Strengthening Canada's Digital Economy

Alberta ICT Council's Input into Strengthening Canada's Digital Economy

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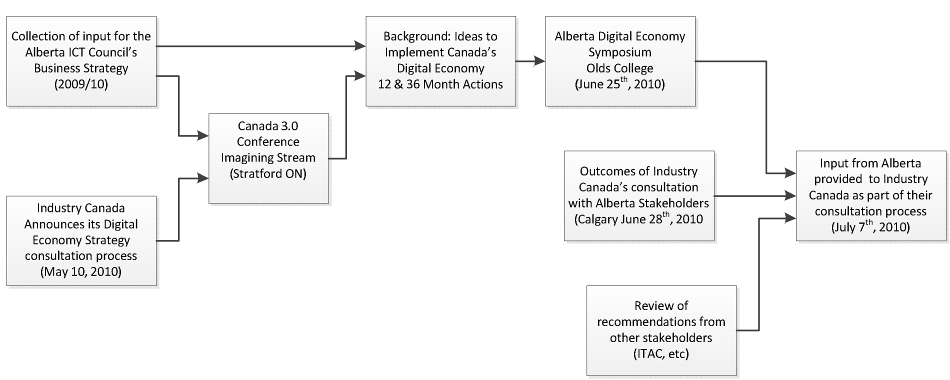
1 Background

The Alberta ICT Council (ICT Council), as part of its process to develop its own long-term program strategy, has involved Alberta ICT sector stakeholders in discussions to identify strengths and weaknesses at the sector and company level. Over the last 18 months the ICT Council has developed a program based on five initiatives: Sector Awareness, Sector Alignment, Access to Capital, Access to Markets, and Access to Skills. Within this framework, the council engages producers, distributors, and consumers of ICT with the objective of reducing production barriers and promoting innovative applications for ICT.

On May 10, 2010, Industry Canada announced their consultation process to develop Canada's Digital Economy. As a representative of Alberta's ICT sector, the ICT council has developed this set of recommendations through hosting a digital media symposium (Olds College June 25th), participating in the Industry Canada Consultation meeting (Calgary June 28th), reviewing recommendations from other organizations, and consulting directly with stakeholders. The recommendations included herein has been summarized from these discussions and from ideas collected while attending the Canada 3.0 conference. The process is described in the diagram below:



1.1 Industry Canada's Consultation Topics

Industry Canada's Improving Canada's Digital Economy Strategy

What can we do (as an industry) to:

1. Build our Capacity to Innovate using Digital Technologies
2. Build a World-class Digital Infrastructure
3. Grow the ICT Industry
4. Create Canada's Digital Content Advantage
5. Build Digital Skills for Tomorrow

1.2 Scope

During the consultation process, the ICT Council divided Canada's Digital Economy into a simple value chain consisting of three groups. While these groups can be further sub-divided, our process looked first at cross-sector opportunities and then into specific sub-sector needs.

Content Providers: Companies involved in the development of digital media and tools to manage digital media. These companies include creators of structured and unstructured "digital data". Digital data includes resources such as text, audio, video, simulation models, and learning content. Digital tools refer to the development and configuration of infrastructure and software systems to distribute and present digital data.

Content Distributors: Companies involved with the technical and business aspects of distributing digital media through networks that reach customers at the point of interest. This includes companies involved with building broadband networks, distribution owners, resellers, and organizations responsible for policies that govern licensing associated with digital media. In this context, "digital media" includes both digital tools and digital data.

Users of Digital Content: Represents markets, consisting of individuals and companies, that use digital media to improve productivity and quality of life (e.g. entertainment). Users of digital content are able to create new markets by identifying innovative uses for digital media.

For references, the ICT Council has sub-divided components of the Digital Economy into the following groups:

Digital Tools: Tools are used to manage digital data and consist of software, hardware, networks, and other processes used to generate and distribute digital data. Digital tools are typically developed by companies in the ICT sector; R&D effort generally qualifies for SR&ED.

Digital Data: Digital data is defined as the information managed by digital tools. Examples of digital data include: geo-spatial maps, data used for decision support, and digitized content (video, audio, text, etc.). Effort to develop digital data generally does not qualify for SR&ED; efforts to create digital content may be supported by grants and contributions from arts and culture programs (e.g. documentaries, movies, etc.).

2 Ideas and Recommendations

The ideas and recommendations listed below are formatted using Industry Canada's consultation guidelines. Each of the sub-sections below address one of the five questions posed by Industry Canada. The sections consist of a restatement of the question, bullets that describe the context (scope) of the question area, and numbered list of recommendations that have been developed through the consultation and review process.

Section 3 (Actions for Consideration) provides a second perspective of recommended activities that can be implemented by Industry Canada to develop strong leadership and an enabling environment for Canada digital economy. These activities are grouped into 12-month and 36-month time horizons.

2.1 Building Capacity to Innovate using Digital Technologies

Driving Consumption of Digital Media Content
Enabling Horizontal and Vertical markets with Digital Media

- Should Canada focus on increasing innovation in some key sectors or focus on providing the foundation for innovation across the economy?
- Which conditions best incent and promote adoption of ICT by Canadian businesses and public sectors?
- What would a successful digital strategy look like for your firm or sector? What are the barriers to implementation?
- Once anti-spam legislation, and privacy and copyright amendments are in place, are there new legislative or policy changes needed to deal with emerging technologies and new threats to the online marketplace?
- How can Canada use its regulatory and policy regime to promote Canada as a favourable environment for e-commerce?

Scope:

- Awareness of digital media that enables change in Canada's economy
- Shaping new attitudes to adopt digital technologies to increase productivity
- Developing new markets for digital tools and digital data - productivity &entertainment
- Creating economic enablers to improve uptake of digital media
- Improving geographical access to digital products & services (distribution)
- Developing market-driven product development – identifying emerging market needs
- Identifying next-generation manufacturing processes
- Improving the quality of life through digital products & services
- Reducing adoption risks in key markets using digital technologies
- Changes to government procurement practices
- Changes to regulations that govern use and development of digital technologies
- Shortcomings of current patent and copyright laws – duration, scope, gaps

Discussion Outcomes:

1. Literacy in digital media is required. Potential consumers of digital products and services need to know what they are capable of and their benefits to the economy and/or quality of life (individual and societal). Education the public on the advantages/disadvantages of

using digital media in the new economy. Literacy maybe problematic when digital applications are not available due to distribution constraints (e.g. rural broadband).

2. Costing/pricing is restrictive; is the market overly protected by policies and regulations that protect companies to the point where monopolies and oligopolies prevent competition from entering the market? Is innovation or adoption stifled by overly expensive products? Do industries that support the "public-good" need special consideration (e.g. health and education sectors)? Do existing copyright laws protect the rights of content creators, distributors, and consumers? Is copyright/patent protection too long (or too short)?
3. Natural evolution of digital products and services with respect to sub-sectors should be governed through guidelines that support the sector. Create a landscape that allows innovation cycles to take place. Create incentives that accelerate capacity.
4. Conditions to enable early adoption should be developed through incentives such as early-adopter tax incentives and support for industry-based education. Support companies willing to take risks associated with adopting new products through grants or tax incentives for use of qualified digital media tools.
5. Focus on building foundations that enable innovation, facilitate awareness, adoption of platform technology remembering that trade-off costs are associated with adopting or not adopting new technology.
6. Markets are driven by the needs of the individuals in the markets; individuals from different generations have different attitudes that impact their needs. Development of the digital economy needs to address the generational needs as they change with time (e.g. changes to the market as baby boomers are replaced with younger generations). Are markets being missed because of generational divides? Are business decisions being made with the right mindset?

2.2 Building a World-class Digital Infrastructure

Distribution Systems for Digital Media

- What speeds and other service characteristics are needed by users (e.g. consumers, businesses, public sector bodies and communities) and how should Canada set goals for next generation networks?
- What steps must be taken to meet these goals? Are the current regulatory and legislative frameworks conducive to incenting investment and competition? What are the appropriate roles of stakeholders in the public and private sectors?
- What steps should be taken to ensure there is sufficient radio spectrum available to support advanced infrastructure development?
- How best can we ensure that rural and remote communities are not left behind in terms of access to advanced networks and what are the priority areas for attention in these regions?

Scope:

- Market drivers – e.g. eCommerce, cloud computing, and SaaS industries
- Network backbones & last-mile broadband throughout Canada
- Public vs. private networks, protected competition, network unification
- Other "infrastructure" required – e.g. non-technical enablers
- Owner, distributor, and consumer rights - copyright changes
- Impacts of convergence of internet & other broadcast methods

- Price & availability of broadband
- Policies to allocate radio spectrum
- Changes to the role of the CRTC

Discussion Outcomes:

7. The method of spectrum management has introduced white space and increased competition in small rural markets that are already served; this has not resulted in increased broadband penetration.
8. As a short-term broadband penetration measure, regulate the copper local loop such that competitive access providers are incented to enter the broadband market. This will increase competition, innovation and will drive out broadband penetration. Include the ability to affordably place 3rd party DSLAMs in incumbent central office buildings
9. CRTC processes and functions needs to be reviewed as they have not kept pace with technological and market change.
10. Stabilize the investment / regulatory climate and rules so that private capital is attracted to invest in digital infrastructure. Look to other countries such as France for examples of how this "P3" type approach has been successful in attracting private capital into broadband infrastructure deployment. The Alberta SuperNet is another successful example.
11. Infrastructure investments must leverage Canadian talent and technology and support the development of core ICT industries that represent significant opportunities for export sales.
12. Government policy needs to recognize that managed fibre broadband is an essential enabler of Canada's next-generation digital economy. The evolution of this infrastructure cannot be left entirely to the private sector because the outcomes desired will not be achieved.
13. Through a combination of grants and regulation, the government can create an environment where publicly controlled fibre infrastructure. A combination of private and public capital could be introduced into un-served and underserved areas of the country. In this business model, the retail sector (applications / services) is completely open to competition and innovation. The fibre is controlled by governments at various levels so that the networks are future-proofed from the variability in the marketplace. A new sector of fibre network operators is created; these companies do not participate in the retail marketplace.
14. Look to Finland where access to minimum broadband of 1Mbps was legislated in 2009.
15. Towers, and fibre to the towers, should be a shared infrastructure that is supported through public incentives and controls. Given the increasing capacity of 3G and 4G mobile devices, all towers will need fibre backhaul to manage user demand.
16. Continue to review government policies and regulations to drive the costs of mobility lower to ensure Canada becomes more competitively priced at a consumer and business level.
17. Provide incentives to develop cloud computing resources and applications including software-as-a-service business models.
18. Canada is not coordinated / organized as a country to implement cost-effective and consistent digital infrastructure. Other countries such as France, Singapore, USA, New Zealand, Nordic countries, Spain are all much organized to execute / invest in their digital infrastructures to compete on a global scale in the digital economy. They are investing and changing approaches to regulating their environments.

19. Plan to run fibre when building roads, rail, and pipeline, and other physical infrastructure to avoid higher costs of running the fibre after-the-fact. E.g. treat fibre in the same way as other traditional infrastructure.

2.3 Growing the ICT Industry

Enablers of a stronger ICT industry

- Do our current investments in R&D effectively lead to innovation, and the creation of new businesses, products and services? Would changes to existing programs better expand our innovation capacity?
- What is needed to innovate and grow the size of the ICT industry including the number of large ICT firms headquartered in Canada?
- What would best position Canada as a destination of choice for venture capital and investments in global R&D and product mandates?
- What efforts are needed to address the talent needs in the coming years?

Scope:

- ICT innovation goes beyond managing computer infrastructure
- Support innovative ideas that are enabled by new digital media technologies
- Define integration points between ICT and other industries. Opportunity areas: process optimization, simulation & decision support, data & advanced mapping, entertainment.
- Build accelerators through the entire innovation lifecycle
- Impact of alternative business models (e.g. distribution of iPhone apps)
- Access to capital: enable investments in ICT and digital content companies
- Access to skills: access to technical and business skills for SMB sector.
- Access to markets: programs that support pilot markets, and export development
- Industry diverse eco-systems, competency centres, test labs
- Leadership - differentiate Canada ICT companies through their sector-level enablers
- Identify & communicate emerging trends
- Develop channels to world-wide digital media markets
- Create export opportunities – competing in the world market

Discussion Outcomes:

20. Government should set guidelines to promote procurement of Canadian solutions based on technologies developed by small and medium size firms. Different from grants, this approach involves re-direction of existing spending to small / medium sized firms and supports the development of reference accounts that are critical in early stages of product commercialization.
21. Promote the development of "raw resources" into complete "refined" solutions; develop an attitude that Canada can complete solutions vs. components that are used in solutions built by companies importing Canadian technology. This may require the development of business eco-systems supported by Canada's national and provincial competency centres. Through the competency centres, promote the development of reusable technical standards and reduce individual costs associated with accessing and integrating to central data resources (e.g. mapping data, decision support services, AI engines, etc.).
22. Create a critical mass among our small companies through recycled resource pools that pollinate innovation between companies in the innovation sector. Ensure immediate and

predicted shortages of local skills are managed through efficient labour training and importing programs.

23. Resolve the "Valley of Death" problem faced by Canadian companies working through the product innovation cycle. There is a complete mismatch between the front-end and the back-end of the innovation funnel. Support funding drops at the end of technical development while the technology still needs to be applied to markets. Support is program-centric not company centric. There are no incentives through the innovation cycle that promote end-to-end acceleration of product development. E.g. we drop support of "winning technologies" before they get to market.
24. Support a product innovation cycle that feeds successful projects all the way through the cycle. Support companies that demonstrate progress through the product innovation cycle and abandon those that are moving slowly.
25. We need to create an environment where: 1) academics drive raw technology, 2) risks of early adoption are tolerable for new technology, and 3) nimble companies can convert raw technology into innovative products that solve industry problems or create new industries.
26. We need to better energize potential consumers of technology as local-early adopters. There is a triple win: End-consumers benefit and are more competitive, we create an industry of exporting companies, and we create a better receptor capacity for our university graduates making innovation more sustainable. Benefits of engaging local early adopters include: 1) research and commercialization are better focused, 2) early adopters provide critical product / business references, and 3) companies will stay in Canada to be close to their early customers.
27. Create a higher awareness of our own capabilities – celebrate our successes to: 1) help with early adopter engagement, 2) attract more students to ICT, 3) create an environment of innovation, and 4) create other opportunities.
28. We need a matching service that connects consumers with ICT manufacturers and bridges mindsets and vocabulary. There is a huge problem in marketing – small companies don't know what questions to ask before they attempt to do analytical marketing or execute a promotional campaign. ICT companies don't know how to justify ROI on marketing expenditures.
29. We need to lower "vendor risk" to early-adopters working with small companies e.g. risk that the company will fail leaving customers in the lurch. How can we be sure that new technologies are aligned with relevant industry standards and regulations?
30. Attitude – End-consumers don't recognize that they MUST improve and drive innovation.
31. Address underinvestment issues faced by ICT companies struggling to access cost-effective capital from debt, equity, and venture capital sources. This may include education and awareness campaigns targeted at both company and investor groups.
32. Proposed changes to SR&ED to include an "**Early Adopter Program**". Objective: To promote companies (users of technology) to participate as early adopters of new technology, including support of activities that provide feedback and input into the further development of the technology. This involves the support of industry mentors and subject matter experts into the design, testing, and early commercialization phases of a new product.
    a. A Canadian company that had a demonstrated need for new generation technology (Technology Receptor) can partner with an SMB to create that technology (Technology Producer). If the Technology Producer qualifies for SR&ED credits, then the Technology Receptor should be able to claim SR&ED credits for those portions of

the project that are in support of the eligible parts of the project. This would normally include activities such as brainstorming sessions, requirements review, installation, testing, piloting the technology in a commercial setting, and documenting "first implementation outcomes".

b. Intellectual property rights remain with the Technology Producer.
c. The write-up for the SR&ED claim by Technology Receptor would piggyback on the write-up of the Technology Producer. The basic lemma is that if the broader project qualifies, then the Technology Producer need only document and qualify its "supporting" activates. There also needs to be a mechanism to document and submit the project only from the Technology Receptor to cover the case where the Technology Producer fails before the claim is evaluated.
d. Generally, the same rules would apply to what qualifies as a "Supporting Project" as would be the case if the activity occurred within the Technology Producer.
e. It would also be nice if the Technology Producer got credit for participation in the demonstrations of the new technology. This would ensure their support throughout the commercialization process.
f. Identified benefits:
    i. Creates motivation for Technology Receptors to actively participate in technology commercialization – from inception to pre-commercial deployment.
    ii. Also makes Canada be seen as a good place to fund companies as it will be easier to engage early adopters.
    iii. It helps mitigate the risk of Receptor firms participating in the commercialization process
    iv. Because it piggybacks on an existing program, it is easy to implement and efficient to operate.
    v. Because it is only a partial cost offset, it keeps the use of the program by Technology Receptors aligned with the programs goals.
g. Options: Technology Receptors could be non-Canadian companies if the work was done in Canada. Technology Producers should qualify as under $10 million in capitalization (i.e. SMB). Costs associated with early product marketing, such supporting demonstrations at tradeshows, could also qualify. Because we want to engage large companies as Technology Receptors, the rules where tax refunds become tax credits could be adjusted to be more of a cash basis. This makes it more appealing to decentralized budgeting systems.
h. Other: We need a similar program for the public sector where, instead of a tax credit, the support results in monies entering a department's budget. This would change how internal technology champions would be measured.

2.4 Creating Canada's Digital Content Advantage

Creating a Canadian Identity through Digital Media
Creating an Environment through Priorities, Policy, and Regulation

- What does creating Canada's digital content advantage mean to you?
- What are the core elements in Canada's marketplace framework for digital media and content? What elements do you believe are necessary to encourage the creation of digital media and content in both official languages and to reflect our Aboriginal and ethnocultural communities?
- How do you see digital content contributing to Canada's prosperity in the digital economy?

- What kinds of 'hard' and/or 'soft' infrastructure investments do you foresee in the future? What kinds of infrastructure will you need in the future to be successful at home and abroad?
- How can stakeholders encourage investment, particularly early stage investment, in the development of innovative digital media and content?
- How can we ensure that all Canadians, including those with disabilities (learning, visual, auditory), will benefit from and participate in the Canadian digital economy?

Scope:

- Creating a Canadian identity – supporting artistic leadership in digital media
- Creating international demand for Canadian content – "culturally Canadian"
- Promoting Canadian culture – secondary benefits from distributing digital content
- Creating an educated population that understands how to advance using digital media
- International recognition of Canada's national competencies
- Government priorities that position Canada's capabilities on the world stage
- Recognized Canadian brands and identity

Discussion Outcomes:

33. Policies and programs are required to develop strong a Canadian brand that is supported by an attitude to build products that support the brand. Build world class products - don't export our talent and half-built innovations.
34. Build the confidence to solve our own issues; import solution components only when local resources are not available. Provide better integration between companies in the ICT sector (tool makers) and companies using these tools to create content, and companies / individuals using the resulting (collective) product.
35. Shift entrepreneurs away from "mom-and-pop" thinking and promote the development of "world class" products and services. Work within an enabling entrepreneuring environment with lofty goals.
36. Focus on Tier-2 firms in domestic/international markets as they may be more receptive to innovative products coming from smaller organizations. Use this strategy to reach large conglomerates like Toyota Motors.
37. Build marketing and distribution channels that promote and make Canadian products accessible on an international scale. Use these channels to sell back into Canada. Take pride in Canada.
38. Support the development of entrepreneuring networks through sector eco-systems, conglomerates, co-ops, business groups, etc.
39. Leverage existing world-class capabilities such as image management, 3d modeling, animation, simulation, and gaming tools through competency centres that reduce costs of acquiring necessary inputs to SMB companies.
40. Accept more ambiguity/uncertainty when supporting the development of an entrepreneurial creative culture. Support risk taking and decisive actions.
41. Support an international mindset while designing, developing, and distributing Canadian digital media products and services. Use PEMD programs to build import/export skills within Canada's entrepreneurs.
42. Adopt "Buy Canadian" programs that actively protect our innovations and successes.

2.5 Building Digital Skills for Tomorrow

Setting an Environment for Continuous Learning
University – Industry Relationships

- What do you see as the most critical challenges in skills development for a digital economy?
- What is the best way to address these challenges?
- What can we do to ensure that labour market entrants have digital skills?
- What is the best way to ensure the current workforce gets the continuous up-skilling required to remain competitive in the digital economy? Are different tactics required for SMEs versus large enterprises?
- How will the digital economy impact the learning system in Canada? How we teach? How we learn?
- What strategies could be employed to address the digital divide?

Scope:

- HQP strategies to create / import skills
- Programs to reduce loss of skills (brain drain)
- Coop and on-the-job training programs
- Apprentice programs for digital media – design, etc.
- Integration of teaching and research activities at universities
- Integration between industry, research parks, and university researchers
- Roles of educators, industry, and sector-level supporters
- Roles of public sector to support high-tech and high-risk businesses
- Impact of digital media technologies on distance learning & educator productivity
- Ensuring educators are using current (and industry relevant) technologies
- Identification of skill shortages – today and in the future
- Selection of technical skills to be taught (curriculum decisions)
- Skills to apply digital media (tools & content) in productive ways
- Enabling advanced technologies – e.g. AI & computational intelligence
- On-the-job training – integration of accredited continuous learning programs
- New delivery mechanisms for post-secondary educators

Discussion Outcomes:

43. Industry challenges: High cost of skilled labour, time required to locate and hire labour, ramp-up time required to bring staff "up-to-speed" – especially software, technical lag due to differences in technologies used by educators and industry, requirement to augment student skills when they enter the workforce, allocating costs of ongoing education in a mobile workforce. Canada needs more global skills and awareness of international markets.

44. Educator Challenges: Declining enrolment, attracting qualified professors, ensuring curriculums are current with emerging technologies, getting industry involved – e.g. co-op student placement, launching research projects, commercializing technologies developed by the university.

45. Industry needs to define commercially viable problems and identify needs to researchers and educators; academia needs to work in networks to research solutions to industry identified problems. Solutions include development of components (primary research) and integration (innovative applications of components into unique systems). Academic research activities should be targeted at technologies that overcome barriers and enable productivity improvements through *disruptive* change.

46. International labour pools are difficult to access by SMB because of bureaucratic procedures, delays, and additional risks associated with hiring an international candidate. Hiring programs are required to assist smaller companies access international labour pools efficiently – e.g. job-start programs, HR assistance, etc.
47. Develop programs to hire co-op and grad students that are accessible to small organizations.
48. Skills missing in SMB organizations: business management, strategic planning, market planning, design planning, creativity, artistic impression, and process optimization. Many SMB organizations are run by skilled professionals that lack general business acumen. Some SMB organizations have limited knowledge of the markets that they server (e.g. overly technical in the IT field).
49. Support mentor networks through introductions, networking activities, and requirements for community "give-back" in government incentive programs triggered when companies becomes successful. Work to integrate ICT companies with Canada's business schools through case studies, marketing projects, and programs that develop investor knowledge of the ICT sector.
50. Develop programs that reduce resistance to change in the workforce. Create desire for change that is enabled by existing and emerging ICT. Skills increase when people adopt technology - promote successes and benefits of adopting ICT-enabled change.
51. Develop cultural aspects of lifelong learning through career plans, *lifelong* RESP programs, and direct company incentives to train staff where mobility is high. Increase tax benefits for time/costs associated with self-directed training.
52. Support the development of programs that leverage distance learning and integrated curriculums supported by multiple organizations (co-delivered programs). Develop continuing education programs that formally recognize industry-sponsored events for credits to degrees, diplomas, and certificates.
53. Break the 8:30am to 4:30pm Monday to Friday model still used by many educators to deliver training. Configure courses that can be easily taken by individuals employed in the workforce. This would also increase the availability of industry-based sessional instructors.
54. Educate Ministers – spend time to develop and sell to senior levels/raise the profile
55. Recognize that education and skill development requirements vary for different generational groups (Boomers, Gen X, Gen Y, etc.). Awareness programs need to be tailored to specific generations.
56. Large organizations need to invest in academia – research and education resources. Applied research models need to be supported more in Canadian universities.
57. Supply/consumer side – look at programs in Finland and Korea.
58. Create an environment that supports creativity – innovation and digital content.

3 Actions for Consideration

The following ideas have been collected by the ICT Council while developing its business strategy and through dialogue with industry stakeholders at the Canada 3.0 Imagining Stream. Section 3.1 describes one-year activities. These activities are generally focused on setting policies and creating an environment that motivates industry stakeholders to adopt a new digital economy. Section 3.2 describes activities over a three-year period. These longer-term activities will take time to implement and demonstrate benefits.

Strong leadership over the next 12-24 months is paramount to enabling change necessary to aggressively shift to a digital economy. Strong communications that define Canada's Digital Economy and develop awareness are recommended – Canadians need to know that ICT represents benefits that go beyond "computer infrastructure".

3.1 One-year Activities

1. Complete the development of the Digital Economy Strategy and *implement* with strong leading messages that are supported by national and provincial stakeholders including: provincial associations, academia, and private sector leaders.
2. Recognize that new forms of digital media and emerging methods to distribute digital media are changing the industry in dramatic ways. As a government, work with industry to identify the components of change and develop these into a new economic model for Canada's Digital Economy. Programs that support digital content need to be developed for simulation, decision support, and artistic content.
3. Initiate a communication strategy that outlines the importance of national productivity and the role that innovation and technology plays in it. Canada falls behind the USA in productivity and other countries in the use of and development of innovation technologies. Communicate (promote) Canada's success stories within and beyond our borders. Use these projects to attract the skills needed to support and grow the industry.
4. Shift Canadian attitudes from the "Information Age" to the "Digital Age". Develop a picture of Canada's digital economy and how/why it is different from the societal and economic drivers that have been taken for granted over the last 20 years. Use phrases like "Digital Society" regularly in communications about Canada's ICT & digital media sectors.
5. Promote "Digital Media" and "Digital Economy" as recognized monikers that consolidate the various sub-sectors of the ICT industry. This is similar to the creation of "Nanotechnology" sector several years ago.
6. Promote Canada as "the place to be" for digital media development. Use this campaign to retain and attract talent necessary to build our digital economy. Work to reduce barriers that restrict access to immigrant work forces with qualified skills needed by Canada's ICT and digital media sectors.
7. Support funding of creative sectors that develop and integrate digital media into our everyday lives (focusing on both internal and export markets).
8. Connect entrepreneurs, established companies, and banks (investment) to create eco-systems for the development of new products. Entrepreneurs = ideas, Companies = commercialization opportunities, Banks = funding to launch projects.

9. Develop better collaboration across the various areas of Digital Media to create eco-systems. Compete internationally on the strengths of these ecosystems (similar to Japanese & Korean strategies). Work together to align and leverage the various competency centres located throughout Canada. "Build a team that can create a Cathedral". E.g. collaboration between producers of digital data and digital tools.
10. Assess how the BDC works within the ICT sector – are changes required to promote investments in ICT products? Can the BDC work to educate private sector investors that don't understand the pros/cons of the financing companies in the ICT sector.
11. Review policies that govern CBC, the National Film Board, and other distributors of digital media to ensure they enable the production and adoption of Canadian-produced digital content.
12. Sponsor forums that bring university and industry stakeholders together to discuss and explore digital media opportunities through the product innovation lifecycle. Apply these learnings to the digital media and other innovation sectors.
13. Recognise that we compete in a world market; our entrepreneurs should be focused on building world-class products and services, not "second-grade solutions" for local markets. Communicate urgency for the development of Canada's digital economy – the world won't wait.

3.2 Three-year Activities

1. Identify and dismantle barriers to entrepreneurial innovation by creating ***company-centric*** assistance programs that enable companies through the *entire* innovation cycle (concept through to break-even sales). Don't drop funding at the end of technology development – develop programs that support product commercialization (e.g. development of company resources necessary to market, sell, and support their products).
2. Develop nation-wide approaches to stimulate the Digital Economy by reducing provincial barriers (e.g. jurisdictional/geographic boundaries) and integrating local programs with national/international initiatives.
3. Work to reduce the (bureaucratic) effort required to identify, apply for, access, and report on government assistance programs. Use company provided self-assessment data as criteria to identify government programs that fit the needs of the company in its current phase of product development. Develop company-centric programs that reward quick progress through the entire product innovation cycle (not just R&D phases).
4. Modify existing programs such as SR&ED to resolve the "Valley of Death" problem faced by Canadian ICT companies challenged with securing early sales of their products. Implement new programs that provide incentives for consumers of ICT products to purchase products from Canada's SMB industry. Develop government procurement processes that support the acquisition of products and services developed by Canada's SMB sector – make sure these programs are (administratively) accessible to SMB entrepreneurs.
5. Modify the SR&ED program to include costs associated with developing digital *content* necessary to build digital solutions – e.g. costs associated with acquiring and manipulating reusable data for digital simulation and/or expert systems (e.g. industrial simulation, mapping, diagnosis tools, etc.). Support the development of not-for-profit organizations that can act as custodians of these "community" data resources.

6. Develop sector-level resources where the costs to build and maintain resources are prohibitive to companies in the sector or sub-sector. Examples include integration test environments that can be used by multiple companies involved in an eco-system value chain. Build these sector resources using existing competency centres including universities and industry-sponsored not-for-profit labs. Leverage public/private partnerships (P3s) models to finance development and operations of these shared resources.
7. Develop early-adopter markets through government purchases and subsidies to consumers. This can be done through tax incentives or pilot programs. The program would reduce the financial risks associated with implementing early-stage products.
8. Develop programs that support (Canadian manufacturing) companies when acquiring ICT-based productivity tools. Develop extensions to the SR&ED program that offset costs to manufacturers that buy Alpha and/or Beta versions of products developed by Canadian ICT companies. Offset costs associated with defects and down-times incurred by early adopters of new ICT products.
9. Challenge businesses (users of digital media) to improve their productivity by strengthening ICT-enabled processes. Promote their evolution to a world-class level of manufacturing. Assist Canadian manufacturers to identify innovative uses for digital media systems through process optimization incentives.
10. Develop exciting "cool" government sponsored projects that attract talent and can be showcased on the international stage. Use these projects to develop a pool of creative artists that standout in the world market – these artists collectively develop a national brand that creates world-wide markets for Canadian digital content.
11. Improve access to skills and labour by modifying the existing RESP program to support continuous learning and life-long career develop. Monies in RESP accounts should be accessible for self-paced programs while individuals are engaged in the workforce. Develop programs where employers can contribute to RESP accounts.
12. Improve broadband connectivity in all parts of Canada by creating an environment that supports the development of cost-effective networks required to access digital media. This assumes lower user costs will translate into higher use which would promote the development of new digital media services. Create an environment that reduces the construction of parallel broadband networks in rural parts of Canada.
13. Develop assistance programs that entice/require successful companies to give back to the industry (ICT community) in terms of in-kind services, mentoring, and leadership – e.g. things that government money can't buy.
14. Implement policies to create private investment funds that are accessible to smaller investors wanting to participate in early-stage companies – e.g. pension and venture funds are not tolerant to the risks of a start-up, how can we create programs that allow the masses to invest in higher-risk ICT projects.
15. Promote the importance of business skills to entrepreneurs in the advanced manufacturing sector. Many start-up companies are led by subject matter experts with minimal business or entrepreneurial experience. Require post-secondary schools to offer business courses as part of a technical degree – or increase the availability of entrepreneur training for owner/managers in SMB organizations.
16. Encourage the development of industry-focused innovation programs that address specific economic/societal pains. Build awareness of how ICT enables business process improvement and its indirect impact on overall productivity and competitiveness of our

society. Promote these concepts and importance of innovation and technology at the high-school level.

17. Support post-secondary schools that are training the next generation of digital media experts through providing access to world-class resources required for research and the learning process. Develop awareness programs that will increase interest in ICT and digital media as a career path.
18. Review the role of the CRTC and the emerging requirements to regulate or deregulate components of the digital economy. Ensure Canada's criminal code maintains laws that control appropriate use of emerging digital media. Canadian law needs to support privacy and security of stakeholders in the digital economy value chain (e.g. content developers, distributors, and consumers).
19. Review changes to patent and copyright laws that may stifle the development of new digital media. Consider changes that address the rights of digital content users, intermediaries (distributors), and producers of digital media. Reviews of copyright laws should assess the needs of specific industries such as health and education. Changes to policies may reduce existing protections in certain market situations – e.g. reduce the potential for controlling monopolies. Consider changes to the duration and scope of protection instruments in light of the accelerated change in today's society.
20. Promote new approaches to leverage digital content in the learning environment – e.g. shared curriculums, distance learning, and integration between industry-based (informal) and academic-based (formal) learning programs.
21. Educate the public about the dangers and risks of the digital economy and ways to avoid being taken advantage of – e.g. privacy, ownership, and access costs.

4 Appendix A: Alberta ICT Council Overview

The Alberta ICT Council is an industry-led not-for-profit organization mandated to support and develop companies working in Alberta's Information and Communication Technology sector. Council activities involve coordinating industry stakeholders and aligning resources that enable effective commercialization processes. The council supports both sector and company development. At the sector level, the council works to create an enabling environment where companies have access to inputs and markets for their products; at the company level, the council supports entrepreneurs as they develop, commercialize, and market their products. Council activities are delivered through the following initiatives:

Sector Alignment: Align organizations in the ICT Community to jointly identify opportunities and address barriers facing Alberta ICT Companies. Activities include aligning programs and resources of member associations to address the broader needs of Alberta's ICT Community and its position in the Canadian and international Markets.

Access to Capital: Create an environment where ICT companies can secure capital for the development, commercialization, and launching of ICT-based products and services. Activities include identification of barriers restricting capital, improving investor understanding of the ICT sector, strengthening business plans, and building entrepreneur skills.

Access to Markets: Support Alberta's ICT companies as they launch their products and services in domestic and international markets. The Access to Markets initiative helps ICT organizations through sponsoring collaborative marketing campaigns, coordinating export development training, and holding industry connector events to identify new market opportunities.

Labour and Skills: Improve the availability of skilled labour within the ICT community through strong industry/educator relationships, attracting individuals to Alberta's ICT sector, sponsoring job creation programs, coordinating mentor groups, holding technical/innovation workshops, and building entrepreneur business networks.

Sector Awareness: Develop materials and relationships that improve the awareness of capabilities within Alberta's ICT sector. Activities will include compiling statistics and research gathered from various sources, producing the "Annual State of The Industry" report, and communications to marketing and export development groups.

Member Organizations

InfoTech Alberta	Calgary Council for Advanced Technology (CCAT)	BioAlberta	EEDC
Digital Solutions Alliance	Alberta Network for Healthcare Information Exchange (ANHIX)	CHITTA	CTI
WiTec Alberta	Alberta Council of Technologies	THECIS	ITAC
Alberta Geomatics Group	Calgary Economic Development	CIPS Alberta	IRAP
TR Labs	Alberta Advanced Education and Technology	TEC Edmonton	iCORE
	Western Economic Diversification	U of Alberta	