DRAFT PROCEEDINGS

Creativity & Convergence Conference -
March 24th, 2015 - Edmonton
Engineering innovation, blending arts and technology

Alberta Council of Technologies

Diversifying Alberta's economy through technology

The premise of the Conference was that diversification of Alberta's economy is needed to protect the province from the extreme impact of rapid declines in the price of oil. The following issues and opportunities were the subject of small focus group discussions leading to resolutions cited below:

1. **Monitoring Diversification.** Measuring objectives is evidence of a commitment to their development
   a) Developing criteria and a score-card for monitoring progress and conducting comparative analyses of diversification and assessing Alberta's capacity to weather future shocks
   b) Developing metrics for monitoring the performance of economic development agencies and incubators as investments in Alberta's economic diversification
2. **Public Procurement.** Balancing free trade and economic development interests
   a) Encouraging public sector organization leaders to support increased procurement, flexibility and innovation for improved business value
   b) Expecting governments to identify *needs* and be open to innovative solutions (vs. systems based) for service delivery   = *open procurement*
   c) Helping governments scan the horizon to close the credibility gap
   d) Subjecting public services to a periodic review of their readiness for privatization
3. **Infrastructure.** Employing technologies for ensuring safe, accessible and economic: tele-communications, transportation and education
   a) Electrifying Transportation. Ensuring Alberta has a contemporary transportation and distribution system
      i) Safe at any speed. Automating speedy cargo and passenger transit: driving, drones and rail transit
      ii) Anything on-time. Educating industry about the application of analytics in logistics for the distribution of commodities and value-added by-products
   b) Modernizing Telecommunications. Ensuring all Alberta has the required connectivity and capacity for information and knowledge transfer
      i) Analytics Centre. Developing an Analytics Centre for advancing the development of analytics applications
      ii) Management. Promoting ethics and data analytics for automating decision making
      iii) Service Delivery. Exploring the relevance of advanced analytics for personalizing professional : healthcare, learning and education, municipal services, transportation, and access to knowledge
   c) Transforming Education. Preparing for change in: how and when, where and why we learn
      i) Preparing students to live in Alberta, Canada and learn to adapt in a global society of on-going change

    ii) Recognizing that educational levels and ready access to information are transforming: the nature of work, the requirement for rigid classification levels and the relevance of relational skills

    iii) Improving the allocation of labour, skills development and competency access

  d) Virtual/ Augmented Reality. Developing applications with commercial relevance

    i) Authenticity – getting beyond gimmicky

    ii) Natural/socially easy to engage/effective and practical use of technology

    iii) Applying agmented reality for aiding in skills transfer

    iv) Educating people to think in context

4. **Value–added Manufacturing.** Capitalizing on Alberta's strategic assets
  a) Collaboration. Integrated development of Alberta agriculture and forestry, bio-tech and life sciences
    i) Agriculture & Food Processing. Safe, secure supply and commercial opportunities in food processing
      1) Educating the industry about emerging opportunities in analytics for improved productivity, value-added opportunities and decision making in the allocation of resources
    ii) Forestry & Wood Products. Identifying measures for value-added manufacturing employing fibre, bio-materials and reclamation technologies
    iii) BioTech & Life Sciences. Capitalizing on Alberta having a single, integrated health services system
      1) Establishing Alberta as a leader in personalized medicine including the use of genomics, cell therapies and medical devices
      2) Educating the industry about emerging opportunities in analytics for improved service delivery, commercial applications and decision making in the allocation of resources
  b) Communications. Engaging the general public and increasing their education about the industry, the regulations and the threats/opportunities
  c) Trust Building. Serving as an honest broker in a knowledge-based economy
    i) Presenting the public with timely and accurate information, independent of industry and government
    ii) Governing the accuracy and integrity of data and information

5. **Climate Change.** The merging of energy and environmental policies and practices
  a) Convergence. Promoting Alberta/Canada leadership in addressing climate change, integrating energy and environmental policy and supporting the development of cleanTech and energy alternatives for a post-carbon economy
  b) Commercialization. Recognizing the convergence of energy and environmental sensitivities as a commercial opportunity, e.g., environmental monitoring, for value-added manufacturing
  c) Reality. Monitoring the gap between market rhetoric about climate change and purchasing practices

6. **Alternative Energies.** Prospects for a greener, post-carbon economy
  a) Concentration. Establishing a centre for the commercialization of alternative energy technologies

b) Exploration. Creating a focus group to explore the commercialization of emerging alternative energies.
   i) 3rd generation biofuels, e.g. Algae:
      1) Energy and nutrients
      2) Carbon capture and remediation of hydrocarbons
      3) Grid Energy Storage
   ii) Fuel cells
      1) Batteries
      2) Thermal Storage
      3) Smart Grid/buildings
c) Leadership. Securing funding for establishing the Alberta Fusion energy Directorate
   i) Creating an Advocacy Committee to bring fusion in general and laser fusion specifically to Alberta
   ii) Developing a strategy to incubate fusion related technologies:
      1) Photonics [lasers, energy, healthcare, instrumentation]
      2) Materials [nanotech, additive manufacturing]
      3) Analytics [3D modeling and AI]
   iii) Developing a unique positon for establishing Alberta as the industry's international fusion knowledge-hub, by:
      1) Embedding Alberta researchers in global programs
      2) Hosting regular gatherings of global fusion experts in Edmonton
   iv) Advocating for hosting - post-ignition, an international fusion energy demonstration plant in Alberta

7. **Innovation.** Clustering technologies and partnerships, for business retention and attraction
   a) Planning. Developing multiple roadmaps of possible and preferable futures for Alberta, drawing on global expertise for establishing Alberta's future innovation platforms
      i) Support productivity established industries with linkages to Alberta Innovations
      ii) Develop test facilities for expediting integration
   b) Demonstrating. Establishing the Edmonton Region as a demonstration Innovation Zone for capturing IP and the associated commercial benefits, featuring collaboration among municipalities each retaining their distinct identity
      i) Focusing the Region's innovation ecosystem on the development of technologies that are smart, sustainable, and resilient
      ii) Completing an Edmonton Region Technology Inventory - what the Region offers
      iii) Securing and developing existing global contacts (networks) by:
         1) Hosting, visiting, establishing virtual facilities in : Brainport, NE; Routes de Laser, FR; the USA and Asia
         2) Assembling and communicating compelling stories of what success looks like - telling the story in a compelling way
   c) Improving. Develop a culture of continuous improvement
      i) Establishing an entrepreneurial institute to leverage best practices and attract the global best practices
      ii) Developing an open and transparent entrepreneur-centric map of program and services

designed to help in starting, growing and expanding entrepreneurial venture

    iii) Encourage Tech Clubs and the involvement of local resources, e.g., libraries, for inspiring and supporting innovation in youth

8. **Funding Innovation.** Growing Alberta's GDP and increasing its resilience by adopting innovation and invention regardless of cache
   a) Learning. Extending ABCtech's 2014 consultations and actions around innovation and access to capital
      i) Facilitating a discussion of roles and responsibilities of the innovation ecosystem – engaging Albertans, identifying brokers and being realistic
   b) Designing. Establishing a task force(s) for developing a suite of innovation funding incentives around:
      i) Tax credits
      ii) Procurement
      iii) Program administration methods
   c) Improving. Leveraging process-innovation in government grant programs:
      i) Clarifying the roles and responsibilities in the innovation ecosystem
      ii) Simplifying the number and focus of grant programs and expedite the applications processes
   d) Reforming. Develop capital markets fitting for Alberta
      i) Establishing and marketing an 'Alberta First' RRSP - a TSFA approved mutual fund, dedicated to investment in technology and innovation
      ii) Developing a direct P2P (internet-based) investment platform for allowing Albertan's to invest directly in vetted technology opportunities, growing and diversifying Alberta's economy
9. **Angel Financing.** Developing angel networks for financing early stage enterprise
   a) Act local. Promoting local enterprise and angel financing for attracting domestic capital
   b) Think future. Sustaining innovation including development of measures for directing wealth transfer to sustain economic development and anticipating wealth transfer
   c) Engage. Support and scale programs that leverage skills development:
      i) Incubators
      ii) Mentorship for entrepreneurs
      iii) Investor education