds through OCRI. A team of two facilitators was hired to assist the team in preparing the Community Action Plan. The Action Plan initially suggested 18 key strategies as a starting point, plus additional strategies that could be developed over time.

The three levels of government were not directly involved in OTI's establishment, although they did play a role in the organisation's development. For instance, the City of Ottawa contributed a staff member to the OTI Steering Committee and OCRI also committed an individual as a key Steering Committee member. The Province also deployed a staff member who later joined the Steering Committee and helped in providing the \$15,000 in funding to develop the Action Plan.

One meeting was held with provincial and federal staff present to discuss funding. However, that was the only tangible federal involvement in the start-up process.

On the basis of the CAP, the Ministry then provided OTI with an operating grant of \$180,000 under its Adjustment Advisory Program (AAP), which helps local stakeholders deal with the immediate effects of plant closures and down-sizings, usually in traditional, "rust-belt" industries. OTI's top two priorities were, first, to establish an Action Centre as a focal point from which to address the needs of highly skilled unemployed and underemployed technology workers and, second, to create employment for them. AAP funds can be used for honoraria for adjustment committee members—OTI qualifies as an adjustment committee—as well as for outside consultants and other program costs. The OTI Steering Committee was composed of unemployed volunteers from its 20 affiliated community-based peer-network groups, plus supporters of the Initiative from governments and other community organizations. However, the Committee members did not receive remuneration for their time and expenses. The OTI Action Centre opened its doors in July 2004. Within the Action Centre there is a limited number of paid and mostly part-time individuals who operate the Centre.

In addition to organizing a second Talent Forum in early 2005, OTI formed a number of Task Forces to implement the CAP priority activities. It is also currently preparing a two-year, \$2-million program proposal that would pursue more "demand-side" initiatives, particularly through business contacts and by working with local universities and colleges on commercialization activities. For instance, one idea is the establishment of business oriented R&D centres that would help generate jobs and businesses by accelerating the commercialization of new tech

innovations by laid-off workers. Advised by politically-savvy leaders, the Initiative is focusing its lobbying for these funds on the federal and provincial Liberal-Party caucuses given that Liberal governments are in power in both jurisdictions.

The Community Action Plan. Released in May 2004, the CAP is meant to serve as a framework for job-seekers, economic-development agencies and all levels of government to coordinate action to address the problem of persistent unemployment and underemployment among technology workers. Building on previous municipal policy and planning documents, the Plan focuses on three strategies: helping to grow jobs in the Ottawa region, gaining immediate support for unemployed tech workers, and providing assistance to unemployed and underemployed workers to help them transition to other sectors. The CAP identifies a list of proposed projects ranging from extending employment insurance benefits to developing a high tech-specific view of economic forecast data. Overall, while the Plan served the purpose of securing the provincial operating grant, OTI is evolving beyond the CAP framework.

Structure and Operations. The OTI Steering Committee no longer exists, having fulfilled its early-stage functions. At the heart of the Initiative are unemployed technology workers, engaged in the activities emerging out of the OTI Action Centre. While OCRI continues to serve as the corporate vehicle for OTI (providing, among other things, administrative and financial services), the Initiative now operates independently and is considering incorporating as a non-profit entity. OTI's operating principles include stimulating economic growth, reducing the social and economic effects on unemployed individuals, identifying ways to sustain the tech talent pool in the future, and continuously evaluating and improving its progress. To achieve these principles,

OTI's main strategy is to get people involved—both those directly affected by the downturn and those in the broader community. It is, in essence, a vehicle for worker and citizen mobilization.

The Initiative's activities are primarily undertaken through task forces that are organized under key themes in the CAP. For example, under the theme of "Creating Business Opportunities," it was envisioned that certain task forces would work on building a database of individuals' skills and coordinates, forming teams to bid on government requests for proposals, conducting research on labour market and workforce growth trends, and establishing links with CEOs and human resource directors in local companies as well as with recruiters and head-hunters. Under the theme of "Individual Development," task forces would focus on gaining security clearance for individuals, accessing entrepreneurship assistance, building relationships with the academic community, and setting up a speakers' series on a variety of topics. These task forces require significant effort to set up and manage. Consequently, only a small number of the planned task forces are actually up and running. The CAP did not specify that each initiative requires a Task Force, but rather identified this as one mechanism by which to implement the plan. Presently, several strategic areas are grouped under one Task Force, while other initiatives are run directly by the Centre rather than a Task Force. For instance, the Centre provides professional examination preparation in project management; a speakers series; and mini courses (e.g. technical writing, coaching, mentoring and individual help). A Monday morning coffee drop in, usually with a special speaker, helps to draw people out of their homes and prepare them psychologically to begin their week of job searching and other employment-related activities.

Outstanding Gaps and Issues. The most pressing gap for OTI is continued funding. There is a growing constituency that wants the organization to survive and even expand. The Initiative's activities are already making a difference in people's lives and succeeding in obtaining jobs for those involved with the Centre. Furthermore, its current programming perspective is short-term in nature: locating jobs, networking, etc. However, OTI leaders are interested in moving toward intermediate to long-term goals, such as building jobs and enterprises through pro-active contacts with businesses and encouraging the development of business centres. In general, the Initiative seeks to help Ottawa's tech sector build jobs from within rather than attracting outside companies to relocate to Ottawa. One short-term gap that needs to be addressed is acquiring reliable information on what business and labour-market areas are growing and offer opportunities. There is also no organization that maintains current, accurate and "granular" (i.e. sub-sector-and-firm-level) regional statistics on the sector. While OTI itself may not be in a position to acquire such statistics, it certainly could encourage other relevant organisations, such as the Social Planning Council or OCRI, to do so.

Another important challenge that OTI faces is that of trying to act as a representative body for laid-off tech workers who are not only scattered across Ottawa, but who are also very heterogeneous in terms of the particular sub-sectors in which they previously worked (e.g. computer software versus telecom switching equipment) and the particular roles they have played in their companies (for example, assembly-line workers versus specialized engineers). Still, the peer-networking groups are especially supportive of OTI. The groups that served solely as "venting" instruments for disgruntled workers did not last very long. The 20

groups that are associated with OTI seek practical results for their members. OTI is very important to them.

Outside Support. To date, the most responsive outside actor has been the Ontario government, urged on by the support of the Ontario Liberal caucus. It probably doesn't hurt that the current Premier of Ontario, a Liberal, is from Ottawa and well-known to some OTI volunteers. For its part, the City of Ottawa does not have the economic resources to contribute to OTI's ongoing operations, especially in light of recent budget cuts to its own social programs, although it did manage to provide matching funding for some additional money from the Province. And, since its own business model relies on grant-funding of projects, OCRI cannot be a financial contributor to OTI's work. So far, the federal government has not indicated substantial interest in the initiative, though OTI has some champions within the federal Liberal caucus in Parliament. This has led to some positive meetings with staff from Human Resources Development Canada (HRSDC), for which OTI has prepared a revised proposal for additional funding. In the meantime, through existing programs, the federal government funds an individual associated with the YMCA, who is specifically trained to deal with technology workers and now works out of the Action Centre.

Coping With Job Loss: The Special Needs of Older Workers

Research on downsizing in other sectors underscores the brutal fact that layoffs exact a heavy price from individual workers. Unemployment can negatively affect a worker's psychological and physical health. Job loss strains marriages and can trigger family conflict, even abuse. Laid-off employees lose the companionship of the workplace; their social networks shrink. Middle-

aged, mid-career workers suffer severely. Deeply rooted in their communities, they are less willing than their younger counterparts to look for work elsewhere. Moreover, often with a spouse and children to support, these older workers are also less able to afford to return to school and often must carry a heavily mortgaged home in a stagnant real estate market. In addition, the worker's spouse may still have a paying job and to relocate would mean to lose that job (Leana and Feldman, 1992).

To cope with job loss, unemployed workers should turn to government and community agencies for skill-building in job-searches, resume-preparation and interviewing. They should be able to access retraining and/or relocation programs. Unemployed tech workers should reach out to family and other social support systems. And they may need financial assistance to 'bridge' the period between their layoff and their next job. Moreover, company-sponsored program designed to ease the transition process out of one job and into another should be available, as well (Leana and Feldman, 1992).

In the areas of counselling and retraining, the Ottawa experience suggests that traditional services may not meet the particular needs of tech workers. For one thing, existing programs were designed for people without the high level of education that characterizes tech professionals. This is an important rationale for OTI-provided customized services targeted to this specific constituency. On the issue of financial bridging, many Ottawa tech workers received adequate buyout packages. They then were eligible to receive Employment Insurance (EI). However, EI only lasts for one year, and many workers have now been unemployed for

two to three years. Clearly, this arrangement falls short of real livelihood needs in the tech cluster.

In Seattle, after the bubble burst there, laid-off tech workers tried to move into the burgeoning biotechnology industry. Management employees with highly transferable skills were able to make this transition fairly easily. However, engineers, programmers and technical specialists, who make up the bulk of tech workers, have found few markets for their niche-specific skills. Furthermore, Seattle tech workers were as old as workers in other sectors, and as equally likely to be heads of households. Thus, they faced a number of serious barriers to coping with job loss. At the same time, what was left of the technology industry moved to an even greater reliance than before on contingent forms of labour-based on short-term, non-binding work contracts-at lower compensation levels (Doussard and Mastracci, 2003).

OTI research indicates the challenges are considerable in Ottawa, as well. A survey by the Ottawa Talent Forum of 241 unemployed technology workers in early 2004 found that more than 40 percent of respondents were over the age of 45, and 65% were over the age of 40. Many in this group had worked for the same firm for ten to 15 years. As elsewhere, these mid-career, middle-aged workers face many barriers to coping successfully with job loss. Further, the survey found that 60 percent of respondents were using Employment Insurance benefits; some have exhausted their EI benefits. In addition, 156 respondents reported having gained an undergraduate university degree, and 56 had master's degrees. At the time of the survey, 80% of respondents indicated that they planned to seek employment outside their existing field (OTI Community Action Plan, 2004).

Other OTI research summarized the challenges and barriers facing unemployed, mainly older, technology workers as follows:

- Exhaustion of Employment Insurance benefits;
- French-language requirements for federal-government employment;
- Security-clearance requirements for federal-government employment;
- Lack of availability of venture capital for start-ups;
- Outsourcing of technology jobs by major companies;
- Susceptibility to exchange-rate fluctuations by export-oriented tech companies;
- Reduction of out-placement services due to the protracted nature of the downturn;
- Reluctance of non-tech employers to hire tech workers for fear that they will leave once the tech sector rebounds;
- Negative image of technology workers as over-paid and demanding;
- Age discrimination against hiring older workers;
- Lack of awareness by employers in transferability of specific tech skills;
- Lack of ability of tech workers themselves to transfer their skills to new employers;
- Obsolescence of specialized skills;
- Lack of financial assistance for training in new skills;
- Lack of detailed knowledge on growth trends within and outside the technology cluster.

Overall, the Ottawa Talent Initiative is well-positioned to find ways of addressing these and other barriers, and has begun to do so.

Growing the Pie: Toward Community-Based Cluster Renewal

As necessary and promising as OTI is, however, it is insufficient as an approach to tech-sector adjustment. For one thing, the Initiative's work on human resources has been constrained by money and scope. For another, working on the "supply-side" of the labour market is only part of what needs to be done. Serious efforts, at the same time, must be made to address the "demand-side" of the equation, through active employment and enterprise development, which OTI and other organisations are now only beginning to address. Ottawa leaders had hoped the market would naturally, fluidly, generate new jobs and businesses. It hasn't. It is time to consider a new model of cluster renewal.

Research by the Conference Board of Canada (2004) suggests that community-based organizations – such as cluster councils, networking organizations and economic development agencies – are especially important at the early stage of a cluster's lifecycle and later, at the renewal-or-decline stage. Between these points, during the growth and mature stages of a cluster, the region's anchor technology firms are outward-oriented and well-resourced, and may not perceive the worth of such community instruments. However, when markets shift to new products or new sites, the cluster sits “on a precipice of sorts between reinvention and dissolution.” Renewal strategies can include, among others, stimulating emerging technological areas that can build on the capabilities of the cluster, licensing new technologies, and forming alliances with other clusters. In California, Joint-Venture Silicon Valley is a 15-year-old non-profit organization that has enabled that region to formulate effective responses during several periods of decline. The catalyst for Joint Venture’s creation was the Silicon Valley’s previous recession during the late 1980s and early 1990s. Now focussing on rebuilding the regional economy in the wake of the tech bubble bursting, the organization has taken on a wide range of

policy issues – among them regulation, health care and tax policy – and has also secured significant federal and state funding to stimulate tech innovation and sector reconstruction (Conference Board of Canada, 2004).

Prior to the downturn, The Ottawa Partnership (TOP), under the auspices of the City of Ottawa, had commissioned a cluster mapping exercise to determine the breadth of the region's high tech activity. Although there was activity in several high-tech sub-sectors, such as software and biotech, the region was historically reliant on telecommunications, the demand for which had triggered an unprecedented level of growth. Given the tendency toward high tech specialization in a region, when trying to develop strategies to renew Ottawa's high tech economy, regional leaders will have to avoid the temptation to adopt a generic strategy. Instead, they must closely examine what Ottawa's existing comparative strengths are and in what technology and market niches the newer local competencies are emerging. It will be difficult for Ottawa to "jump" into a completely new high technology area, given constant changes in technology and market demands and given that past success in one high tech field does not guarantee success in another. Moreover, developing new economic prospects in the region requires more "indirect animation" and social capital building efforts on the part of public authorities than they are used to, but which were important for the initial rise of the Ottawa tech economy.

European experience is instructive in this regard. The European Union's Regional Innovation and Technology Transfer Strategies and Infrastructures Initiative engages targeted regions in a multi-stepped planning process. The first step is to set up a Steering Committee with balanced representation from such stakeholders as politicians, development agencies, entrepreneurs and

other business interests, and providers of innovation support services, such as universities and technology transfer centres. An analysis is undertaken to assess the strengths, weaknesses, opportunities and threats in the regional economy. Special attention in the SWOT analysis is devoted to the comparative advantages of the region under study in relation to competitor regions. A strategic framework and specific projects to promote innovation and tech transfer are then formulated, implemented and monitored. In the political culture of Europe, this kind of multi-stakeholder process, facilitated by the state, attracts considerable support.

These approaches offer more promise than Ottawa's current approach to cluster renewal. But even the California and European models are not comprehensive enough. First, they tend to maintain the technology sector as a "gated community" in labour market terms. Second, their key structures do not include substantial representation from unemployed technology workers. Third, there are few links with the social sector of the region or community. Social agencies pay a large price when tech clusters decline or fail outright; these agencies should be "at the table" for that reason alone. Fourth, their enterprise development work is still indirect, attempting to stimulate the commercialization of R&D and creating the conditions for business to flourish. Again, this is not enough.

In fact, we need to turn to the field of community economic development in order to fashion a truly broader strategy for cluster renewal. Community economic development, or CED, is a field of practice in which non-profit corporations, associations or cooperatives "blend business and social techniques to reduce poverty and unemployment and revitalize communities"—either geographic communities or communities of interest (Jackson, 2004:68). In general, "the goal of

CED is to promote social well-being through the creation of local economic opportunity" (Torjman and Leviten-Reid, 2003: 68). In Quebec, the term more commonly used to identify non-state, non-market organizations active in this field is *économie sociale*. In 2004, the Government of Canada's Department of Finance (2004:16) announced a \$132-million initiative to finance and build the capacity of social enterprises and CED organizations across the country, recognizing the importance of CED strategies "involving citizens, governments, the voluntary sector, business, learning institutions and other partners." Such multi-sector partnerships share risks as well as benefits among stakeholders (Levine, Torjman and Born, 2002). This approach is most effective when CED organizations take an asset-based, rather than a needs-based, approach to local development, helping communities to "assemble their strengths into new combinations, new structures of opportunity, new sources of income and control, and new possibilities for production" (Kretzmann and McKnight, 1993, cited in Mathie and Cunningham, 2002: 2).³

Levine, Torjman and Born (2002) set out three basic CED models that are relevant to Canadian cities: One model is creating community wealth, by supporting the development of community- or cooperatively-owned and non-profit small businesses, together with community business networks. Organizing community or cooperative enterprises in the high tech sector may not be such a far-fetched idea. In fact, it should probably be considered an essential tool in any cluster renewal "tool-kit." The second model is community mobilization, through organizing, animating, listening, group work, strategic planning, conflict resolution, leadership development and, in particular, inclusive engagement of minorities or other citizens who may in some way be

³ Asset-based community development (ABCD) has become a well-known stream of community development and CED. American John McKnight has been a leader in promoting, demonstrating and assessing ABCD efforts in Chicago and elsewhere. The Community Foundation of Ottawa has invited Dr. McKnight to speak in Ottawa and has used the ABCD framework in some of its internal planning.

marginalized. The third model is self-employment development and micro-lending, providing customized training, business advice, mentoring, and micro-loans to enable unemployed workers or welfare recipients to start their own businesses-and succeed. To complement and promote these CED models, municipalities can play several important roles, including: convening diverse sectors, through multi-sector leadership roundtables; creating favourable conditions, such as tax breaks to local firms to hire long-term, unemployed workers; employment development, by supporting innovative training programs and community loan funds; and developing and maintaining an information base, including detailed labour-force data, analysis of untapped capacity, inventory of job vacancies, available training programs and research and methods used by other municipalities to renew local economies (Levine, Torjman and Born, 2002).

Combining a cluster-based strategy with a CED-based strategy involves “stretching” CED to encompass the needs of high-tech small and medium-sized enterprises (SMEs) and unemployed technology workers. CED focuses on long-term enterprise-based strategies that recognize and build on existing resources and talents in the community. In terms of economic development more generally, most metropolitan governments tend to focus on creating a positive environment for small businesses, particularly those that emphasize innovative entrepreneurship and new technologies. For a smaller city like Ottawa, however, it makes sense to link both strategies together. The region is increasingly made up of a proliferation of high-tech SMEs, as a response to the shedding jobs by larger firms, with these SMEs struggling to achieve sustainability and the next level of growth. There is also a new group of “disadvantaged” citizens in Ottawa – the longer-term unemployed tech workers who are experiencing problems re-entering this sector of finding employment in alternative sectors. CED initiatives are multi-faceted and deploy

strategies aimed at encouraging regional business growth, such as training and job placement, technical assistance for business start-ups, expanding local access to capital, and job creation and retention.

The Ottawa Knowledge Initiative: A Better Way Forward

There is a better way forward for Ottawa. We propose extending, expanding and converting the Ottawa Talent Initiative into a community-based approach to cluster renewal – we call it the Ottawa Knowledge Initiative (OKI). The OKI would comprise six components: community-based organization, enterprise generation, a social-tech incubator, enterprise financing, community workforce intermediaries, and database management.

1. Community-Based Organization

A non-profit legal structure would be put in place to guide OKI, with substantive representation on its board of directors not only from unemployed tech workers and executives of technology companies, but also from leaders of social organizations, the community (foundations, major non-profits), universities and colleges, and governments at all levels. In particular, the OKI organization would establish a multi-sector leadership roundtable to develop a detailed plan for community-based cluster renewal – one that would meaningfully engage all of Ottawa's diverse sectors and constituencies.

One interesting model is Waterloo's Opportunities (OP) 2000 leadership roundtable that included not only business but the social sector, unemployed citizens and the regional government. The roundtable strove to reduce poverty and unemployment in Waterloo not only

via its own initiatives, but also by each representative within his or her own sector. For example, business representatives involved in OP 2000 encouraged their peers to examine their employment practices around hiring, wages, working time, and layoffs. (Levine, Torjman and Born, 2002). Another model is the Joint-Venture Silicon Valley organization, which has drawn attention as an example where a local community employed specific strategies to changes its economic trajectory. Joint Venture brings together established and emerging leaders from the business, labour, government, nonprofits, etc. to create an *economic community* – that is, where there is a strong, responsive relationship between the economy and community that allows for sustained advantages to accrue both to companies and to the community.

In terms of practical next steps, OTI should become a separate legal entity. Its mandate, board and program capacity all should be expanded to take on the role of catalyst and driver of community-based cluster renewal. It should be rebranded as the Ottawa Knowledge Initiative. And substantial funding from all levels of government should be made available to support OKI's activities. In some areas, OKI could sub-contract with existing local organizations to provide certain services. For example, OCRI could be tasked to promote tech start-ups on the supply side, while OTI build up its services on the labour-market side. The Social Planning Council could assist in database management or other functions. OKI would thus lead cluster renewal but not necessarily directly deliver all the essential services.

2. Enterprise Generation

Public and charitable funds would be mobilized by OKI to support the start-up and growth of technology, and technology-related, small enterprise. Cooperative and non-profit business forms

would be encouraged as much as privately-owned ones. OKI would provide assistance for business plans, market studies, research and development, and financing proposals. Small business could also access OKI funds to hire consultants on business strategy and management, human resources and other aspects of enterprise implementation. Furthermore, OKI funds would be used to promote exports to the US, Europe and Asia. Where a product or service matched a market, and no individual entrepreneurs were found to come forward, OKI itself would *directly* create the enterprise and grow the business with the intent of spinning it off to other owners later.

Researchers at the University of Ottawa have also emphasized the need for a proper technology incubator in Ottawa. But they eschew the standard spin-off model, where it is assumed that technology in an incubator has to be commercialized almost exclusively as a new product in a spin-off company. Not all technologies can provide the basis for a company and establishing a company is a very onerous process unto itself. Instead, the role of an incubator should be to assess the commercial potential of a technology, in conjunction with the market conditions and the venture's management team. In addition, at a critical juncture, an assessment needs to be made whether the technology should be spun off to a start-up or licensed or sold to a large company. It is more likely that technologies, rather than companies, will be brought to market. The sector will be able to achieve more modest and sustainable successes this way. This would be a better foundation for regional growth rather than encouraging the inflated expectations of would-be entrepreneurs (Large, David, 2005). This would seem to be wise counsel in the case of Ottawa.

3. Social-Tech Incubator

Another instrument that could blend the social enterprise and CED strategies is a *social technology* incubator. This would be a community-owned corporation that would support entrepreneurial individuals and groups in R&D, business planning, marketing, financing and licensing *to create and grow businesses that use technology to meet social needs*. There are many applications of software, hardware, telecom, photonics and biotechnology that can, among many other things, help fight poverty, improve the environment and energy efficiency, promote human rights, and meet the needs of persons with different abilities. The social technology incubator would not only seek to match technology innovations with social organizations and constituencies, it would also put together the money, expertise and markets to bring the technology application to commercial reality—for a social purpose.

One of the most interesting models for a social tech incubator is Palo Alto-based Beneficent Technologies, or Benetech. The creation of former rocket scientist and tech entrepreneur Jim Fruchterman, Benetech is actually three organizations—two non-profits and a for-profit—that share leadership, space and services. An overall board of directors provides senior-level expertise in intellectual property, venture capital, software, life sciences and philanthropy. Benetech plays the role of in-house venture capitalist, evaluating product ideas, supporting market research, creating product “buzz,” and mobilizing financing—especially foundation and corporate grants. It organizes enterprises teams, supports them in preparing rigorous, benchmarked business plans that aim to quickly achieve break-even financial performance and high social impacts, with a longer-term self-sufficiency or exit plan.

Two projects illustrate Benetech's approach and potential. Bookshare.org is an online library of 10,000 scanned, downloadable books that can be accessed in audio or Braille for a small fee by blind or reading-impaired customers. This social enterprise is growing through partnerships with publishers, software companies and post-secondary institutions. The second project is Martus, which provides human rights workers with web-enabled software tools to collect, analyze and disseminate information on human rights abuses. Using open source technology, Martus generates revenue from server maintenance and administration, customizing software and user training. Other Benetech projects involve testing technologies for large-scale statistical studies in the human rights field, landmine detection, handheld computers and camera systems for the disability community, and open-source software to increase computer use among low-income groups.

While none of these businesses is likely to create thousands, or even hundreds of jobs, nevertheless such social enterprises do create some jobs—along with a lot of positive momentum in the community. They give confidence to entrepreneurs, both individual and collective, and engage key actors, such as foundations and social activists. There are obvious collateral benefits associated with bringing these parties together with the tech community to work on joint projects. The bottom line here though is to ensure that these businesses do, in fact, meet important social needs. Their *social* return on investment can be very significant, indeed.

4. Enterprise Financing

OKI would also inject new capital into the non-profit Ottawa Community Loan Fund, and strengthen its ties to OCLF. The Fund would become the Initiative's financing arm to enable new enterprises to access appropriately targeted and packaged, and low-cost loans and

guarantees. OCLF would, in turn, bring other financial institutions—including the Business Development Bank of Canada, banks and credit unions/caisses populaires—to the table to share the benefits and risks of lending to new tech start-ups.

5. Community-Workforce Intermediation

OTI has played a useful role in assisting unemployed workers to tap into a wide network of contacts through which job seekers can learn about potential job openings and share experiences. Intermediaries are important in this regard as they operate as the ‘linking agents’ between the needs of job seekers and employers. However, community organizations in Ottawa that are positioned to play such a role often lack the sectoral expertise to be fully effective – that is, they are staffed by professionals with social service backgrounds but who are unfamiliar with the occupational capacities and circumstances of technology workers. An OKI-type organization could more fully serve as a workforce intermediary between the high tech sector and unemployed technology workers. One important experience is to draw from, for example, is that of the Learning Enrichment Foundation (LEF) in Toronto. LEF has established close working relationships with a number of sectors in Toronto. Based on its intimate understanding of the skills needed by local businesses, as well as the skills and capacities of the long-term unemployed workers who are their clients, the Foundation has developed a suite of programs to help transition these individuals into these sectors. In particular, LEF pioneered a “Life Learning System” to formalize its targeted training efforts and give it the ability to link these efforts with small and medium-size companies (Torjman and Leviten-Reid, 2003).

6. Database Management

Another important component of OKI's work would be to maintain a comprehensive, local-level database—derived from a one-time household census of employment status and skills and knowledge assets, updated by smaller-sample studies on a regular basis. This information would be used by OKI to target, adjust or request certain training offerings for unemployed tech workers. The Initiative would also link the talent in the database with the immediate labour-market needs of small enterprises and large corporations alike—that is, matching the supply of skills with demand. The census would involve a massive training and implementation effort for the largest household survey ever carried out in the Ottawa area. The management information system to maintain and use the collected data would require professional management. With its labour-market initiative ‘TalentWorks,’ OCRI already tracks changes in labour supply and demand in the region, but this could be deepened to have a more sub-sectoral focus. In addition, a related tracking system would involve a community-based “early warning” systems that could help identify larger companies that may be in trouble. The CED corporation RESO in Montreal developed a capacity with local stakeholders to detect firms in trouble and, through a broad-based community process, was able to reduce the outward exit of businesses and retain the jobs at risk (Levine, Torjman and Born, 2002).

Conclusion

Steering on black ice is never easy. It really is only the possibility of community solidarity and assistance that makes trying to steer worthwhile at all. Ottawa is trying hard to steer on the black ice of a stagnant, unpredictable tech sector. In such an environment, its best option is to adopt a community-based approach to cluster renewal. The region has begun to take some initial steps in

this direction, but there is much more work to be done. A clear vision, strong political will and adequate public funding will be keys to success. In the meantime, whether the Ottawa tech cluster can really deliver sustainable livelihoods to large numbers of workers and citizens in the region still remains a serious and open question.

References

- Bagnell, J. (2005a). “\$500 billion later.” Ottawa Citizen, March 3. F4-F5.
- Bagnell, J. (2005b). “Few startups standing after the party ended.” Ottawa Citizen, March 3. F5.
- Beckstead, D. and W. M. Brown. (2005). “An Anatomy of Growth and Decline: High-Tech Industries Through the Boom and Bust Years, 1997-2003.” Statistics Canada, Ottawa.
- Buss, T.F. (1993). “A Tale of Two Cities: Revitalizing Corby, Northamptonshire, and Youngstown, Ohio.” In P.B. Meyer (ed). Comparative Studies in Local Economic Development. London, England: Greenwood Press.
- Conference Board of Canada. (2004). “Clusters of Opportunity, Clusters of Risk.” Ottawa.
- Cortright, J. and H. Mayer. (2002). High Tech Specialization: A Comparison of High Technology Centers, Washington, D.C.: The Brookings Institution Center on Urban and Metropolitan Policy.
- Department of Finance. (2004). “A New Deal for Communities: Budget 2004.” Ottawa.

Doussard, M. and S. Mastracci. (2003). “Uncertain Futures: The Real Impact of the High-Tech Boom and Bust on Seattle’s IT Workers.” Center for Urban Economic Development, University of Illinois, Chicago.

Fast Company, January 2004.

Godinez, V. (2004). “Experts debate future demand for IT workers.” Ottawa Citizen, January 10. K4.

Goff, K. (2005a). “Ottawa: The year ahead.” Ottawa Citizen, January 4. D1, D4.

Goff, K. (2005b). “Shifting gears: Consumers, retail take lead.” Ottawa Citizen, January 5. D1, D4.

Goff, K. (2005c). “Growth in Ottawa home prices slows in final quarter.” Ottawa Citizen, January 8. D1, D4.

Goff, K. (2005d). “Technology sector adds 3,700 jobs in January.” Ottawa Citizen, February 5. D1.

Goff, K. (2005e). "Getting back to the growth groove." Ottawa Citizen, January 26. C1, C4.

Goff, K. (2004a). "Office vacancies near 7-year high." Ottawa Citizen, September 25. D1.

Goff, K. (2004b). "Full-time employment slides again." Ottawa Citizen, December 4. D1, D4.

Goff, K. (2004c). "Funloving Ottawa: We're well read, so-so with attire, and highly taxed."

Ottawa Citizen, December 14. D1, D4.

Goff, K. (2003). "Few pay gains for skilled tech workers." Ottawa Citizen, November 18. E3.

Hill, B. (2005). "Nortel to shut Carling campus research labs." Ottawa Citizen, January 15, D1.

Hill, B. (2004a). "Why the shine is off semi-conductor sales." Ottawa Citizen, October 8. E1-E2.

Hill, B. (2004b). "Venture capital funding in Ottawa jumps by 33% in third quarter." Ottawa Citizen, October 23. B1.

Hill, B. (2004c). "Zarlink says high dollar will double loss." Ottawa Citizen, December 8. D1, D4.

Hill, B. (2004d). "Looking back at the year in tech." Ottawa Citizen, December 30. E1-E3.

Hum, P. (2005). "Back from the brink." Ottawa Citizen, March 10. E1, E4-E5.

Industry Canada. (2004). "Information and Communications Technologies Statistical Overview." November. Ottawa.

Jackson, Edward T. (2004). "Community Innovation Through Entrepreneurship: Grantmaking in Canadian Community Economic Development." Journal of the Community Development Society, 35, (1), 65-81.

Jackson, Edward T. and Rahil Khan. (2003a). "Sustaining Livelihoods in the New Economy: Constructing a Role for Community Economic Development in Technology Cluster Growth." Caledon Institute of Social Policy, Ottawa.

Jackson, Edward and Rahil Khan. (2003b). "Five ways to help former tech workers." Ottawa Citizen, December 19. D6.

Jarboe, K.P. (2000). "Community Workforce Partnerships." Athena Alliance, Washington, D.C.

Kristal-Schroder, C. (2004). "Food bank struggles to meet demand." Ottawa Citizen, October 7.

B2.

Large, D. (2005). "The Renaissance of Ottawa's ICT Community Through Joint Initiatives."

Optimum Online: the Journal of Public Sector Management, 35, (1).

Leanna, C. and D.C. Feldman. (1992). Coping with Job Loss. New York: Lexington Books.

Levine, B., S. Torjman and P. Born. (2002). "Community Economic Development in Canadian Cities: From Experiment to Mainstream." In C. Andrew, K.A. Graham and S.D. Phillips (eds).

Urban Affairs: Back on the Policy Agenda, Montreal/Kingston: McGill-Queen's University Press, 201-220.

Mallett, J.G. (2002). "Silicon Valley North: The Formation of the Ottawa Innovation Cluster." Information Technology Association, Ottawa.

Mayeda, A. (2005). "Seeking a bird in the hand." Ottawa Citizen, March 2. C1-C2.

Mayeda, A. (2004a). "Job growth falters in capital region." Ottawa Citizen, September 11. D1.

Mayeda, A. (2004b). "Ottawa technology hall of fame." Ottawa Citizen, November 24. D1, D3.

Mayeda, A. (2004c). "Breathing new life into life sciences." Ottawa Citizen, November 27. D1, D4.

O'Neill, J. (2005). "Failure to combat child poverty a 'national disgrace.'" Ottawa Citizen, January 22. E1, E3.

O'Neill, J. (2004). "Techies embark on journey out of 'black ice of life.'" Ottawa Citizen, January 17. D1-D2.

O'Neill, J. (2003a). "Techies on the edge." Ottawa Citizen, December 12. F1-F3.

O'Neill, J. (2003b). "Disillusioned workers urged to stay in Ottawa." Ottawa Citizen, December 13. D1-D2.

Ottawa Talent Initiative. (2004). Website (www.ottawatalentinitiative.ca)

Ottawa Talent Initiative. (2004). “Community Action Plan.” Ottawa.

Radko, R., J. McQuaid, B. Barclay and P. Putinski. (2004). Focus Group Interview with OTI Task Force Leaders, conducted by Rahil Khan, Ottawa.

Savoie, D.J. (2000). Community Economic Development in Atlantic Canada: False Hope or Panacea? Moncton: Canadian Institute for Research on Regional Development.

Srivastava, S. and N. Theodore. (2004). “America’s High Tech Bust: A Report to the Washington Alliance of Technology Workers.” Center for Urban Economic Development, University of Illinois, Chicago.

Sutcliffe, M. (2005). “100,000 tech jobs by ’08: OCRI.” Ottawa Citizen, January 22. D1, D4.

Sutcliffe, M. (2004). “Ten years after: back to potential?” Ottawa Citizen, September 25. D1-D2.

Tödtling, F. and M. Trippl. (2004). “Like Phoenix from the Ashes? The Renewal of Clusters in Old Industrial Areas.” Regional Studies, 41, (5/6), 175-195.

Torjman, S. and E. Leviten-Reid. (2003). "Innovation and Poverty Reduction." Caledon Institute of Social Policy, Ottawa.

Torjman, S. (1999). "Reintegrating the Unemployed Through Customized Training." Caledon Institute of Social Policy, Ottawa.

Woolhouse, K. (2004). "2004 gave Ottawa-focused investors a rough ride." Ottawa Citizen, December 30. B1, B4.

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