

## **TransCanada Cluster Capacity – Design, Cultural Industries, Indigenous Knowledge**

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We need to think of digital media and design, and cultural industries, not only as sectors in their own right, capable of significant ongoing value generation (GPD, jobs, etc.) but equally as enabling “technologies” or “systems” that will be at the crossroads of every other cluster. My proposal is that cultural industry creativity, design thinking and capacity, business planning, machine learning and superfast speed networks, be national resources that span Canada’s Supercluster strategy.

### **Ethical and Inclusive Problem Solving Clusters**

The complex problems of the 21st century require intensive interdisciplinary approaches and human-centered knowledge. The humanities, social sciences, arts and culture are fundamental to addressing these problems in Canada and on the global stage, as much as the science, technology, engineering and mathematics (STEM) disciplines that are traditionally tasked with innovation. Culture and design bring human interfaces, human agency and decision making and experience to the fore whenever there is a human interface between technologies and people. In the 21<sup>st</sup> century that agency needs to take into account “respectful design”, that is the recognition that there are living systems beyond the human at play. The effective combination of machine learning and technology; human agency and integrated environmental and sustainable systems holds great potential for Canada as underlying principles and capabilities.

It is the combination of these forms of knowledge, practices, industries that will truly allow Canada to succeed in this century and solve challenges of livable “smart cities,” disease control and brain health. This approach is sometimes called STEAM+D: Science, Technology, Engineering, Arts, Math + Design – representing the full spectrum of expertise required to enable cultural, social and economic innovation.

### ***The API Economy***

Any technology product which is human-facing plays within the “API Economy”, (application programming interface economy) – this is a general term that describes the way application programming interfaces (APIs) can positively affect an organization's profitability. An API is a customer (user) interface for technology products that allows software components to communicate. (APIs) act as the digital glue that links services, applications and systems. There are many examples of this, most recently global firms like Apple or fb are considered, but closer to home there is Spotify. Mike Serbinis founder of Kobo testifies to the dependency that Kobo had on excellent design talent (supplied in great part by OCAD University). He has a new company, League Inc. which is disintermediating the delivery of healthcare services, providing an alternative to traditional insurance benefits and supporting a wide range of affordable and accessible wellness and health services.

The API economy is magnified many times over when we discuss IoT, or the connected world – the combination of data producing, analyzing and communicating products, services and networks. Canadian Business Magazine has anticipated that Canada will see about \$500 billion of an expanding market estimated to be worth around US\$19 trillion by 2022 (Wilkinson, May 6, 2014). A key to such economic benefits is the necessity to invest in ongoing research in order to identify and anticipate both

consumer and non-consumer applications of IoT devices. We note that 83% of Canadians are eager to adopt IoT technology, more than their American neighbours, according to a recent survey by Primus and Ryerson's DMZ (Wilson, 2016). Sixty- eight per cent believe these technologies will better their lives—manage their home, remove stress, and improve fitness and health. The market for wearables will continue to grow exponentially with a prediction of a \$25 billion value by 2019 (Wilson, 2016). However, research indicates that people will not use devices unless there is quality design and social inclusion.

### ***Design Front and Centre***

Design thinking must be front and centre in the federal inclusive innovation cluster strategy, in both in policy development and implementation. Design thinking solicits solutions from the most diverse range of perspectives in order to create more durable product and service solutions in the marketplace. This means that companies, organizations and nations can generate multiple strategies and then bring them together towards implementation. Design thinking relies on diverse, multidisciplinary teams that collaborate on a wide range of potential solutions, rapidly creating and iterating prototypes while continually gathering and integrating feedback from intended users, ensuring that delivered systems incorporate feedback and are constantly improved.

We are in an era where competitive success is determined by the ability to understand human needs and desires and to deliver richly imagined ways of addressing these. Technology needs to be intentionally designed for and with people. Design creates the experience of a product, system or service, the individual, social and cultural experience, and the value and the impact it has. Design integrates responses to human behaviors and environmental planning within product and service development.

Design bridges between raw invention and application. Many organizations recognize the importance of innovation but they don't know how to achieve it. The answer is design.

Leading OECD countries have already integrated design thinking and design into innovation strategies in order to support the emergence of key industries. Examples include Denmark, which implemented a national design policy to raise productivity; China, which has invested heavily in design training at the post-secondary level; and Korea, which is focusing on design as a means to recover from the drop in demand for its high-tech goods in the 1990s. Businesses are also emphasizing design in their product development. These and other successes are supported by experiences in New Zealand, Denmark, Singapore, the United Kingdom and Canada that have correlated design intensity with innovation growth and capacity-building at the regional and national levels.

This is because design operates as a critically important source of economic value, raising firms' profitability and productivity, and contributing to national economic competitiveness and performance. Nations that integrate design into STEM activities are more successful than others. Science needs applications, and emerging technologies are most successful when adapted into human-centric products. Canada already has a large and well-established design services sector — particularly in Ontario, Quebec and British Columbia — that is well-positioned to double or triple its engagement . There are 18,661 employers/ non-employers of specialized design services, and Ontario is home to 45% of them. Across the country, specialized design services industry revenues have been on the rise, with the operating profit margin increasing from 19.7% in 2013 to 21.3% in 2014).

An important feature of the specialized design services industry is that it influences a variety of other industries.

Recent statistics show that 64% of sales of services were to other businesses, with interior and graphic design services accounting group's total sales. (Stats Canada, Specialized Design Services, 2014)

### ***Cultural Industries***

Canadian cultural production, both not-for-profit and our substantial for-profit sector, represents of 3% GDP on an annual basis. The growing interface between the arts and the sciences brings new possibilities; for example, in the exploration of artistic and musical expression in brain health and cognitive capacity at Baycrest Hospital, or in the experiments in virtual reality and theatre at the Stratford Festival. For all of these reasons, Canada will benefit by ensuring that the cultural sectors and industries are treated as an important cluster and equally as a partner in innovation when placed side by side in integrated interdisciplinary clusters. Toronto, for example, had 174,000 cultural sector workers in 2011; that year's cultural GDP in Toronto was estimated at \$11.3 billion. On the design side, fully 62% of Ontario's 45,150 designers live here.

Support for companies to collaborate and merge will be a critical component of clusters and embedding growth capacity within clusters is critical. Canada needs the capacity to support serial start-up and company builders.<sup>i</sup>

### ***Design, Digital Media and AI***

There is tremendous potential when machine learning, AI, design, cultural creativity and diversity are brought together. For example, FinTech competitiveness requires not only the best in machine learning algorithms to develop new kinds of products and services that combine speed of service and accuracy, but equally design thinking, design and adaptive digital media

interfaces that serve all manner of users from analysts to customers. In Scotiabank's Design Thinking Studio with OCAD University the focus is on shifting the bank from a culture of transaction to a culture of engagement. Cultural producers equally require AI to engage with markets and audiences. I cannot emphasize this strongly enough. AI is embedded in search, marketing software.

### ***Diversity, Indigenous Culture and Engagement***

Canadian Indigenous communities and artists are at a crucible moment of flourishing growth (urge audience to see Kent Monkman's work at the UT Museum or Maria Hupfield at the Power Plant) or search for Jason Lewis and Skawannati Fragnito's works with indigenous futurism, and attend ImagiNative's screenings and digital media works...at the same time the proposals of the Truth and Reconciliation Commission are still fresh. Opportunities through high speed networks, Indigenous centers within clusters, connections to communities that values, creative expression and methods can be embedded in clusters while driving value to Indigenous creators and communities.

There must also be strategies for culture change to ensure that female entrepreneurs are nurtured and able to sustain their vision and companies. Women continue to form the majority of consumers, but are dramatically underrepresented in incubators and start-up numbers. <sup>ii</sup>

### ***Toronto's Waterfront***

Toronto's Waterfront is being remodeled as a hub for the connected world. Waterfront Toronto, the public advocate and steward of the city's lakeshore revitalization, estimates that the waterfront communities will eventually be home to 40,000 new residents and 40,000 new jobs.

The significant investments in ultra-high-speed networks, smart infrastructure and data capture/analytics in this precinct and the current present of ICT, incubators such as 111, cultural industries, carbon neutral technologies, GBC and soon OCAD U offer a unique opportunity for a cluster hub within this larger cluster.

### ***Toronto/Waterloo AI/ICT Supercluster***

For all of the reasons that I have shared it is critical that an Ontario supercluster brings together cultural knowledge, Indigenous knowledge, digital media design with our tremendous artificial intelligence, machine learning capabilities. Without these capabilities we will be weak not only on the human interface but equally, the ability to address markets, complex global demand and competition, effectively scale up will be severely limited. Let's not make sure that Canada is a world where design and cultural creativity drive global innovation, rather than being solely consumers of others' cultural and design values and aesthetics.

### ***Conclusion***

A consortium of universities, colleges and industry could offer design expertise to the planned super clusters across the country, whether connected vehicles, carbon-neutral advanced manufacturing or FinTech, facilitating sharing, interaction and engagement in support of the design of new products and services. Canada needs demand-driven innovation. Critical to achieving this goal are the participation and support of the country's universities and colleges. Integrating the "idea push" from university research and the "demand-driven pull" of industry-research partnerships will enable Canada to realize benefits from public investment in research while helping industry to innovate as needed. Combining this

with supports for work- integrated learning will support the education and training of the next generation of innovators.

A cluster needs physical, virtual and human infrastructure – investment in the next phase of the Federal government’s Inclusive Innovation strategy needs to fuel a trifecta of talent, physical infrastructure (built+tech) and as networks such as CATA have proposed, virtual connectivity.

Whatever their focus, Canada’s Super Clusters need to take into account cultural diversity, Indigenous knowledge, processes and culture and creative expression – our economic and social future is a design problem.

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i Canada is fortunate to have nurtured individuals such Raja Khanna, Michael McMillan, or Michael Hurst, entrepreneurs who have successfully started and then moved on from companies that continue or are acquired in order to create further successful firms.

ii Connected to this is developing ways to ensure there are mechanisms to get women onto start-up boards. Diversity of view on boards coupled with understanding the audience/user has been demonstrated to build more effective market reach.