Geomatics Industry Association of Canada
L'Association canadienne des entreprises de géomatique

SHAPING CANADA'S LANDSCAPE

TOWARDS A NATIONAL GEOMATICS STRATEGY FOR CANADA

A Discussion Paper Prepared by

The Geomatics Industry Association of Canada

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On Canadian Innovation, Productivity and Competitiveness

A recent publication by the Conference Board of Canada entitled "Innovation" gave Canada a "D Grade" in innovation – ranking Canada 13th out of 17 countries in its ability to ***"turn knowledge into new and improved goods and services"*** for the benefit of our economy and society. The Conference Board points out that innovation is an ***"essential component of a high performance economy"*** and is a key factor in helping us address issues of great importance such as our environment, economy, health care and education.

Countries that rank highly on the innovation scale such as the US, Switzerland and Ireland have developed public policy and national strategies around innovation. Strategies that, according to the Conference Board, seek to ***"systematically and coherently promote national innovation and help cutting edge sectors achieve their global potential".*** Canada has not done this. We have some very good universities who conduct valuable research and development but we tend to lack the capability to turn the results of that R&D into products and services that help us as a society. Geomatics is a "cutting edge" sector that needs to be leveraged more effectively in Canada.

One of the negative impacts of low innovation is low productivity and Canada's productivity lags behind that of more innovative countries. In a 2007 report entitled "Canadian Productivity Losing Ground", the Certified General Accountants Association of Canada documented Canada's lagging productivity and said that our standard of living is at risk as a result. In fact, the CGA report pointed out that the majority of gains Canada had made in productivity were associated more with Canadians working longer hours than with Canadians working more efficiently. CGA-Canada stated ***"it is necessary to promote business innovation and efficiency – that is accelerate physical production and enhance quality by using technology to bolster productivity"***. This need to be more productive applies to all sectors of our society – business, government and academia if we are to be successful in a global economy. Geomatics is a technology that can bolster productivity across a wide range of sectors.

Low levels of innovation and productivity make us less competitive as a nation at a very bad time… As Canada is struggling with these issues, other countries are forging ahead in a global economy. The January 2009 issue of GIM International documented the importance of Geomatics technologies to India's society and economy by helping them address poverty, economic development, water and natural resource management. Of note in this article was a quotation from Preetha Pulusani, Joint Managing Director of Rolta where she said ***"In***

the development and use of geospatial solutions, developing countries have one advantage: coming late to the game, they can leapfrog others, skipping a few steps to get to where they need to be by learning from the experiences of the west". Preetha Pulusani makes a very good point so Canada needs to pay very close attention to it's levels of innovation, productivity and competitiveness if it doesn't want to be "leapfrogged" as a nation.

Geomatics In Canada

Geomatics is a "leading edge technology" that is comprised of an integrated suite of "geo disciplines" including Surveying, Mapping, Imaging, Remote Sensing, Navigation and Geographic Information Systems. The Geomatics industry in Canada is a multi-billion dollar industry that has seen significant growth as Geomatics technologies have found applications in an increasingly broad range of key sectors including Infrastructure; Sovereignty, Defence, Security, Public safety, Emergency Management, Environment, Transportation, Energy, Agriculture, Education, Health and Natural Resource Management.

Applied effectively, Geomatics technology is capable of increasing Canada's innovation, productivity and competitiveness across many key sectors and therefore, is of strategic importance to Canada's economy and society. Unfortunately, Canada is not benefiting as much as it could

or should from this strategic technology. One of the reasons for this is related to mapping which is a fundamental ingredient of Geomatics solutions. Canada does not have consistent, appropriate, up-to-date, national mapping and this problem is seriously inhibiting the effective application of Geomatics technologies across many sectors of our economy.

In recognition of the need for better mapping in Canada, GIAC began to pursue a "National Mapping Strategy" in 2007. Since that time, GIAC's thinking has evolved with the recognition that a National Mapping Strategy can not be considered in isolation. It needs to be a core component of an overall National Geomatics Strategy. Canada needs a National Geomatics Strategy to help us effectively leverage a key technology that will enable many benefits for our economy, our environment and our society.

Shaping Canada's Landscape – Towards a National Geomatics Strategy

In early 2009, the Canadian Government was accepting pre-budget submissions. Economic stimulus was a key topic of discussion and there was a general consensus that investing in Infrastructure was going to be a key thrust of the government's economic stimulus plan. In recognition of this, GIAC prepared a submission as part of the national pre-budget

consultation process. This submission was entitled "Shaping Canada's Landscape – Towards a National Geomatics Strategy" and can be viewed at www.giac.ca . Even though the applications for Geomatics are quite broad, GIAC's submission focused primarily on Infrastructure since this was an anticipated priority for stimulus spending in the upcoming budget.

In the subsequent budget, the federal government announced $12 Billion in new infrastructure spending to be added to the $33 Billion it had previously announced. In addition to this, various provincial governments have since announced over $80 Billion in additional infrastructure spending. With all of this infrastructure money being announced, the focus now becomes how to spend it wisely and this is where Geomatics can help in a major way.

Although much of the focus on infrastructure stimulus has been on the building of infrastructure to create jobs and help revitalize and expand our infrastructure, significant attention also needs to be paid to improving the productivity of our infrastructure operators. We currently have a unique opportunity to modernize and improve the planning, design, construction, maintenance, operation and replacement of our infrastructure through the application of advanced technologies like Geomatics.

The benefits of applying Geomatics technologies to all phases of the infrastructure life cycle are well-documented. When one considers the plight of our infrastructure operators who are dealing with an aging workforce, aging infrastructure, increased service demands and increased regulations, it is clear that much more needs to be done to maximize the efficiency of our infrastructure operators such as local and provincial governments, power and gas transmission and distribution organizations and other critical infrastructure operators.

There are many examples, of infrastructure operators increasing their productivity and improving service through the use of Geomatics technologies such as spatially enabled asset management, mobile workforce management, outage management, financial management and others. The emerging “smart grid” will be an enormous consumer of Geomatics technologies. If our infrastructure operators could increase their productivity and improve services using Geomatics technologies, the cumulative, year over year benefits to Canada would be very significant and this is justification for stimulus spending on the strategic application of Geomatics for infrastructure.

GIAC's budget submission "Shaping Canada's Landscape – Towards a National Geomatics Strategy" contained two recommendations which are summarized in the following paragraphs.

GIAC's first recommendation is:

> ***"the Government of Canada allocate approximately $50 million annually starting in 2009 for a period of five years to fund investments in Geomatics for Canada's infrastructure."***

This funding is required to fund the following essential components of modern infrastructure operation:

- **Base Mapping** funding would be used by the provinces (and other stakeholders) for funding the creation, updating, accessing and distribution of commonly required and shared base mapping including imagery, Lidar, Digital Elevation Models ("DEM's"), parcel mapping, land use mapping and topographic mapping to the extent that these are not already readily accessible.

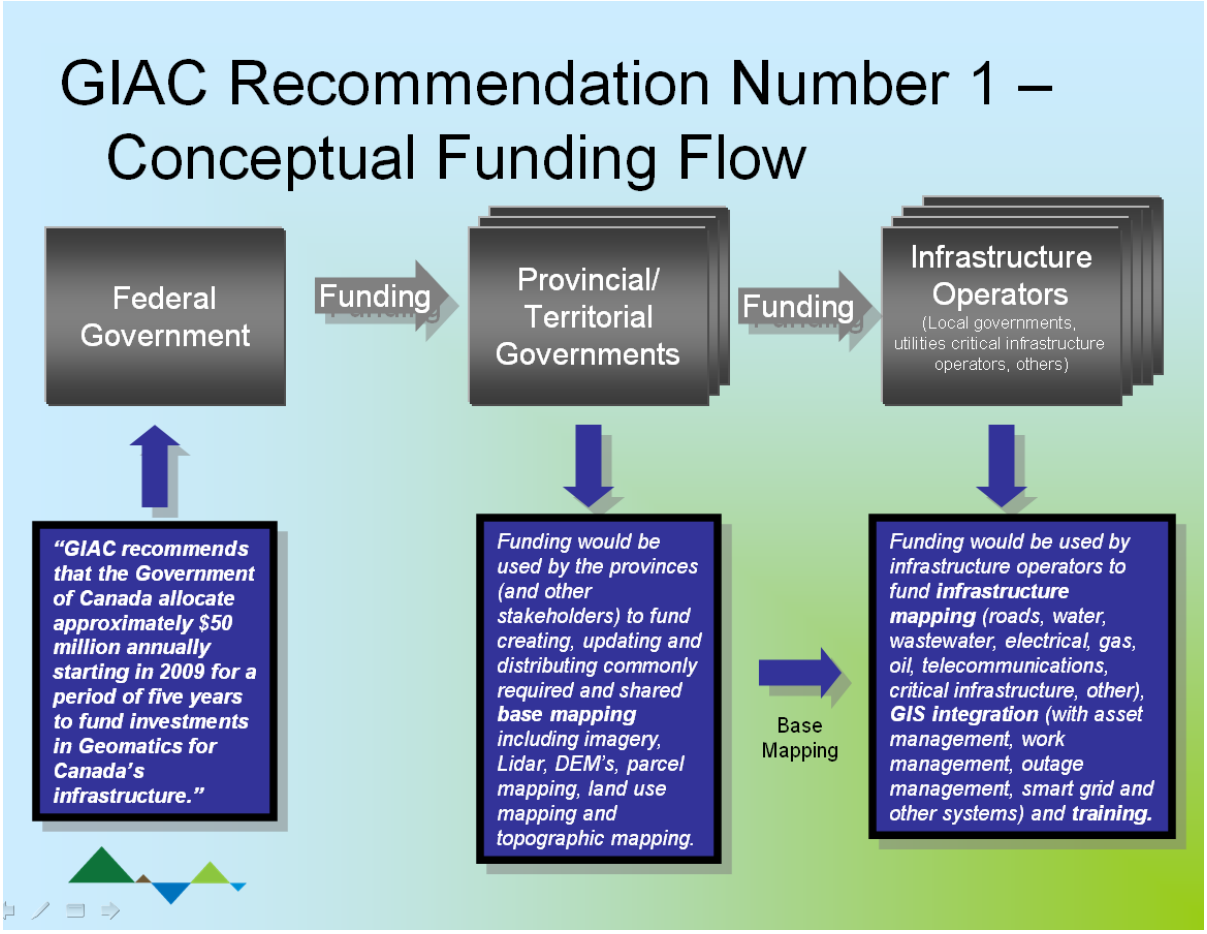
- **Infrastructure Mapping** funding would be used by infrastructure operators to fund infrastructure mapping of roads, water,

wastewater, electrical, gas, oil, telecommunications, critical infrastructure and other types of infrastructure to the extent that these are not already readily accessible.

- **GIS integration** funding would be used by infrastructure operators to fund the leveraging of base mapping and infrastructure mapping and integration thereof with systems for asset management, work management, outage management, emergency management, public safety, security, smart grid and others.

- **Training** funding would be used by infrastructure operators and training institutions to fund the training of infrastructure workers on the effective use of Geomatics technologies in the office and in the field.

The following slide depicts a "Conceptual Funding Flow" resulting from "GIAC's Recommendation Number 1" .



GIAC's approach offers clear and substantive potential benefits to:

- all levels of Government (who need access to base mapping);
- infrastructure operators (for productivity and service level improvement);
- the broader Geomatics community (many other sectors who also need access to base mapping for uses beyond infrastructure);
- the Canadian Geomatics industry (who would provide the Geomatics products and services to support this); and most importantly,

- the Canadian tax payer (whose tax dollars would be going toward stimulus spending that would introduce long-term, structural returns on investment).

GIAC's second recommendation is:

- ***"the Government of Canada fund the development of Canada's first comprehensive, multi-sector National Geomatics Strategy by 2010."***

Canada has persistent, structural problems with innovation, productivity and competitiveness that need to be addressed. These problems will and are affecting all of us by limiting our ability as a nation to effectively tackle issues and opportunities like healthcare, education, the environment, infrastructure, public safety and others. Other countries, which Canada competes with in a global economy, are making strategic commitments to Geomatics to help address these types of problems and their efforts are paying off.

One key area of investment by these other countries is the Information Communications Technology ("ICT") sector. This sector is generating new, "knowledge economy jobs" and contributing positively to GDP through process innovation, productivity and competitiveness. The broad, cross-sector applicability of Geomatics technology and the

resultant positive impacts on efficiency and service levels for those who apply it means that Geomatics will establish itself as a primary pillar of the ICT sector. But this will not happen automatically in Canada. It will happen in countries that grasp the importance of key ICT technologies like Geomatics and take steps to strategically integrate these technologies into their economies. Investment in Geomatics would have the dual benefits of making domestics users (such as infrastructure operators) more productive while also making the Canadian Geomatics industry more globally competitive.

For these reasons, Canada needs a comprehensive, integrated, multi-sector National Geomatics strategy. This is not just about contracts for Canadian Geomatics companies or funding for government mapping initiatives or funding for university R&D initiatives - it is about our economy, our environment and our society. A Canadian National Geomatics Strategy needs to be about supporting and leveraging the best capabilities of our Industry, Academia and Government in a coordinated manner and focusing those coordinated capabilities on issues and opportunities that are important to us as a nation.

Although mapping is a very important component of a National Geomatics Strategy, GIAC realizes that we all need to step back and look at the big picture and address mapping within the context of a number of related components in a comprehensive and integrated

manner. Here are some of the components that GIAC has identified that require attention:

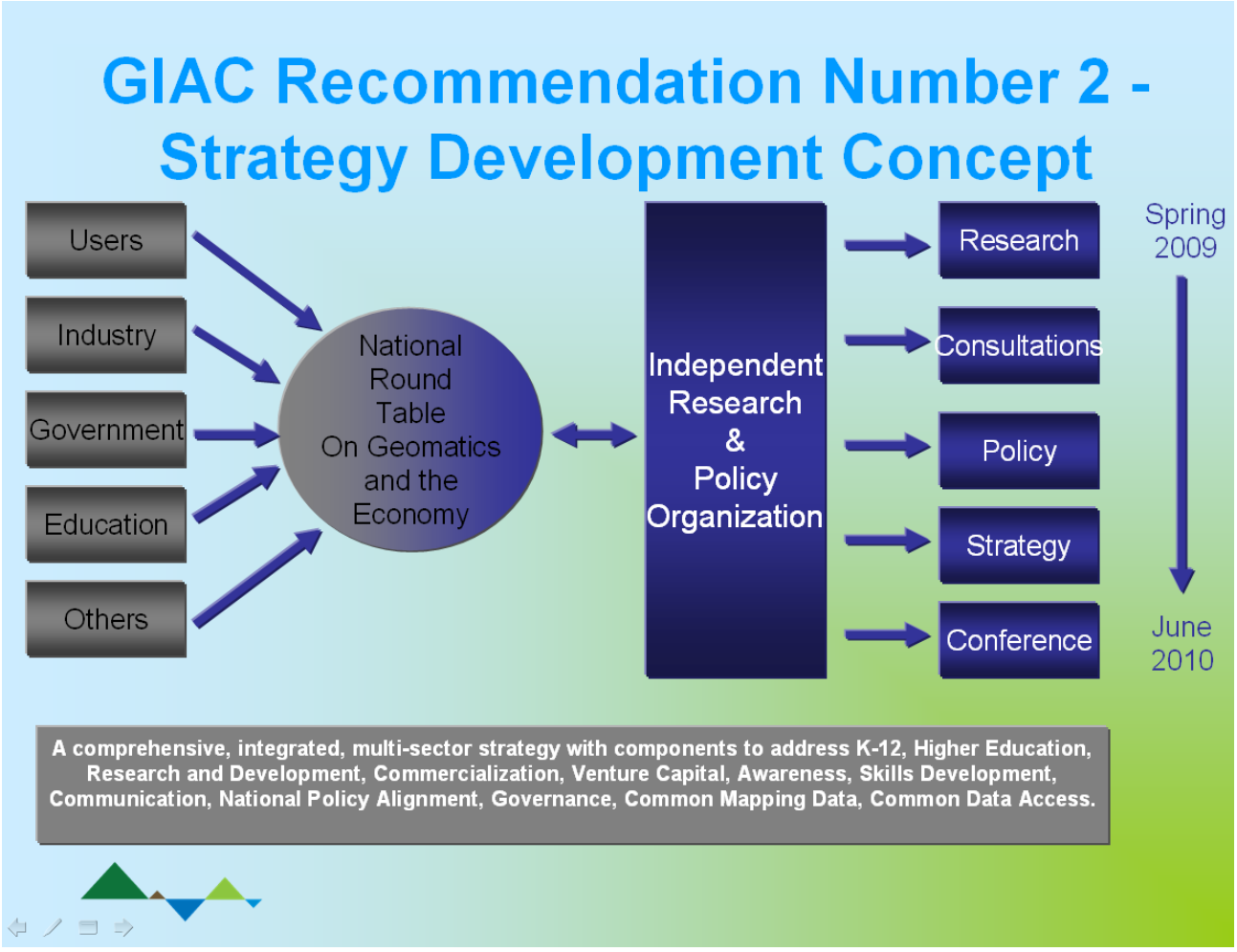
- We need to increase our support of Geomatics R&D and innovation in our educational institutions and our private sector. We need to find ways for our educational institutions and private sector to work more closely together in an integrated manner – focused on issues and opportunities which are of strategic importance to Canada. We also need to remove roadblocks to the commercialization of R&D so we can efficiently take our best ideas and turn them into powerful products and services for domestic and external consumption;
- We need to significantly increase the exposure to Geomatics at our K-12 levels so our high school students will be exposed to "spatial thinking" and the abilities of spatial tools to solve problems and also, more importantly, to increase their interest in science and technology as career options. How can we expect our high school students to be interested in science and technologies like Geomatics if they don't even know what they are?
- We need to make investments in Geomatics skills development so our domestic users in many different sectors will be able to understand and leverage this technology more effectively in their specific areas of endeavor;

- We need to significantly increase the awareness of the applications for and benefits of Geomatics technologies across many sectors including our banking and financing sectors. It is very difficult for Canadian companies to attract venture capital for advanced technologies like Geomatics that are relatively new and difficult to comprehend. A National Geomatics Strategy that exhibits our government's commitment to Geomatics would be very helpful in this regard.
- We need a National Geomatics Strategy which is integrated with a National ICT Strategy and is aligned with our science and technology policies and priorities.
- We need to remove the policy, regulatory and legislative challenges that hamper our industry's growth here and abroad;
- We need to invest in our national base mapping and access mechanisms so that all sectors can have ready access to commonly required types of base mapping include imagery, Lidar, DEM's, parcel mapping, land use mapping and topographic mapping when and where they need it. There are numerous international examples that we could draw from such as the "Imagery for the Nation" initiative in the US. We need to optimize our mapping funding, governance and delivery models so we are not wasting money through duplication and/or hampering productivity through poor mapping access and availability.

- And finally, we need a National Geomatics Strategy that elevates the awareness of Geomatics by communicating its importance to society.

GIAC believes that in order to establish objectivity and credibility, a National Geomatics Strategy needs to be facilitated and developed by an independent policy and research organization working with key sectors and stakeholders such as Users, Industry, Academia and Government. A "round table" mechanism would be employed as the vehicle for multi-sector and user input and interaction. The primary components of the strategy process would include Research, Consultations, Policy Development, Strategy Development and a Conference or conferences to enable interaction with the broad Geomatics community as well as awareness generation. GIAC's proposed timeline for this is spring 2009 through June 2010.

The following slide depicts a "Strategy Development Concept" resulting from "GIAC's Recommendation Number 2".



In Conclusion

Geomatics technology is becoming a key enabler of innovation, productivity and competitiveness across many sectors. These are issues which Canada is struggling with and we need to make more effective use of advanced technologies like Geomatics to address them. Although the applications for Geomatics are much broader than infrastructure, the current infrastructure stimulus activities represent a rare and unique opportunity for Canada to leverage Geomatics to the

benefit of all levels of government, infrastructure operators, the Geomatics community and the Canadian tax payer.

Canada needs a National Geomatics Strategy to make effective use of this important technology for the benefit of our economy, our environment and our society. A strategy such as this could be a logical result of the GeoConnections program or an initiative of Industry Canada.

We need to grow and coordinate the Geomatics community in a manner that benefits all Canadians. Current activities such as the stimulus initiatives, CCOG's National Mapping Strategy and GIAC's National Geomatics Strategy present us with a unique set of opportunistic circumstances. However, nothing will happen unless the entire Geomatics community pulls together to help move things forward. GIAC needs more members to add membership revenues to help fund these activities. GIAC's recommendations have been designed to stimulate beneficial change for all stakeholders. Our members are currently encouraging their political representatives as well as their clients and colleagues to support GIAC's recommendations and GIAC encourages all interested parties to do the same. For more information about this initiative and to learn how you can help, please contact the Geomatics Industry Association of Canada.