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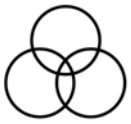

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E-Governance and Smart Communities: A Social Learning Challenge

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Bill Collins, Gilles Paquet, Jeffrey Roy & Chris Wilson

Centre on Governance, Centre d'études en gouvernance
11 Marie Curie, Vanier Hall University of Ottawa
Tel: (613) 562-5800, ext. 4910 Fax: (613) 562-5350 Email: governan@governance.uottawa.ca
URL: http://www.governance.uottawa.ca

The technology of telecommunications and information and the economics of a global economy are rapidly converging…Power is being realigned and wealth redefined. Old forms of governance are being replaced with the emergence of the City-State and the establishment of local and regional "smart communities" that aggressively embrace the tools of this new age."

J. Eger [1999]

Introduction

A period of great change has been brought forth by globalization and the new information and communications technologies (NICT).

On the one hand, globalization has triggered more intense economic and political interdependencies, and has challenged fundamental assumptions about sovereignty and the role of the nation-state. "News, currency, and economic and political intelligence no longer can be contained within national borders, but flow often instantaneously, to all corners of the globe, making it difficult or even impossible for national governments to influence political or economic conditions over which, not long ago, they held unquestioned control" (Eger, 1997).

On the other hand, the Internet, with the development of the World Wide Web and browser technology, is among the major driving forces of this change. In the last five years, the Internet has blossomed from an arcane tool used by academics and government researchers into a worldwide mass of communications medium, now poised to become the leading carrier of all communications and financial transactions affecting life and work in the 21st Century. The reality of the global village puts people, attitudes and values in much closer contact with each other than at any other time in human history. Again historically, this kind of bumping up of people against one another has produced either conflict or cooperation. Consequently as the need for coordination gets stronger in order to avoid conflict, the question of governance forms has become an issue of significant proportions.

As networks increasingly take hold and reshape the way people live, communicate and work, such forces have raised the question of what kind of governance people will need in the next millennium. Some elements of answers have been put forward under the general rubric of e-governance. It suggests "a widespread adoption of a more community-based model of governance" with greater connectivity being facilitated by new technology (Tapscott and Agnew 1999). Aided by proximity, the application of NICT locally leads to economic, social and political transformations encapsulated by the new 'smart community' movement.

Yet, this transformation is more fundamental than it sounds. There is a risk that current claims of digital interdependence remain too vague to command the adherence of many who are not satisfied with a simple redefinition of the rules of their relationship through the use of new technologies. For those sceptics, the devil is in the details, and the details, they claim, are missing. To respond to this sort of demand for details, one needs to specify more fully how the collective intelligence, or collective decision-making capacity, of communities would operate,

how the modified community governance structures would work. Our purpose in this paper is to provide some preliminary mapping of this terrain.

In section one, we identify the twin set of geographic governance dimensions at work in explaining the emergence of smart communities: the rise of city-regions and the increasing prominence of citizen engagement.

Section two puts forward the proposition that community-based models of governance must be built on what we call "collective intelligence" (CI). While CI is obviously omnipresent in e-governance and smart communities, it should be clear that there is more to it than geographical proximity and connectedness through the NICT.

In section three, we review the current Canadian strategy to promote smart communities, the Smart Community Demonstration Program (SCDP), and its rhetorical acceptance of at least some of the logics ascribed by our analysis. We also highlight some important blockages to social learning that are a precursor to collective intelligence – using them as a starting point of the action necessary to ensure the epiphany of e-governance in our digital age.

Section four examines Ottawa's changing governance context, including both an assessment of Smart Capital, the Ontario pilot of Industry Canada's SCDP, and Ottawa's Smart Growth agenda as a case studies of an emergent 'smart city'. Section five concludes with some early lessons learned to date.

City-Regions & The Learning Imperative

The knowledge-based socio-economy, having been pushed by technological change and innovation, has presented new collective learning new challenges for communities and the networks of relationships that underpin them. The present explosion of interest in smart communities and e-governance are expressions of these two sets of forces that have brought forth a renewed importance for both city-regions and citizen engagement due to globalization, free trade, decentralization and NICT.

With respect to the rise of city-regions, globalization and the rapid development and diffusion of information and communication technologies are said to be eliminating borders. Moreover, this process of international integration is paralleled by one of national disintegration: sub-national units are being forced to produce local adaptations to the global marketplace and have consequently demonstrated the greatest learning capacities in this turbulent environment. Naisbitt characterized this shift as the "global paradox" (1994), the juxtaposition of increased scope of concern coupled with a growing importance attached to the learning that occurs in smaller organizational units. It is in this environment that smart communities have emerged.

Internationally, there is a flourishing of literature on systems of innovation from a local perspective. Terms such as industrial and technology clusters, local industrial systems, or local systems of innovation have been used to denote sub-national entities, their patterns of coordination and learning, and their main determinants of socio-economic development. This

growing body of literature has informed much of the recent thinking on digital or smart communities.

Saxenian (1994) identifies the key determinants of regional competitiveness, ascribing the success of Silicon Valley to the establishment of a "network system". A network system, according to Saxenian, is a decentralized industrial system in which production is organized by networks of specialized firms that compete intensely while also collaborating in both formal and informal ways with each other and with local institutions like universities. What matters in Saxenian's network system are the patterns of relationships within communities for both competition and collaboration. In Silicon Valley, the rich social, technical and productive relationships have fostered entrepreneurship, experimentation, and collective learning. Thus, a region's social, technical and productive infrastructure appears to be as critical to the successes of local firms as their own individual activities.

The network system that links public, private and academic organizations and facilitates collective learning, provides a significant regional advantage to a community's firms so that they may operate more successfully in today's very turbulent, competitive environments. The fluidity of the system enables people with innovative ideas to connect with others to commercialize those ideas and bring them to market more quickly. Saxenian further identifies a number of factors that are key to innovation such as:

- the density of communication networks, group affiliations, and cooperation between competing companies,
- the fluidity of organizational structuring,
- the mobility of the workforce,
- the presence of local discussion forums,
- the nature of venture capital leadership,
- the degree of collaboration with world-class universities, and
- the connectivity with international partners .

Silicon Valley has excelled in each of these, and as result, has been able to spawn start-ups much faster and successfully than anywhere else in the world.

Therefore, the success of a community in the knowledge-based economy is determined, in large part, by its effectiveness in gathering, disseminating and utilizing knowledge[1] and technology. The ability to innovate and enhance performance depends on learning-intensive relationships. Fundamentally, innovation stems from interplay among the different institutions and individuals – firms, laboratories, universities and consumers. An innovative community is therefore likely to demonstrate more network-based governance patterns (Stoker 1996).

While electronic networks may be at the heart of the popular perception of smart communities, the resolution of local governance issues, which reflect a community's adaptive capacity, is more dependent on complex sets of social ties than technology. The dynamics of learning and adaptation, central to the complexities of ecological systems, are increasingly used as an analogy to the collaborative relations between sectors in local systems of governance. Our observation is

[1] We use knowledge here not as being interchangeable with data or information, but as data that has been organized and contextualized through a variety of human interactions.

that communities have developed a far richer ecology of institutions to co-ordinate their economic activities, than their social, political or civic interests.

In this new ecology a range of corporate, regional and personal networks organize the most critical processes: generating the knowledge that can be translated into products and services. That translation requires the constant scanning and contextualizing of information in a process that encourages durable and dynamic networks that are underpinned by reciprocity and mutual trust, and that allow members to share information, risks and opportunities with greater ease (Leadbeater 1999: 148).

According to many commentators, today's competitive advantage lies in the concentrated diversity that is the defining characteristic of city-regions – the diversity, for example, of intellectual capital, business and infrastructure. The significance of this advantage rests with the fact that it is not easily imitated from place to place. City-regions that are able to achieve the diversity and sufficient critical mass can attract and support high degrees of specialization – specialized labour, knowledge, business services, media, etc.

Through these specialized qualities, city-regions can contribute in unique and significant ways to an enterprise's flexibility, responsiveness and innovativeness (Capello 1999). As a response to the growing pressures of globalization and NICT, communities around the world have begun to sketch out their first drafts of "networked" communities – networks of individuals and organizations linked electronically. These are the 'smart communities' of the future.

Thus, smart communities may be viewed as models of how large complex social systems can effectively adjust global forces using their collective resources and capacities to take advantage of new opportunities – socially, politically and economically.

City-regions have a comparative cost advantage both because of their lower communication costs (including the cost of direct human interfaces of the type that produces trustability), and also due to the minimalist character of their coordination and control structures. But the requisite governance structure may not automatically emerge simply because of its desirability or the attractiveness of such an outcome. Local patriotisms and the presence of broader national or regional designs may prevent the coalescence of effective city-region governance structures, or only bring them forth in oblique ways through the work of civic entrepreneurs, those entrepreneurs who act as networkers and catalysts for community betterment.

NICT is playing an important role in the emergence of new community governance structures. The Internet is a particularly good example of successful decentralization based upon both overlapping interests and extensive connectivity. This success has proved to be dependent on extensive and affordable connections through loose arrangements within commonly accepted technology standards that establish how members interact: the payment and encryption systems in use on the Internet are good examples of competitive approaches that eventually evolved into common standards.

Yet, many city-regions have found that the setting of such standards for community interactions have proved elusive. This difficulty is ascribable to both their embeddedness in larger socio-political and economic units that stunt their independent development, but also due to their

limited understanding of the sort of levers required to provide effective governance at this level. Barnett (1997) has outlined these challenges in a usefully simple fashion:

- what size, level and structure of government is best suited to perform an enabling role;
- how can government facilitate activity by the private and voluntary sectors in order to bring about pluralistic governance; and
- how can higher levels of government facilitate the task of governance of lower levels government in the discharge of their duties?

Many commentators suggest that local governments often lack the policy tools and jurisdictional authority to effectively manage the new governance [Hudson 1995; Roy 1998]. A recent report by the TD Bank highlights the fiscal shortcomings of Canadian cities for funding the necessary infrastructure to underpin the development of Canada's urban centres, the country's principal engines of growth.

With regard to Barnett's underscoring of pluralistic governance, it is locally where such dynamics are gaining ground due to arguments that favour the learning advantages of proximity and the enhanced innovative flexibility offered by an array of networks and partnerships that hold a wider range of accountabilities and authorities [Paquet 1997]. While industrial clusters and innovation networks provided some sense of the local interdependencies in the past [Best 1990], the complexity and boundary spanning of many current issues, such as talent or e-governance, require a greater breadth of knowledge and resources.

Putnam [1993], Moss Kanter [1995] and others, have stressed the importance of collaborative practises, community ties, and civic engagement in adding a collective dimension of the region. Saxenian's portrayal of Silicon Valley is multi-sector, and Henton's emphasis [Henton and al. 1997] on civic entrepreneurship recognizes both the multiplicity of actors who are building new forms of synergistic ties and the growing importance of place in securing innovation leadership .

What appears to be the result is an environment in which manages point to new ecologies, fluid boundaries, and multi-stakeholder ties as necessary elements of both competitive and collaborative advantages [Moore 1996; Capello 1999]. The consequence of this is the need for fostering dynamic processes of learning that are, by definition, multi-stakeholder, i.e. the need for smart communities.

To follow Barnett's analysis further in the context of an aspiring smart community, the key concern is whether or not a forum, or sets of forums, responsible for the evolution of the smart community enjoys dispersed, yet significant degrees of support and participation. In addition, to the extent to which NICT is a variable in shaping the connectivity among dispersed elements of the community and in facilitating consensus, it too must also be addressed.

In terms of Barnett's third question, the term governance is "now widely deployed to capture some of the meaning of efforts at social and economic coordination in a world where all tiers of government must increasingly collaborate with one another as well as with non-governmental organizations of various kinds (private and civic) in order to pursue their goals" [Scott, Soja and Storper 1999]. This fluid interface of local governance and economic development and

transnational integration creates a new division of labour amongst local, provincial (in the Canadian context) and national stakeholders. Yet unlike in the past, the starting point for any such renaissance must be that of local action – or such has been the claim of the federal SCDP initiative designed to foster local action. This claim is worthy of further investigation.

Collective Intelligence and The Smart Community

One of the main features of the new global and digital era have been a drift toward a more informed and demanding citizenry at a time when the collective institutions (market, state, civic fixtures) would appear to become less capable to satisfy these demands.

This has led to both an increase in the degree of discontent among citizens vis-à-vis their institutions, and to a groping for new ways to cope with the challenge of adapting ever faster to the evolving environment. These new ways have been built first and foremost through the coalescence of teams, clans and networks that have been woven by empathy, trust, and common experience together with the knowledge that partners would do better together than in isolation.

Such networking emerges naturally among persons that sharing some sort of proximity, or common experience. Networking can materialize rather quickly into some form of fruitful result when motivated by survival. This dual constraint (proximity and fruitful collaboration) has led to the rise of community as the locus of such creative interaction and to the effective mobilization of skills and competencies as the *sine qua non* of the network. The notion of 'collective intelligence' (Levy 1994) is a way to capture this mobilization effect and the nurturing of continuous learning that it generates.

The notion of smart community refers to the locus in which such networked intelligence is embedded. A smart community has been defined as a "geographical area ranging in size from a neighbourhood to a multi-county region within which citizens, organizations and governing institutions deploy embrace and NICT to transform their region in significant and fundamental ways" (Eger 1997). In an information age, smart communities are intended to promote job growth, economic development and improve quality of life within the community.

At the 1997 World Forum on Smart Communities, it was estimated that some 50,000 cities and towns around the world would embrace "smart" initiatives by the year 2000. Cities and regions such as Singapore, Hong Kong, Yokohama and San Diego (California) are developing partnerships among industry, government, the private sector, health and educational institutions, and community groups. While the emphasis of these initiatives is very much on economic growth and global competitiveness, smart communities, by linking government, business and citizens, are said to provide an opportunity for enhancing citizen participation in and influence over local decision-making.

Yet, the conceptual dynamics of collective intelligence/smart community remain very poorly understood. While the geographical and technological co-ordinates of this networked reality are much easier to fathom, understand and work with the hidden portion of the iceberg is social learning and the collective intelligence that is produced from it. Consequently, while it is sufficient to underline the importance of proximity and information technologies in creating a

smart community, indeed they are as necessary as water is in the preparation of tea, they are as clearly insufficient in defining a truly smart community as water is in defining a good cup of tea.

The literature on smart communities is replete with references to proximity and NIC, often celebrating their usage through various local collaborations. Indeed these collaborations are regarded as "becoming the new model for successful urban organization in the global age, and the only local political arrangement likely to make it possible for besieged municipalities to survive in the increasingly intense global competition that lies ahead" (Eger, 1997).

A smart community initiative becomes an integrated approach to helping entire communities go on-line -- to connect to local governments, to schools, to businesses, to citizens, and to health and social services in order to deliver local services or to help advance local skills and capacities. In the same spirit, the optimum use of NICT has been rightly presented as an essential element of smart communities but has often become the *deus ex machina* from which all good -- collective intelligence and social learning included -- stem.

We suggest the core transformational challenge from smart communities lies elsewhere. It lies squarely in the capacity to ignite and sustain collective intelligence through an effective use of social learning. This in turn requires governance structures that ensure coordination among the different local stakeholders where knowledge and power are distributed. And there is no way to do this job without a distributed governance structure, the only sort of governance capable of such cognitive mobilization.

To correct the biases injected into the current debate on smart communities by the overemphasis on proximity and IT and to ensure that collective intelligence and social learning are given appropriate valence, it is crucial to uncover the impediments that may exist to a good functioning collective intelligence and effective social learning.

Smart Communities in Canada (a cautionary beginning)

The smart communities concept is indeed growing in importance in the U.S. and indeed world-wide. There are approximately two dozen communities world-wide that have begun implementing comprehensive information and service applications for their citizens and many more that have produced community portals, e-government services, online tourist services, tele-health services, and enterprise support services. Recently, Canada developed a national strategy modeled after California concept of smart communities, appropriately entitled the *Smart Communities Demonstration Program*. In the 1997 Speech from the Throne, the Government of Canada made a pledge:

> *We will make the information and knowledge infrastructure accessible to all Canadians by the year 2000, thereby making Canada the most connected nation in the world. This will provide individuals, schools, libraries, small and large businesses, rural and Aboriginal communities, public institutions, and all levels of government with new opportunities for learning, interacting, transacting business and developing their social and economic potential.*

The *Smart Communities Demonstration Program* is a three-year (October 2000-September 2003) 60 million dollar federally supported partnership program created and administered by Industry Canada to help Canada become a world leader in the development and use of IT for economic, social and cultural development. It is supporting 12 projects in typically Canadian fashion – one in each province, one aboriginal and one northern project. The program's goal is to help establish world-class Smart Communities across the country so that Canadians can fully realize the benefits that information and communication technologies have to offer. The program sets out the following objectives:

- to assist communities in developing and implementing sustainable Smart Communities strategies;
- to create opportunities for learning through the sharing among communities of Smart activities, experiences and lessons learned;
- to provide new business opportunities, domestically and internationally, for Canadian companies developing and delivering information and communication technology applications and services.

Although no such admission is forthcoming by the federal government, an important consideration for this initiative lay in the implicit recognition that successful implementation would only occur through the collaborations of local stakeholders. This would not be a federally divined and implemented initiative. This federal experiment reflects a much more European flavour in asking cities and regions to plan collaboratively in order to augment local resources with federal ones. Almost as a response to Barnett, the implication here is that a single layer of government or a single sector of the community is no longer sufficient to meet current challenges but rather innovative forms of multi-level processes are what's needed – processes that are made much more feasible in a world of e-governance.

In terms of which level of government is most likely to serve as the engine of experimentation with new models of both digital and democratic governance, the federal government's list of anticipated outcomes from the Smart Communities Demonstration Program lacks any mention of direct democracy, although enhancing some degree of citizen engagement is anticipated. In a "smart community" all citizens will potentially be connected, so why should they not be connected to their leaders. The lack of emphasis in Canada's federal initiative on direct participatory democracy means that the emancipatory potential of the Internet will depend on local initiatives and leadership. Such an observation is not necessarily surprising in light of the fact that it is nationally where the Westminster-based parliamentary model of government is most at odds with dispersed and more democratic forms of e-governance and citizen engagement.

Yet, the Internet and other IT applications, for example, could enable citizens to vote electronically in elections, referendums and plebiscites. They could facilitate opinion polling, "electronic town halls", and electronic forums that promote dialogue between elected politicians and citizens, bypassing the traditional intermediaries. Making policy information available over the Internet to citizens and educating them on how to use information technology to access the information are also important elements of electronic democracy in a "smart community". For example, in the Blacksburg Electronic Village associated with the University of Virginia in the USA, the most well used Internet resource is the town's official plan. While as exciting as

watching paint dry, citizens have come to learn that this informational resource is literally at their fingertips. It can be used to help them in a variety of personal and professional ways and most frequently it is used as a basis to debate zoning rules or development plans for the community.

Access is another major federal concern in its *Connecting Canadians* strategy. Much has been written about the *digital divide* in terms of the need to ensure that an access gap does not further exacerbate already existing economic and knowledge gaps in society. Addressing this divide seems dependent on new compacts of concerted action – locally across sectors and across all levels of government. The Community Access Program (CAP), another Industry Canada strategy has, for instance, been designed to encourage access to regions or socio economic groups that have limited or no Internet access. This is being done through consortia of private, public and civic partners that define the local need and implement a local solution.

It is interesting, and perhaps not misguided that the federal government does not attempt to define what forms of sustainable (in a social and economic sense) development should be pursued by the localities themselves. Indeed, laying out such goals and plans to achieve them are at the heart of the submissions that have competed for federal funds. Aside from contributing funds, the federal government has demanded accountability frameworks that meet the needs of federal and local stakeholders and acted as the conduit for sharing best practices and lessons learned to all parts of the country. The consequence here, explored more fully in the subsequent section, is that the workings of federalism, and the new division of powers among community stakeholders, presents an important contribution to making communities smarter.

While it remains early days for the Canadian entries into the global smart communities movement, we can attempt to sketch out what are likely to be the most important issues or the most significant blockages in efforts to achieve a bottom-up, ecologically based process of local renewal – of course one assisted by the deployment of NICT. The three issues in most need of attention are: i) the requirement for new social technologies; ii) stronger approaches to education, awareness and leadership, and iii) an understanding of the omnipresent dangers of the centralized mindset.

i) New social technologies

There is a real danger in the present smart communities' movement that social innovation is a secondary consideration to the development of new technologies – for the sake of both invention and commercialization. While NICT will continue to serve as a critical catalyst for economic development and market-based innovation, the philosophy of smart communities implies a more profound transformation in every day life – across a wide spectrum of communities. We know that even in the technology industry itself electronic communications are used best after human relationships have been established. What is the nature of the human relationships that are defined by a specific community? Are these relationships different from the sorts of relationships that have been formed in the past? Do these technologies actually enhance human relationships?

The unanswered quandary of a smart community is in better understanding the social processes of engagement that will be redefined with the addition of the electronic tools to governance toolkit. It is likely that this understanding will begin locally rather than nationally or provincially

where proximity can encourage face-to-face action through already existing pools of trust (of more traditional forms). In terms of a local governance ecology, an important emphasis must be placed on the civic innovations that may contribute to a widened exploration of how new types of connectedness might contribute to more collaborative communities.

Industry Canada recognizes that in ten to twenty years, possibly 100 city regions around the world will have invented their own ways of using technology, simultaneously becoming smart and part of an elite group of economic and social powerhouses that dominate the global economy. The SCDP has strongly encouraged the innovative use of collaboration to ramp up Canadian cities along this curve. It recognizes that only local political, civic, business, and education leaders, working in cooperation, can bring people and technology together in time to capture the competitive and civic advantages that the telecommunications revolution makes possible. While optimum use of information and communication technologies is an essential element of smart communities, community partnerships - not wires - are the fibres that bind. The extent to which the underlying social capacities can be fostered to facilitate such partnering is an open challenge that must be met with local innovation.

ii) Awareness, education and leadership

A fundamental question, however, is whether information technology and the electronic marketplace will of themselves improve the social and economic circumstances of the whole community, or further widen the distance between the haves and have-nots.

For cities to really reap the benefits of technology in aid of the development of healthy and sustainable communities requires much more than just *building bandwidth*. A truly smart community will need to develop comprehensive plans to address, in more depth, the issues surrounding access and education to ensure that all citizens have the opportunity to benefit from the knowledge-based "networked" economy. While this is an issue being looked at under the federal SCDP, the program that has been directly set up to address this issue is CAP and maybe in future the currently marginalized broadband initiative.

The digital divide that separates have and have-not communities is also a concern. In fact, among many of the communities across Canada that made application for SCDP funding there is a common feeling of disenfranchisement as the government moves on to other priorities after having done their bit for smart communities under SCDP. There is no new funding to help any additional communities that may have worthy projects to support. Interestingly, the government in 2002 was almost cancelled funding for the SCDP Directorate even before the 12 projects were completed.

The intent of the federal program was to provide a powerful impetus to create smart communities across Canada. The government's support for the 12 communities was to generate learning that could be leveraged to all communities across Canada. Notwithstanding the fact that there will no further federal support funding for communities, there also appears to be no further funding to collect and disseminate the knowledge and experience generated from the 12 pilots. Obviously, the government feels it cannot afford to provide funding to every community in Canada, something that raises important policy questions about the nature and impacts of this program

and subsequent initiatives designed to foster local connectivity. For most of the cities and regions not included in the SCDP framework, local resilience will be even more central - underscoring the importance of a collective approach rooted in the local ecology, but sensitive to global processes and the need to partner outwardly in an open world.

The local challenges that must be overcome by any aspiring smart community are evident across all three-community sectors. In the marketplace, new enterprise will require a more global outlook by necessity, and while NICT is a liberating force that unleashes greater potential for smaller companies, those smaller organizations and individuals must co-exist with larger forms of multi-national structures. In the ecology of social groups and civic associations there must be must be a similar openness, particularly when NICT can be a powerful vehicle for information exchange and learning across localities, a process that the growing mobility of human capital is likely to intensify. In terms of the state, although a good deal of emphasis has been placed for local strategic action, this bottom-up emphasis must be complemented by an equally-important discussion of the consequences of this grass roots action on other levels of government – and their subsequent interactions. This latter point requires further elaboration.

iii) The centralized mindset:

As the local level increasingly becomes the crucible where innovation occurs, what role, if any, should the federal government play in economic development? Clearly, top-down federal approaches to economic development have been everywhere discredited and are no longer feasible in an environment that requires a substantial degree of flexibility and nimbleness in order to constantly adapt and compete.

The nature of competitiveness in the new economy has forced national governments around the world to rethink their roles in economic development. According to Stevens (1996), governments are responsible for providing the framework conditions for innovative collaborations, technology dissemination and development of information infrastructures – all crucial to performance in knowledge-based economies.

The Canadian government's approach to growth and competitiveness has been to create the very framework conditions outlined above. The government, through partnerships with other levels of government, private and third sector organizations, is engaged in the development of a national infrastructure program of connectedness not unlike the railway program of yesteryear.

The federal approach claims to recognize the centrality of local, bottom-up strategies of economic development by fostering a national framework in support of the design of local NICT strategies that address the particular needs of individual communities. The program is based on the concept that local leaders know far better than national officials how next-generation technologies can best be marshalled to benefit a community. Success is believed to occur when communities take the initiative – that is, they build the necessary partnerships, develop a vision and take ownership of the effort.

Yet, the federal government's track record in this regard is not promising. The legacy of a strong central government runs deep in post-war Canada, and it is evident in the most recent regional development strategies deployed in Atlantic Canada – where many of the smart communities

principles have been repackaged into an expanded initiative, differentiated by a wider and more explicit reach of the federal government into local processes.

More curious still is the contractual approach used by the SCDP to funnel resources to its pilot projects. It was an approach that treated collaborative community groups as IT vendors, even to the point of asking for voluntary organizations to specify precisely who would be used three years out in the project. Given that many voluntary organizations ordinarily have difficulty specifying who will be working for them 3 days out, this spurious requirement was quickly eliminated. However, the mindset remains still. The 12 pilots were contracted on a service delivery basis despite the fact that they were meant to be part of a grand national experiment. Incentives for the pilots were structured around on-time on-budget basis rather than as a learning experiment. This discrepancy has yet to be resolved.

Examples like these may be justified in areas deemed less developed or where ownership is less broad, but the countervailing danger is that the federal government will go beyond infrastructure and move into disguised, albeit digitally-based, forms of industrial strategy – a return to central planning.

Thus, a national dialogue must be forged on the premise that social learning is inherently a localized process that requires endogenous strategies for both competitiveness and cohesion. The role for the federal government is clearly circumscribed – providing a framework, matching not exclusive funding of NICT deployments, and the dissemination of learning. This is a source of merit in the SCDP but one that can be quickly quashed by over-arching federal, federal-provincial, or provincial mechanisms that add rigidities to the local ecology, reducing its resilience rather than improving it.

Ottawa's Smart Capital

As Ontario's SCDP selection, Ottawa's SmartCapital has received roughly $4.5 million in public funds to be matched, in turn, by $8.5 million in private and in-kind contributions. It is the largest urban centre to receive funding under the SCDP. It is developing 13 online applications in the areas of business, education, e-government, and the community sector in a collective effort to provide the tools and core services that will attract citizens, organizations and visitors to Ottawa's online space. However, SmartCapital has expanded the scope of its original activities to include a network of advanced online laboratories, a network of 300 public Internet access sites, an expanded high capacity fibre optic network, a rural community network and the development of a local wide area network.

SmartCapital was set up as a division of OCRI, the lead organization responsible for Ottawa's bid, itself a non-profit private-public collaborative, that has acted as the area's principle civic entrepreneur and community catalyst for two decades. The early focus of OCRI on knowledge and research partnerships, in particular, developed within it a capacity for create and sustain collaboration which has been clearly demonstrated by its expanding array of industry-education partnerships, industry-government partnerships and its reputational position as the go-to place to begin any type of joint community venture.

Indeed, an important determinant in the success or failure of a SCDP bid was the degree of locally collaboration that could sustain it (meaning that in the absence of federal funding, many of the ideas might well have proceeded albeit through alternative mechanisms - arguably a point of strength of the program from the federal perspective as well).

Assessing SmartCapital- an interim report

As a starting point in this assessing the progress of Ottawa's smart community project the SmartResults Team at the Centre on Governance have tried to utilize the Federal Government's own accountability guidelines for multi organizational partnerships. According the Office of the Auditor General and Treasury Board Secretariat there are five criteria of effective accountability[2]:

1. clarity of roles and responsibilities;
2. clarity of performance expectations;
3. balance of expectations and capacities;
4. credibility of reporting; and
5. reasonableness of review and adjustment

At this stage of SmartCapital, the assessment process has been primarily focused on the first three of these criteria.

In addition to accountability, SmartCapital has committed to assessing itself in terms of added collaboration, the value adding impacts to the respective sub-project audiences, knowledge

[2] *Accountability Practices In The Public Sector*, Office of the Auditor General of Canada & the Treasury Board Secretariat, January, 1998:5

management, the transferability of its outputs and outcomes, and the overall sustainability of SmartCapital. However, the results oriented nature of the Government's accountability framework is a broad brush that tends to include these others within its scope.

Drawing on the Government's own definition, the assessment assumption with respect to Smart-Capital accountability has not been in terms of assigning blame or reporting on compliance, "but more as a useful and essential management and governance process for:

- understanding the performance of programs, services and operations, agreeing on performance expectations,
- improving performance through supportive assessment and feedback aimed at creating a continuous learning environment, and ensuring corrective action in a timely fashion, and
- demonstrating in a transparent and proactive way to others, including the public, the levels of public sector performance attained."[3]

With this in mind, we have observed a certain tension that exists between the simultaneous adoption of SCDP's service delivery paradigm (explicit in the Contribution Agreements) and the experimental learning paradigm (espoused by the SCDP Directorate). While the former tends to emphasize incentives geared to outputs (was the service delivered), the latter emphasizes outcomes and results (how are we better served/ what did we learn). Given that "*outcomes are the results of main interest*"[4] to Canadians, it will be important for Industry Canada and SmartCapital to strike the proper balance with these two paradigms to ensure that sub-project teams have the capacity to deliver on outcomes, notwithstanding the their ability to deliver on outputs, in order to meet the accountability criteria of the Government. This conclusion derives from the observations of the SmartResults Team and the experiences with SmartCapital and its subproject teams and the desire to align the expected outcomes of the government with the capacity of SmartCapital to deliver.

Early engagement with the SmartCapital team has provided the SmartResults Team the foundation for developing SmartResults as a real partnership between the Centre on Governance at the University of Ottawa and OCRI. This partnership has operated in a climate of trust and open communication between the two parties. As a consequence, a formal agreement on how to conduct SmartCapital's assessment was not difficult to negotiate. In addition, researchers at the Centre published a number of papers that became part of the conceptual framework and point of reference to help guide the development of the evaluation plan. SmartCapital's familiarity with the Centre's research work was helpful for discussions and expectations in later stages of the project.

The development of an evaluation framework for an overall assessment of SmartCapital has proved to be a challenging endeavour. SmartResults' conceptual model targets the evaluation of SmartCapital at two levels:

a) SmartCapital as a whole, and
b) the 13 subprojects individually

[3] Ibid. pg. 11
[4] Ibid. pg. 7

While outcomes at the second level have not been too difficult to identify, identifying reasonable and measurable outcomes at the SmartCapital level has been challenging. Given too that an appropriate time frame to assess SmartCapital's impact (and the impact of most sub-projects as well) on the community is likely to extend beyond the time frame of the SCDP, SmartResults is paying attention to the interactive dynamics of the project and its adaptive capacity to respond to its regularly changing external environment. While these changes have not dramatically affected SmartCapital's formal expected deliverables, they have certainly re-drawn some of the dimensions of its assessment. Examples, include:

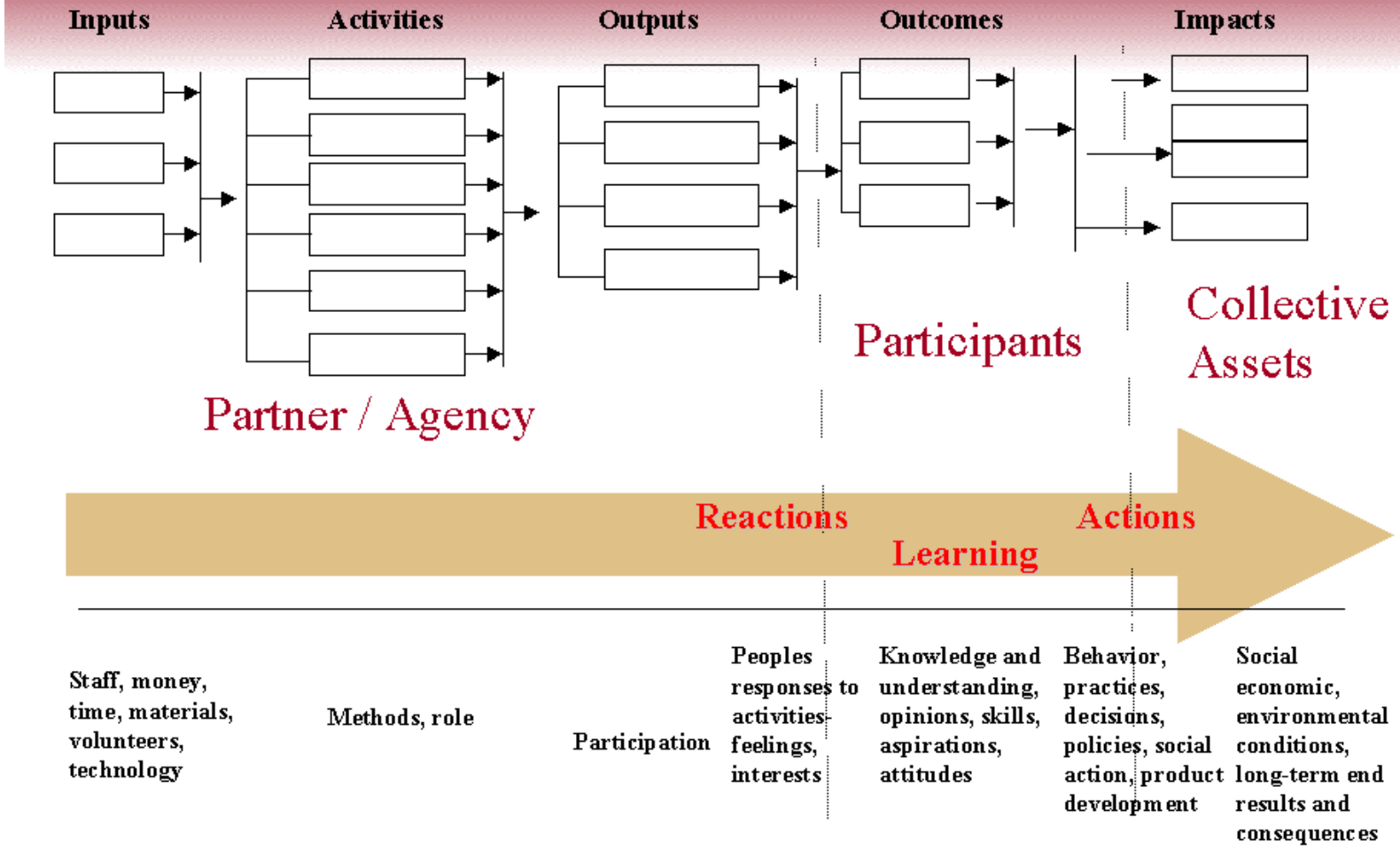
- Amalgamation of the City of Ottawa
- Changing economic climate and the downturn in the technology sector
- New directions for the city's development emerging from the Ottawa Smart Growth plan.
- Many subprojects have changed or are in the process of changing their statement of work and some subprojects have had changes in leadership.

As examples of SmartCapital's adaptiveness, we observed the evolution of both the SmartCapital 'portal' and the City of Ottawa 'portal'. The SmartCapital 'portal' was originally to be provided by Industry Canada under their Access.ca initiative. For various reasons this initiative failed to deliver and a key element of SmartCapital became unfunded. After numerous negotiations the initial expectations for a comprehensive portal were scaled back to become a 'services gateway'. This gateway will help to provide the highest value adding contribution to SmartCapital users given the absence of funding for portal development in the original SmartCapital plan. The City of Ottawa portal on the other hand originally planned to provide information channels to a variety of citizen groups. As the City's priorities changed and became more focused on e-democracy, the emphasis of their SmartCapital project shifted away from an information push strategy, dropping the parents and senior citizens channels, to one of increasing engagement with citizens in its decision making processes.

From these kinds of experiences we conclude that beyond the simple recognition that deliverables are met, a fair assessment of SmartCapital as a 'smart community' must inevitably weigh heavily on the adaptiveness of its 'process' even if hard measures of its impact on the economy or on community cohesion may prove uncertain. In the end, adaptiveness is indicative of effective learning, and that collective learning is indicative of a community getting 'smarter'.

The extensive interviewing of sub-project team members and SmartCapital management that was conducted by the SmartResults Team provided an additional feedback and communication channel from the subprojects to SmartCapital management. Some of the evaluator's observations to the management team helped to strengthen the ties between the central management group and the subprojects. As an example, the SmartCapital management was made aware of the "distance" that the SmartLibrary subproject felt in its connection with its participation with SmartCapital. As a result, SmartCapital management decided to increase their participation whenever possible in the meetings of the individual subprojects.

Evaluating SmartCapital



It became clear to the SmartCapital management team early on that some of several of the subprojects shared a number of functional and design attributes that encouraged collaboration. After informing and advising subproject teams on their various commonalities, direct lateral communications between subprojects started. Cross project teams formed and discussions were held to identify how to work together and share experiences and potentially share costs. These inter-project interactions presented evidence of synergistic outcomes of the type that were anticipated from the SmartCapital process. Capturing these interactions through the SmartResults interviewing process will contribute to assessing key dimensions of SmartCapital's outcomes. Some examples include:

- National Capital FreeNet have discussed with the Smart Community Centre their mutual promotion among their complementary audiences and clients.
- Smart Community Centre have discussed digital divide issues and training concerns with Ottawa's *SmartSites* project, an affiliated SmartCapital initiative.
- SmartLibrary and the National Capital FreeNet have discussed mutual promotion among their audiences
- EduNet and the Smart Community Center discussed the commonalities among their service business models
- Moving forward with the SCOR subproject.

Though we are not quite there yet, the implementation of the assessment will be a collaborative effort between SmartCapital, its subprojects, and SmartResults. We suspect that a potential difficulty may arise with a lack of resources among the project teams to devote to the collection of data. Many of the subprojects have not set aside a budget for the evaluation work. However, our approach is to integrate our assessment with other evaluation efforts that subprojects may conduct and thereby minimize the direct and indirect costs of evaluation as much as possible.

Identifying outcomes and setting their measurement criteria has proved to be a matter of arriving at a workable balance between goals (sometimes changing goals) and resources with the people responsible for the subprojects enmeshed in a process of learning themselves as they face new ideas and challengers during the implementation of their subproject. As a consequence, SmartResults has learned that an externally imposed set of criterion that presumed a degree of familiarity and uniformity within each project did not exist and that a negotiated arrangement was required.

The task of SmartResults has been more that of an advisor than an auditor. Overcoming the 'auditor' perception has been challenging. We learned that closer engagement with the SmartCapital and subproject teams has allowed us to identify additional opportunities for collaboration and learning by paying attention to people and their ideas. The more we have been seen as a colleague through participation in the formal and informal events of SmartCapital and its network environment the less we were perceived as a threatening auditor – providing us with the opportunity to learn more from the practitioners 'in action'.

However, despite some very good examples of intra and inter-project learning, we observed that the SCDP implementation, as reflected in the Contribution Agreement, oriented the partners more towards the delivery of services rather than towards creating a learning or experimentation

environment. Hence, project teams that were pressed for time and lean on resources found it difficult to commit time to learning experiments or learning outside the bounds of their Contribution Agreement. We suspect that such experimentation might have been perceived as having the potential to distract attention and resources away from committed outputs in ways that might reflect ill on the success of their projects.

Given the need to balance service delivery with learning, we would encourage a greater emphasis on learning as a strategic direction and suggest the following refinements to enhance SmartCapital's learning:

1. Provide more opportunities for sub-project team members to learn from each other. In fact, the sub-project teams have already requested this and the SmartCapital management team is creating forums for this type of discussion.
2. Provide more opportunities for sub-project team members to learn from other SCDP projects. This too is already being planned in the context of Ottawa's Smart City Summit.
3. Create a broader awareness that learning itself is a deliverable and that resources devoted to this deliverable are an essential element of performance.
4. Encourage the direct participation of users and/or clients to provide feedback on the project's services.

While it is premature to deliver a verdict on SmartCapital, our observations lead us to draw a preliminary conclusion -- that despite the issue of trying to balance service delivery with experimentation, SmartCapital appears to demonstrate a capacity to generate trust, to be self learning and autocatalytic, to adapt, to share knowledge, and to be capable of conducting joint action. It seems like SmartCapital is well begun.

In parallel to the SmartCapital initiative, Ottawa's own strategy for local economic development has been co-ordinated by The Ottawa Partnership (TOP), an informal forum of prominent local leaders with a delegated mandate to foster collective action across government, industry and education. While formal authority for economic development remains vested in various public, private and associational bodies, TOP ensures coordination among them and thus has become the final authority on economic development issues. In situations of complex problems where there exist multiple authorities and accountabilities this method of using informal delegated authority to provide coordination has proved in Ottawa and elsewhere to be an extremely useful mechanism.

The Ottawa experience appears to be a precursor towards a broader movement of smart cities, wherein the focus on economic development is inextricably linked to community and social development (to the extent that the public sector changes at all in such a context) and a more streamlined local government. Localized governance processes have been largely driven by cluster arguments for vertical integration of economic development and by collaboration around the perimeter of local innovation. Municipal government structures in Ottawa, as with few exceptions in North America, have only begun to shed their traditional role as service delivery agents of higher-order (i.e. provincial) governments and insert themselves strategically as an agent of change in the new local scene.

Ottawa has become a vocal leader for reforming the constitutionally constrained relationship between the three levels of government spurred on by a KPMG report that demonstrated the paltry local return to the City of tax dollars earned from its strong economic growth in the late nineties. The City's argument is that its property tax base is woefully insufficient to sustain similar future growth from which the province and the federal government have benefited handsomely. The City's position which first seemed radical in 2001 has been vindicated by the recent TD Bank report and the Government's Caucus Task Force On Urban Issues.

Conclusion

Companies, governments and civic organizations must operate in a world of heightened complexity, and they must respond collectively at the local level in order to meet the challenges of a global economy alone. Collaboration between all sectors and members of society will be the key to success. For truly effective local governance, today and in the future, it is essential that government and politicians not only govern efficiently and economically, but effectively engaging citizens in open and participative information sharing and decision-making.

Engaging citizens contributes not only to better decisions but also to the greater vitality of both municipal government and communities. Clusters and communities must become inter-linked, and they must be viewed and nurtured as interdependent components of a local ecology where interests converge and communities grow.

Such is the hope provided by the vision of a *Smart Community*. Smart communities will need to move beyond the focus on economic development and develop a coherent and compelling vision that makes it clear how the new information networks are going to enhance and extend human relationships to promote deeper involvement across local governance.

The reality, at least presently is more cautious. While there is little doubt about the growing importance of the local nexus of governance and proximity, technology alone cannot transform how individuals and organizations behave, interact and promote their collective interests – in processes that are fundamentally different than what takes place presently. The social challenges presented by NICT are in some respects similar to the impacts technology has had in the economic sphere.

In the latter case, technologies have improved the efficiency as existing processes handling them with greater speed and fewer resources, but the spectacular creations and success stories of technology have taken place when entrepreneurs apply new technologies to promote fundamental re-inventions of how we live. On the social side, the same opportunity has presented itself as smart cities– although connectivity alone will not suffice. New mixes of technical connections and social creations will truly define the smart cities of tomorrow.

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