ADDRESSING A GAP IN CANADA'S GLOBAL INNOVATION STRATEGY

Capacity Building in IP Literacy, IP Strategy and Access to Affordable IP Legal Services

SPECIAL REPORT

Myra J. Tawfik

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ABOUT THE INTERNATIONAL LAW RESEARCH PROGRAM

The International Law Research Program (ILRP) at CIGI is an integrated multidisciplinary research program that provides leading academics, government and private sector legal experts, as well as students from Canada and abroad, with the opportunity to contribute to advancements in international law.

The ILRP strives to be the world's leading international law research program, with recognized impact on how international law is brought to bear on significant global issues. The program's mission is to connect knowledge, policy and practice to build the international law framework — the globalized rule of law — to support international governance of the future. Its founding belief is that better international governance, including a strengthened international law framework, can improve the lives of people everywhere, increase prosperity, ensure global sustainability, address inequality, safeguard human rights and promote a more secure world.

The ILRP will focus on the areas of international law that are most important to global innovation, prosperity and sustainability: international economic law, international intellectual property law and international environmental law.

ABOUT THE AUTHOR

Myra J. Tawfik has been a CIGI senior fellow since 2014. She leads a project that explores strategies for capacity building in intellectual property (IP) literacy, IP strategy and access to affordable IP legal services for the Canadian start-up and entrepreneurial communities. She is also the co-author, with CIGI Senior Fellow Karima Bawa, of a massive open online course (MOOC) entitled "Foundations of IP Strategy."

In addition to her role at CIGI, Myra is professor of law at the University of Windsor. Her area of expertise is IP law, including comparative and international aspects. She is the founder of the Law, Technology and Entrepreneurship Clinic at the Faculty of Law, University of Windsor. She was also the co-director of the Centre for Enterprise and Law at the University of Windsor, which provided student-led business consulting and legal support to local start-ups and entrepreneurs from 2010 to 2013.

In 2016, she was appointed EPICentre Professor of IP Commercialization and Strategy at the University of Windsor to continue her research and educational outreach initiatives in support of IP literacy, IP strategy and access to affordable IP legal services.

ACRONYMS AND ABBREVIATIONS

ACCT	Alliance for Commercialization of Canadian Technology
CEL	Centre for Enterprise and Law
CIC	Canadian International Council
CIPA	Chartered Institute of Patent Attorneys
CIPO	Canadian Intellectual Property Office
FSB	Federation of Small Business
GII	Global Innovation Index
IAC	Inventors Assistance Center
ICT	information and communications technology
iLINC	ICT Law Incubators Network
IP	intellectual property
IT	information technology
IPO	intellectual property office
IPIC	Intellectual Property Institute of Canada
IPR	intellectual property rights
IPTA	Institute of Patent and Trade Mark Attorneys
KIPO	Korean Intellectual Property Office
LTEC	Law, Technology and Entrepreneurship Clinic
MOOC	massive open online course
OCE	Ontario Centres of Excellence
OCEA	on-campus entrepreneurship activities
OECD	Organisation for Economic Co-operation and Development
PTRC	Patent and Trademark Resource Center
SMEs	small and medium-sized enterprises
STEM	science, technology, engineering and math
TTOs	technology transfer offices
USPTO	United States Patent and Trademark Office
WIPO	World Intellectual Property Organization
WTO	World Trade Organization

EXECUTIVE SUMMARY

There is a fault line in Canada's innovation capacity that is often overlooked by policy makers and yet is a contributing factor to this country's lagging performance in global innovation competitiveness. This gap relates to weak intellectual property (IP) literacy among Canadian innovators and their inability to access affordable and timely IP legal services, including IP strategic advice, especially at the earliest stages of the business venture. This results in underdeveloped or non-existent IP commercialization strategies that inhibit — or, indeed, entirely undermine — business growth, scale-up and global competitiveness. In order to shore up Canada's overall performance, more attention needs to be paid to capacity building in three interrelated areas:

- raising the literacy levels among innovative IP start-ups and small and medium-sized enterprises (SMEs) in the basics of IP law and IP strategy;
- ensuring that IP start-ups have meaningful access to affordable IP legal services at the earliest stages of the business venture; and
- building greater capacity in IP strategy expertise among IP lawyers and the other intermediaries who support IP start-ups.

This report offers a number of solutions to address each of these weaknesses:

- Raising the level of IP literacy among IP start-ups in the basics of IP law and IP strategy

Recommendation 1: That an online "one-stop" directory or library of key available resources be developed and centralized for easy access and ease of use by IP start-ups and other interested stakeholders.

Recommendation 2: That the Canadian Intellectual Property Office (CIPO) aggressively expand its role in the provision of "direct to business" self-help tools and resources.

Recommendation 3: That an "IP throughout the curriculum strategy" be implemented within, but not limited to, the post-secondary sector.

Recommendation 4: That targeted educational programs be introduced for IP start-ups and "non-lawyer" intermediaries to develop their literacy in the area of IP strategy.

- Ensuring that IP start-ups have meaningful access to affordable IP legal services at the earliest stages of the business venture

Recommendation 5: That provincial and federal levels of government provide financial support and other incentives for law schools to establish and sustain IP legal clinics. These IP clinics should operate in a network to ensure coverage throughout each province and should be connected to the growing transnational network of IP clinics.

Recommendation 6: That provincial law societies enhance their rules regarding legal services delivered by law students, and ensure that they facilitate the establishment of a wide range of subject-matter-specific clinics.

Recommendation 7: That provincial and federal policy makers consider funding "in-house" IP counsel positions in strategic locations throughout the country.

Recommendation 8: That policy makers in government and within the legal profession encourage greater participation by IP lawyers in providing pro bono transactional services to IP start-ups.

Recommendation 9: That provincial and federal policy makers introduce a comprehensive, nationwide funding strategy to provide direct financial support for initial IP filing costs and IP legal advice where free legal services are unavailable or where the specific file requires particularly skilled intervention.

- Building capacity in IP strategy expertise among IP lawyers and the other intermediaries who support IP start-ups

Recommendation 10: That law schools build into their existing IP curriculum a senior-level course in IP strategy. Consideration should be given to multidisciplinary enrolment of students from cognate disciplines such as (but not limited to) business and science, technology, engineering and math (STEM).

Recommendation 11: That, to every extent possible, universities that have or can partner with faculties of law, faculties of business and STEM faculties should collaborate on the development of integrated clinical and experiential programs to support early-stage IP start-ups and to train future lawyers and business consultants, among other intermediaries. Further multidisciplinary integration should be considered, including with the arts and humanities.

Recommendation 12: That universities and other interested stakeholders establish multidisciplinary graduate, professional and/or executive degree or certificate programs to offer specialized training to lawyers, among others, in IP commercialization and strategy.

INTRODUCTION

Starting in the late 1980s, major industrialized nations, led by the United States and the European Union, began shifting their economies away from goods manufacturing to knowledge production. The resulting knowledge economy is acutely dependent on the various domestic and international legal regimes that transform innovative ideas into "knowledge products," in other words, into tradable commodities that can be bought and sold in the global marketplace. Since IP rights[1] are the mechanisms through which innovative ideas are commercialized, IP is quickly becoming the primary currency of this new international economic order.

In fact, the international trade framework hinges on the belief that robust IP laws and enforceable international trade rules strengthen a country's capacity to compete in the global knowledge economy. Therefore, most countries around the world, including Canada, adhere to an increasingly intricate array of treaties and regional agreements that are directed toward enhancing IP rights and strengthening their international enforcement.[2]

Canada is a "good international IP citizen." It is a member of all major international IP law treaties[3] and continues to ratify and implement more recent international initiatives.[4] The country is a signatory to the World Trade Organization's (WTO's) Agreement on Trade-Related Aspects of Intellectual Property Rights, as well as to various bilateral and regional trade treaties that include comprehensive IP chapters.[5] It continues to participate in new regional trade arrangements, most notably the Canada-European Union Comprehensive Economic and Trade Agreement and the Trans-Pacific Partnership, each of which includes extensive IP provisions.[6] Indeed, Canadian IP laws are among the most advanced and sophisticated in the world. In this respect, the country has kept pace with its major competitors.

However, enacting IP laws and adhering to the growing mosaic of international agreements are not enough, on their own, to stimulate economic growth, if Canada's weak global innovative competitiveness is any indication. It is the premise of this report that countries such as Canada need to pay closer attention to the ways in which their IP laws are operationalized and to the mechanics of the law in practice, including the geopolitical context within which they operate. In other words, IP legal knowledge and expertise need to be mobilized on the ground in order to optimize business success and its attendant economic rewards.

Like most other industrialized countries, Canada rests a lot of its economic hopes on the strength of SMEs, especially those engaged in innovative IP-intensive ventures. These SMEs, be they IP-intensive start-ups or more established firms, need to be properly equipped with the necessary IP tools to succeed and prosper in the global economy. In this respect, Canadian businesses need to become experts at the mechanics of IP and how to strategically leverage the various forms of IP rights to their competitive advantage. They must be adept at optimizing the practices

1 The most important forms of IP are patents, copyright, trademarks, industrial designs and trade secrets.

2 The North American Free Trade Agreement was the first of its kind. *North American Free Trade Agreement Between the Government of Canada, the Government of Mexico and the Government of the United States*, 17 December 1992, Can TS 1994 No 2 (entered into force 1 January 1994). It was soon followed by the most important multilateral trade agreement on IP, namely, the *Agreement on Trade-Related Aspects of Intellectual Property Rights, Annex 1C of the Marrakesh Agreement Establishing the World Trade Organization*, 15 April 1994, 1869 UNTS 299, 33 ILM 1197 (entered into force 1 January 1995).

3 Most notably the *Berne Convention for the Protection of Artistic and Literary Works*, 9 September 1886, 828 UNTS 221 (entered into force 5 December 1887; Canada became a member as a British colony in 1886 and acceded in its own right in 1928); the *Paris Convention for the Protection of Industrial Property*, 20 March 1883, 828 UNTS 305 (entered into force 7 July 1884; Canada acceded in 1923); and the *Rome Convention for the Protection of Performers, Producers of Phonograms and Broadcasting Organizations*, 26 October 1961, 496 UNTS 43 (entered into force 18 May 1964; Canada became a member in 1998).

4 In 2012, for example, Canada made significant amendments to its copyright legislation in order to implement the WIPO Internet Treaties: *WIPO Copyright Treaty*, 20 December 1996, 36 ILM 65 (entered into force 6 March 2002); *WIPO Performers and Producers of Phonograms Treaty*, 20 December 1996, 36 ILM 76 (entered into force 20 May 2002). In 2014, it amended its trademark legislation to bring it into conformity with the *Protocol Relating to the Madrid Agreement Concerning the International Registration of Marks*, 27 June 1989, WIPO Pub No 204(E), (entered into force 1 December 1995), the *Singapore Treaty on the Law of Trademarks*, 27 March 2006 (entered into force 16 March 2009) and the Nice Classification established by the *Nice Agreement Concerning the International Classification of Goods and Services for the Purposes of the Registration of Marks*, 15 June 1957, 1154 UNTS 89, 23 UST 1336 (entered into force 6 February 1979), although these implementing provisions are not yet in force.

5 For example, the *Canada-Korea Free Trade Agreement*, 22 September 2014, Can TS 2015 No 3 (entered into force 1 January 2015).

6 See *Comprehensive Economic and Trade Agreement*, Canada and European Union, online: Global Affairs Canada <www.international.gc.ca/trade-agreements-accords-commerciaux/agr-acc/ceta-aecg/index.aspx?lang=eng> and *Trans-Pacific Partnership*, online: Global Affairs Canada <www.international.gc.ca/trade-agreements-accords-commerciaux/agr-acc/tpp-ptp/index.aspx?lang=eng>.

and techniques surrounding their IP assets in order to ensure efficiency of production and the ability to seize commercial opportunities as they present themselves. And they need to be able to rely on timely advice from highly skilled advisers and experts to help them navigate the increasingly complex domestic and international IP legal environments. In sum, innovative businesses and the intermediaries that advise them need to be more fully engaged in the "business of IP."

In 2011, an expert panel commissioned by the Canadian government to report on federal support for Canadian innovation expressed this concern:

> …the Panel is concerned that Canada is not benefiting as much as it should from the valuable IP being generated in this country. While Canada produces IP in abundance, it is less adept at reaping the commercial benefits; too many of the big ideas it generates wind up generating wealth for others. The Panel believes that the government needs to explore this issue further. In particular, *there is a need to develop the skills and knowledge of Canadian entrepreneurs regarding the effective management of their IP.*[7]

In an article published in *The Globe and Mail* on December 12, 2014, founder and former chief executive officer of Research In Motion (now BlackBerry), Jim Balsillie, expressed a similar concern:

> The critical challenge and opportunity for Canadian policy makers and business leaders is to fully understand the differences between the ecosystem for a resource economy and the ecosystem for an innovation economy, and then ensure that…all gaps are addressed…*We need to reorient both our domestic and our geopolitical engagements to ideas commercialization, particularly in the complex, predatory and evolving realm of intellectual property rights management….Sophisticated capacity here will increasingly be needed….The academy needs to research it and our schools need to teach it, the courts need a strategy to advance it, industrial programs need to encourage it, and public sector-private sector structures need to ensure it's addressed on a priority basis.*[8]

These statements are rallying calls for change in the way in which Canadian policy makers and key intermediaries, such as the legal profession, currently support IP-intensive businesses.

This report takes up this cause. It identifies the IP legal gap in Canada's innovation ecosystem and seeks to initiate a meaningful conversation about optimal strategies for capacity building in this respect.

First, however, some preliminary definitional and contextual remarks are in order.

The specific types of businesses under scrutiny are those that are IP intensive and are at their most vulnerable during the early start-up stage (within their first five years). These businesses are less likely to be "IP savvy" and might fail to translate innovative ideas into commercially valuable IP. "IP-intensive" refers to those businesses that have developed ideas that are or can be protected by IP, if the IP is properly identified and protected. This definition would obviously include the "tech start-up" and those innovators drawn from the STEM disciplines. However, the term should also be understood to encompass innovative activity from any disciplinary sector, including within the arts and humanities. The unifying element is that a business is built around and generates revenue from the commercialization of IP.[9]

In this report, these IP-intensive businesses are referred to as "IP start-ups," recognizing that the term should be understood to include those start-ups that have yet to even consider their IP, as well as those that have undertaken some first steps toward commercializing and protecting their innovative ideas. And while the start-up sector is the primary group under consideration, some of the discussion and recommendations in this report apply equally to any innovative venture, regardless of its stage of development. In fact, sophisticated knowledge of and access to experts in IP strategy must be accessible throughout the life cycle of the business.

The term "IP strategy" refers to the ways in which companies maximize the exploitation of their IP rights to ensure they are properly leveraged in fulfillment of

7 Canada, Independent Panel on Federal Support to Research and Development, *Innovation Canada: A Call to Action* (Ottawa: Public Works and Government Services Canada, 2011), online: <http://rd-review.ca/eic/site/033.nsf/vwapj/R-D_InnovationCanada_Final-eng.pdf/$FILE/R-D_InnovationCanada_Final-eng.pdf> at 2-16 (emphasis added) [Jenkins Report].

8 Monica Pohlmann, "Jim Balsillie on commercializing our ideas: 'Where the innovation game is won or lost'", *The Globe and Mail* (12 December 2014), (emphasis added), online: <www.theglobeandmail.com/opinion/jim-balsillie-on-commercializing-our-ideas-where-the-innovation-game-is-won-or-lost/article22064289/>.

9 Although the focus is on IP-intensive businesses, most businesses will have at least some IP to consider, even if only the trademark of their business or the copyright in their websites. Developing sound strategic practices around IP is advisable, regardless of the organization's level of IP dependence.

their business objectives. This term is used in this report to encompass both strategic planning and ongoing management of IP rights.

The primary site of inquiry for this study is the support infrastructure within the commercialization ecosystem in Canada, namely, university technology transfer offices (TTOs), entrepreneurship centres, incubators, accelerators, innovation hubs, regional innovation clusters and similar public business and commercialization supports for Canadian start-ups and entrepreneurs. These agencies are proliferating within the post-secondary sector, as well as within Canadian municipalities at large. They will be referred to collectively as the "IP commercialization ecosystem," even though their functions are not limited to questions of IP commercialization.

In addition, this report is limited in its parameters. Its focus is specifically on the provision of IP legal services delivered by IP legal professionals, including law students. It must be acknowledged, however, that there are a number of key intermediaries along the IP commercialization chain, including business development professionals, technology transfer managers, and registered patent and trademark agents, among others. These intermediaries play important roles in the commercialization process and tangential reference is made to them where applicable. A more comprehensive strategy for capacity building in IP literacy and IP strategy would have to look more deeply at each of these players along the commercialization chain.

As a final comment, the questions and concerns raised in this study should not be understood as Canada-specific. As a medium-sized economy that is largely a net importer of IP developed elsewhere, Canada is an exemplar for similarly situated countries. In fact, most industrialized countries that are leaders in global innovative capacity (even the United States and the European Union) have similar concerns about maximizing their IP knowledge and strategies, and about ensuring that IP legal advice is affordable and accessible, especially to the start-up community.[10] Thus, the issues raised are not limited to any one specific jurisdiction but have broader currency.

This report is divided into six parts, including this introduction. The second part outlines the research methodologies for this study. The third part identifies the fault line in Canada's global competitiveness in terms of weak IP awareness and difficulty in accessing IP legal services, including IP strategic skills, among IP start-ups. The fourth part of the report provides an environmental scan of the current IP commercialization ecosystem. The fifth part recommends models and solutions for capacity building in IP literacy, access to affordable IP legal services and the development of IP strategic skills for IP start-ups and the intermediaries who support them. The report ends with a conclusion.

10 See e.g. United Kingdom, Federation of Small Businesses, *Key to the Knowledge Economy: Making the Most of Small Business Intellectual Property*, Report Ref 535 (Blackpool: Federation of Small Business, May 2015), online: <www.fsb.org.uk/docs/default-source/fsb-org-uk/pressroom/key-to-the-knowledge-economy-making-the-most-of-small-business-intellectual-property-(1).pdf?sfvrsn=0> [FSB Report].

RESEARCH METHODOLOGY

INTERVIEWS

From November 2014 to April 2015, CIGI Senior Fellow Karima Bawa, Research Fellow James Hinton and the author interviewed various intermediaries within the IP commercialization ecosystem at a number of Canadian universities. At least two interviewers were present at all interviews (with one exception, where the author was the sole representative). The author was present at all interviews to provide continuity.

These interviews were conducted with stakeholders in Alberta, British Columbia, Ontario and Quebec. The largest group of interviewees was from Ontario and the interviews were conducted with individuals and organizations based in Ottawa, Toronto, Waterloo and Windsor. In the other provinces, the interviews were conducted with representatives from major city centres, namely, Montreal, Edmonton and Vancouver.

From 20 organizations, 25 individuals were interviewed. The interviews were open ended and free flowing. Some were conducted in person (site visits), while others took place via conference call. Each interview lasted approximately one hour.

The breakdown of those interviewed is as follows:

Innovation and Commercialization Intermediaries

- 10 university TTOs
- five community-based or campus-based accelerators/incubators or innovation hubs (informal discussions with one campus-based incubator and one community-based accelerator were also conducted)
- one combination TTO and community accelerator
- one independently funded not-for-profit accelerator/incubator
- one for-profit accelerator/incubator
- one venture capital firm
- one law firm specializing in corporate/commercial legal services for start-ups (although a number of

informal conversations were conducted with IP lawyers in private practice, involved in IP clinical work or who served as general counsel in companies)

The starting point was to canvass as many intermediaries as possible within the project timeframe. The general purpose of the interviews was to gain a basic understanding about the roles of these various IP commercialization intermediaries and the services they provided, including advice on IP strategy. Insights were also sought in relation to any gaps they identified in the IP commercialization process.

More specifically, in each case, information was sought as to:

- the structure of their organization in relation to IP commercialization services and activities;
- what their particular role was in relation to IP law and IP commercialization;
- in the case of those who were not lawyers, whether and how they obtained relevant IP knowledge and accessed IP legal services (or if they felt they needed them);
- whether and how they assisted their IP start-up clientele in securing IP legal services; and
- what kinds of IP strategies they had employed or had considered in their IP commercialization activities.

IP Start-ups and Entrepreneurs

A number of IP start-ups, entrepreneurs and other innovative companies were interviewed. The general purpose of these interviews was to elicit greater understanding of their needs and their experiences in protecting and strategically managing their IP, especially in relation to whether they were able to secure IP legal advice and their overall satisfaction with the services provided. From these interviews, a series of illustrative case studies was developed. This report contains two case studies: *Patent Co* (Appendix 1) and *Polar Pen* (Appendix 2).

RESEARCH SPECIFIC TO THIS REPORT

A review of primary and secondary material was undertaken in furtherance of the research objectives. Primary material included Canadian federal and provincial government reports as well as Canadian and international reports by think tanks, research institutes and international agencies on innovation and global competitiveness. Secondary material included scholarly papers on innovation and start-up success, university commercialization of IP, IP clinical legal education, and the role of the IP legal profession in facilitating start-up success.

An exit interview was conducted with the law student interns at the CIGI/Law, Technology and Entrepreneurship Clinic (LTEC)/Communitech Summer IP Law Clinic to elicit their reflections on the benefits of the IP clinic for themselves as future lawyers and for the clients they served over the three-month clinic period.

Finally, informal discussions were undertaken with representatives from CIPO to gain their insights on the various questions of concern.

A number of individuals provided invaluable research support, including two CIGI junior fellows from the Master of Arts in Global Governance program at the Balsillie School of International Affairs, four law student research assistants from the University of Windsor, two CIGI articling students and a CIGI summer co-op student.[11]

IDENTIFYING THE IP LEGAL KNOWLEDGE GAP FOR IP START-UPS IN CANADA: A FAULT LINE IN CANADA'S GLOBAL COMPETITIVENESS

In the large number of studies and reports on global innovation competitiveness, Canada ranks high in terms of educated population and R&D spending in the post-secondary sector. However, the country drops significantly in its ability to transform ideas and knowledge into economically beneficially outcomes. In this respect, Canada fares poorly relative to its international competitors.

In 2014, the Conference Board of Canada placed Canada thirteenth among 16 peers. The country was given D grades on a number of relevant categories: "patents by population"; "patents index"; "high and medium high tech manufacturing"; "export market share in aerospace, electronics, computers, pharma…."; "trademarks"; "ICT [information and communications technology] investment"; "venture capital"; "business enterprise and R&D spending"; and "patenting by firms less than 5 years old."[12]

A more recent study, released in September 2015, shows a vast improvement in the country's overall innovative capacity. The Conference Board has now ranked Canada ninth among 16, with an overall C grade. However, the

11 The author is grateful for the contributions of Samah Rahman and Shashanth Shetty (CIGI junior fellows); Victoria Asikis, Stephen Dalby, Samantha Pillon and Amanda Stephens (Windsor law students); Kent Howe and Sam Anissimov (CIGI articling students) and Nethmi Kulatilake (CIGI summer intern).

12 Out of 21 innovation indicators, Canada received 13 Ds, 2 Cs and 6 Bs. Canada, Conference Board of Canada, *How Canada Performs: International Ranking 2014* (Ottawa: Conference Board of Canada, 2014), online: <www.conferenceboard.ca/hcp/details/innovation.aspx>.

country remains weak in some key categories, especially on "business enterprise and R&D spending" and "patents." Although patent registrations improved, they remained very low in comparison with international competitors. In this category, all the provinces scored either D or D minus grades, and the country ranked fifteenth out of 16.[13]

The 2015 Global Innovation Index (GII) places Canada in sixteenth place overall, out of 141 countries. Areas of weakness included "human capital and research" (rank: 22), "business sophistication" (rank: 18), "knowledge & technology outputs" (rank: 21) and "creative outputs" (rank: 18).[14]

In the World Economic Forum's *Global Competitiveness Report 2014-2015*, Canada ranked fifteenth overall. However, in the category of "business sophistication," the country ranked twenty-third and in "innovation" (a category that includes IP), it ranked twenty-second.[15]

In the 2015 Bloomberg Innovation Index,[16] Canada ranked twelfth overall but twentieth in R&D and twenty-first in patents, after Latvia and Romania. The C. D. Howe Institute's 2014 *Measuring Innovation in Canada: The Tale Told by Patent Applications* summed up the dichotomy this way: "Canada often performs well on measures of R&D inputs, such as journal publications or academic citations… but as measured by patent applications it appears to be struggling with the commercialization aspect of the innovation process."[17] They also found that "[o]verall, 85 percent of patents filed in Canada involve no Canadian inventors"[18] and that Canadian patent rates have been in decline since 2000.

Although the emphasis on patents as the only metric of innovation and commercialization activity is increasingly being criticized,[19] rates of patenting remain the basis on which most global indices develop their rankings and results. The prevailing wisdom is that patents are a good measure of innovative and economic capacity, because they serve "as an output indicator (albeit a partial and imperfect indicator) of R&D activity and its productivity, as well as of the state of development of particular technologies and industries."[20]

It may well be that Canadian businesses are looking beyond patents and are making considered and strategic choices about optimizing their IP portfolios by using other forms of IP. However, this remains to be seen. One study of the existing literature on Canadian patenting concluded that factors such as limited financial resources, non-familiarity with patent information and limited access to legal advice contributed to a reticence on the part of Canadian SMEs to patent.[21] Anecdotally, one of the university tech-transfer professionals interviewed for this report explained that declining resources at their office have led to a decrease in patent disclosures and patent activity on that campus. With decreased resources comes decreased expertise to enable campus researchers to make informed decisions about IP protection.

In addition, it must be highlighted that the 2015 GII adopted a more inclusive perspective on innovation that incorporated metrics relating to "creative outputs" rather than patent data only. Creative outputs were measured using criteria such as trademark applications as well as material falling within the domain of copyright such as cultural and creative services, national feature films, printing and publishing. Assessments of online creativity were also included, such as domain name registrations, Wikipedia edits and YouTube video uploads. In spite of the expanded metrics, Canada fared just slightly better on

13 Unlike the previous year's report, this study does not include a specific category for patenting by firms less than five years old. Canada, Conference Board of Canada, *How Canada Performs: A Report Card on Canada* (Ottawa: Conference Board of Canada, 2015), online: <www.conferenceboard.ca/hcp/provincial/innovation/patents.aspx> [*How Canada Performs*].

14 Soumitra Dutta, Bruno Lanvin & Sacha Wunsch-Vincent, eds, *The Global Innovation Index 2015: Effective Innovation Policies for Development* (Geneva: Johnson Cornell University, INSEAD, WIPO, 2015), online: <www.globalinnovationindex.org/userfiles/file/reportpdf/gii-full-report-2015-v6.pdf>.

15 Klaus Schwab, *The Global Competitiveness Report 2014-2015* (Geneva: World Economic Forum, 2014), online: <www.weforum.org/reports/global-competitiveness-report-2014-2015/>.

16 Peter Coy, "The Bloomberg Innovation Index", Bloomberg (2015), online: <www.bloomberg.com/graphics/2015-innovative-countries/>.

17 Robbie Brydon et al, "Measuring Innovation in Canada: The Tale Told by Patent Applications" (Toronto: CD Howe Institute, 2014) at 9, online: <www.cdhowe.org/sites/default/files/attachments/research_papers/mixed/e-brief_191.pdf>.

18 *Ibid* at 10.

19 See Unico, *Metrics for the Evaluation of Knowledge Transfer Activities at Universities* (Cambridge: Library House, 2008); Ruth Graham, *Creating University-Based Entrepreneurial Ecosystems: Evidence from Emerging World Leaders* (Cambridge, MA: The MIT Press, 2014).

20 Conference Board of Canada, *How Canada Performs: Provincial and Territorial Rankings in Venture Capital* (Ottawa: Conference Board of Canada, 2015), online: <www.conferenceboard.ca/hcp/provincial/innovation/venture-capital.aspx> [*Venture Capital*].

21 Bharat Maheshwari, Vinod Kumar & V Vedmani, "Patenting in Canadian Small and Medium-Sized Enterprises: Inhibiting Factors and Effective Strategies" (San Francisco: ResearchGate, 2007), online: <www.researchgate.net/publication/237438044_patenting_in_canadian_small_medium-sized_enterprises_inhibiting_factors_and_effective_strategies>. See also Rashid Nikzad, "Canadian Patent Profile: Some Exploration of Patent Statistics" (2013) 35:1 W Patent Information 201. For a comparative study on factors influencing the use of secrecy over patents, see Helene Delerue & Albert Lejeune, "Managerial Secrecy and Intellectual Asset Protection in SMEs: The Role of Institutional Environment" (2011) 17:1 J Intl Management 130 and Bronwyn Hall et al, "The Choice between Formal and Informal Intellectual Property: a Literary Review", National Bureau of Economic Research Working Paper Series, Paper No 17983, online: <www.nber.org/papers/w17983>.

"creative outputs" (18/141) than it did on "knowledge and technology outputs" (21/141). Therefore, in the absence of any significant mitigating data, the existing metrics paint a gloomy picture.

Indeed, these worrisome rankings and results are clearly of concern to federal and provincial levels of government, as well as to independent think tanks and research centres throughout the country. For example, the federal government's 2014 report *Seizing Canada's Moment: Moving Forward in Science, Technology and Innovation*, stated: "[w]hile Canada shows research and development strengths in some industrial sectors, the overall outcomes for business continue to be less than the competition in other countries, with adverse impacts on our productivity and, potentially, on Canadians' long-term prosperity… Canada's future growth and prosperity will depend on our ability to build on our advantages in people and knowledge and address our innovation challenges."[22]

The Conference Board's study concluded that "Canada does not take the steps that other countries take to ensure research can be successfully commercialized and used as a source of advantage for innovative companies seeking global market share. Canadian companies are thus rarely at the leading edge of new technologies and too often find themselves a generation or more behind the productivity growth achieved by global industry leaders."[23]

Similar expressions of concern emerge in a number of provincial fora. For example, the non-partisan Jobs and Prosperity Council in Ontario, in its *Advantage Ontario* document, stated: "The need for change is clear. Ontario's prosperity will depend on innovative, highly productive firms that are flexible enough to capitalize on opportunities wherever and whenever they emerge. Governments, labour, the not-for-profit sector, academia and the private sector need to rethink and realign their roles and actions to build a competitive, globally oriented economy."[24]

However, identifying the problem is one thing. Finding the appropriate solutions is quite another. In an effort to shore up Canada's innovative capacity, provincial policy makers have been developing and implementing innovation strategies.[25] For example, the most recent British Columbia budget statement included a report from the province's Ministry of Technology, Innovation and Citizens' Services: "The ministry is currently developing a provincial innovation strategy paper to accelerate British Columbia's economic performance by supporting innovation, commercialization and entrepreneurship. British Columbia's technology sector provides over 84,000 jobs, across over 9,000 companies and is the third largest contributor to provincial economic output. The ministry is working closely with the British Columbia technology community on how government might enable the technology sector to best support economic growth and job creation."[26]

A cornerstone of the strategies in the various provinces has been to develop and support the establishment of various entrepreneurial resources within the post-secondary sector as well as in communities at large. These resource centres take the form of business incubators, accelerators, entrepreneurship hubs, innovation clusters and the like. Recent provincial economic plans include at least one chapter on government programs to enhance this commercialization ecosystem.[27] For example, the Ontario Centres of Excellence (OCE), an independent non-profit organization established to spur the province's innovation and economic prosperity, has funded regional innovation centres as well as campus-linked accelerators and on-campus entrepreneurship activities (OCEA).[28]

At the federal level, strategic choices have been made to accelerate post-secondary funding to technical disciplines

22 Industry Canada, *Seizing Canada's Moment: Moving Forward in Science, Technology and Innovation*, Catalogue No lu37-4/1-2014E-PDF (Ottawa: Industry Canada Web Services, 2014) at 4.

23 *Venture Capital*, *supra* note 20.

24 Ontario, Jobs and Prosperity Council, *Advantage Ontario* (Toronto: Queen's Printer, 2012) at 1, online: <http://docs.files.ontario.ca/documents/340/jpc-advantageontarioenglish.pdf>.

25 See e.g. Alberta Enterprise and Advanced Education, *Alberta Research and Innovation Plan 2012* (Edmonton: Alberta Enterprise and Advanced Education, 2012); BC Research and Innovation, *Local Excellence, Global Impact*, (Victoria: Queen's Printer, 2012); Ontario, Ministry of Research and Innovation, *Seizing Global Opportunities: Ontario's Innovation Agenda* (Toronto: Queen's Printer, 2013); Manitoba Jobs and the Economy, "The Manitoba Innovation Strategy" (Winnipeg: Queen's Printer, 2014).

26 British Columbia, Ministry of Technology, Innovation and Citizen's Services, *Ministry of Technology, Innovation and Citizens' Services 2015/16–2017/18 Service Plan* (Victoria: Queen's Printer, 2015) at 5.

27 Indeed, the funding for the CIGI International Law Research Program is also tied to this mandate: "The research will directly support Ontario's economic priorities of attracting and strengthening businesses that commercialize intellectual property while furthering the province's export market so made-in-Ontario companies and products can advance their success on a global scale." Ontario, Ministry of Advanced Education and Skills Development, *Province Makes Key Research and Innovation Investments* (Ottawa: Queen's Printer, 2013), online: <http://news.ontario.ca/tcu/en/2013/11/province-makes-key-research-and-innovation-investments-1.html>.

28 See Ontario, "Ontario Centres of Excellence" (2016), online: <www.oce-ontario.org/> [Centres of Excellence].

over the humanities and liberal arts.[29] In addition, this targeted funding for the STEM disciplines is increasingly tied to immediately "useful" or applied outcomes instead of basic research.[30] Further initiatives include efforts to make post-secondary research more accessible and relevant to the needs of industry through greater public-private partnerships and industry-university collaborations.[31]

However, these policy choices and targeted expenditures are still not paying off in terms of increasing Canada's innovative capacity and its global competitiveness. In July 2015, Canada's finance minister was still reporting that: "[t]he innovation performance of Canadian firms has continued to fall relative to the previous two decades, despite considerable federal efforts in recent years."[32]

Admittedly, a multitude of factors contributes to Canada's weak showing, but this report is principally concerned with the ways in which these entrepreneurship agencies provide IP legal services and support for the IP commercialization efforts of their clients, including raising their level of awareness about the importance of strategically managing their IP.

The question that must be asked is whether some of the difficulties in IP commercialization activity might lie in the inability of innovative businesses to access timely, affordable IP legal and strategic advice within the IP commercialization ecosystem. Could the Conference Board's assessments of a D grade in the category of "rates of patenting in first 5 years of a business" in 2014, and a D in "patents" in 2015, be attributable, at least in part, to the overall lack of IP literacy among IP start-ups and the absence of cost-effective and meaningful IP legal solutions for these young Canadian entrepreneurs?

In a similar vein, one impediment often cited in the literature on Canada's innovative performance is that this country suffers from weak venture capital or angel investment in start-ups and other high-risk ventures.[33] Conversations with a few angel investors and venture capitalists reveal that there is enough venture funding — what is lacking, in their view, are businesses in which they have sufficient confidence investing.[34] While more research must be done in this area, one representative of an angel network suggested that some of this investment insecurity might lie in a lack of confidence surrounding start-ups' IP strategy and their IP due diligence. Could some of the financing obstacles faced by IP start-ups, especially the lack of private sector investment, be related to a lack of confidence in prospective investees' levels of IP literacy and informed IP strategic planning?

Some anecdotal evidence supports the validity of this concern. A few years back, a workshop was held at the University of Windsor on the basics of IP designed for student start-ups who were intending to apply for government funding to support their business. The application form required that applicants identify their IP strategy. When it came time to review the grant applications prior to submission, it was clear that the only message that resonated for the audience was that the use of trade secrets to protect their ideas was cheaper than obtaining a patent. Without exception, the individuals identified their IP strategy as one of trade secret protection, when it was clear that they had no genuine understanding of the relative benefits or detriments of choosing one form of IP over another. The sole criterion underlying their decision was the question of cost. It is easy to understand how potential investors might be wary. IP start-ups ought to be in a position to provide as informed and deliberate a plan of action respecting their IP as they can with their overall business plans.

And yet, in spite of these questions, it is startling that few of the studies, inquiries and reports on Canadian innovation competitiveness look closely at this question of IP literacy and access to affordable IP legal expertise. Instead, they tend toward advocating for changes in Canada's IP laws, recommending new indirect incentives or streamlining

29 For a critique of this over-emphasis on STEM disciplines, see the op ed by University of Windsor President Alan Wildeman, "We ignore the liberal arts at our peril", *The Globe and Mail* (7 September 2015), online: <www.theglobeandmail.com/globe-debate/we-ignore-the-liberal-arts-at-our-peril/article26228215/>.

30 Concerns have been raised about the implications of this shift away from funding for basic research. See e.g. Canadian Association of University Teachers, "Federal Funding of Basic Research" (2013) 13:1 CAUT Education Review, online: <www.caut.ca/docs/default-source/education-review/educationreview13-1-en.pdf?sfvrsn=2>. A comparative analysis of 15 countries, including Canada, found that the ratio of basic to applied research varied across disciplines but remained pretty robust overall, with academics often engaging in both. The researchers did, however, find a correlation between basic research and lower rates of external grant funding. See Peter James Bentley, Magnus Gulbrandsen & Svein Kyvik, "The Relationship between Basic and Applied Research in Universities" (2015) 70:4 Higher Education 1, online: <http://link.springer.com/article/10.1007%2Fs10734-015-9861-2>.

31 For example, the Mitacs program, a national not-for-profit organization that supports research-based innovation. Mitacs, "Mitacs builds partnerships between academia, industry, and the world: to create a more innovative Canada" (2016), online: <www.mitacs.ca/en>.

32 Citing secret memorandum of Finance Minister Joe Oliver, see Andy Blatchford, "Canadian Business Innovation Has Faded Despite Federal Cash: Memo", *The Globe and Mail* (2 July 2015), online: www.theglobeandmail.com/report-on-business/canadian-business-innovation-has-faded-despite-federal-cash-memo/article25219953/.

33 For example, the Jenkins Report found gaps and poor performance in the venture capital system in Canada. See Jenkins Report, *supra* note 7.

34 The Conference Board of Canada rated provincial venture capital investment quite high: "Increased venture capital investment in a number of provinces, along with lagging investment in European countries since the recession, has vaulted Canada from being one of the weakest to one of the strongest countries on this indicator." See *Venture Capital*, *supra* note 20.

CIPO practices.[35] However, one can have the most modern IP laws, the soundest registrar practices and the most progressive tax policies in place, and still not fully address the IP commercialization deficit.

If it is indeed the case that the costs and complexity of IP protection and the inaccessibility of legal expertise are barriers to IP start-up success, this issue must be tackled head-on and must be corrected quickly. Without a strategic approach to raising IP awareness, shoring up IP knowledge and providing easy and affordable access to those with specialized IP expertise, tinkering with laws, policies and regulatory structures will not make much difference. A critical analysis of the current state of IP start-up literacy, access to IP legal services and the availability of experts in IP strategic advice must become part and parcel of any further research investigations into Canada's lagging innovation competitiveness. This report provides a starting point from which assessments of this kind can be made.

THE IMPORTANCE OF IP LITERACY AND ACCESS TO TIMELY AND AFFORDABLE IP LEGAL EXPERTISE

Recent research conducted by the Federation of Small Business (FSB) in the United Kingdom found that close to one in three small businesses that owned IP relied on these IP rights for 75 percent of their revenues.[36] In addition, an EU study found that:

- intellectual property rights (IPR)-intensive industries pay higher remuneration than non-IPR-intensive industries, with a premium of more than 40 percent;
- IPR-intensive industries account for 90 percent of the European Union's trade with the rest of the world;
- about half of EU industries are IPR intensive;
- IPR-intensive industries account directly for 26 percent of all jobs in the European Union — around 56 million direct jobs. With the addition of 20 million indirect jobs, one in three of all EU jobs — 35 percent of all jobs — rely on IPR-intensive industries;
- these industries generated almost 39 percent of total economic activity (GDP) in the European Union, worth €4.7 trillion;
- IPR-intensive industries pay higher remuneration than non-IPR-intensive industries, with a premium of more than 40 percent; and
- IPR-intensive industries account for 90 percent of the European Union's trade with the rest of the world.[37]

Clearly, IP is good for business, if properly protected and strategically managed. However, it appears that most SMEs do not recognize the value of IP to their businesses and therefore do not actively protect their intellectual assets, nor do they maximize the benefits through sound IP strategies. For example, while the UK's FSB study found that 30 percent of British SMEs maximized their IP, the remaining 70 percent struggled with IP protection and management largely due to the costs, including the cost of legal services. The complexity of the IP legal system, coupled with the costs of IP legal services, presents very real obstacles. The situation is similar in the United States, which, like the United Kingdom, has a stronger entrepreneurial and innovation culture than Canada. As Tanya Marcum and Eden Blair have written:

> Often, entrepreneurs do not protect their intellectual property. Among other factors, they may not even identify their IP. And in cases when the latter is achieved, they may not pursue protection, believing the costs to enforce their IP rights are too high. Not all cases of infringement are nefarious in nature; entrepreneurs may be completely unaware that they are violating the IP rights of another, though this ignorance does not save them from potential costly litigation. Attorneys can offer insight as to the identification and protection of IP, as well as search for possible conflicts. Unfortunately, however — as with other legal issues — entrepreneurs often use cost comparison (i.e., the cost of hiring an attorney versus the cost of not hiring one) as the deciding factor and end up losing their

35 See e.g. Canadian Chamber of Commerce, *Innovation for a Better Tomorrow: Closing Canada's Intellectual Property Gap in the Pharmaceutical Sector* (Ottawa: Canadian Chamber of Commerce, 2011), online: <www.chamber.ca/download.aspx?t=0&pid=01c1b24c-9bae-e211-8bd8-000c291b8abf>. Note the strong critique of this report by Edward M Iacobucci, "Innovation for a Better Tomorrow: A Critique" (30 May 2011), online: <www.canadiangenerics.ca/en/news/docs/05.30.11%20Innovation%20for%20a%20Better%20Tomorrow%20-%20A%20Critique_FINAL.pdf>. On the absence of direct incentives, see Council of Canadian Academies, *The State of Industrial R&D in Canada* (Ottawa: Council of Canadian Academies, 2013), online: <www.scienceadvice.ca/uploads/eng/assessments%20and%20publications%20and%20news%20releases/research%20and%20develop/ird_fullreporten.pdf>.

36 See FSB Report, *supra* note 10.

37 European Union, Office for Harmonization in the Internal Market (Trade Marks and Designs), *Intellectual Property Rights Intensive Industries: Contribution to Economic Performance and Employment in the European Union* (Munich: European Patent Office, 2013), online: <https://oami.europa.eu/ohimportal/en/web/observatory/ip-contribution>.

> intellectual property rights or infringing on those of others.[38]

Obviously, the successful commercialization of ideas and the realization of economic benefits do not rest exclusively with sound IP legal knowledge, access to affordable IP legal services and strategic management skills. However, without a sophisticated understanding of domestic and international IP practices, companies face unnecessary and often overwhelming difficulties. At the very least, these businesses will suffer delays and financial setbacks in correcting IP missteps. In other cases, however, the absence of adequate IP knowledge and protection, especially at the earliest stage of the venture, could result in business failure. The stakes are therefore high if Canada (and indeed other similarly situated countries) wants to grow its economy on the strength and talents of its IP start-ups.

Nortel is a case in point. A very successful Canadian telecommunications company, Nortel had thousands of patents in its portfolio. However, it failed to capitalize on the commercial value of these patents prior to its bankruptcy. Instead, during the bankruptcy proceedings, the portfolio was sold to third parties who saw the financial opportunities and were able to exploit them to their own advantage. The lesson here is that even a major multinational corporation may not be as prepared or as proactive in managing its IP as one would hope.

Even a seasoned entrepreneur can get caught in an IP misstep. In an example drawn from one of the entrepreneur interviews conducted for this report, defects in IP ownership were not caught during licensing negotiations and were therefore not corrected at the time the various IP agreements were signed. The individual seeking to license the IP in question was a sophisticated entrepreneur with a technical background and an in-depth understanding of the technology in question, as well as some experience with contract negotiations. However, he did not have legal training and did not catch the flaws in the IP chain of title. When these defects were finally recognized, close to 70 percent of the financing raised by the company had to be expended on legal fees to correct the IP ownership issues.

If experienced and sophisticated players can be caught unawares, how can one expect the young IP start-up to navigate the various IP complexities and to bear the costs of expert legal advice? This is especially worrisome where the IP start-up is a post-secondary student trying to develop a prototype, obtain financing for the business and complete his or her degree at the same time — the so-called "garage entrepreneur." James Hinton and Kent Howe have aptly described the IP start-up's conundrum as the "new innovator's IP commercialization dilemma": "Access to IP legal knowledge and guidance…are critical when navigating the complex international IP legal regime, yet early-stage innovators (many of whom are young and inexperienced in business) often lack both IP knowledge and the financial resources to obtain timely legal guidance, leaving them vulnerable at a critical phase of the commercialization process. We call this the new innovator's IP commercialization dilemma."[39]

Given that the cost of legal services creates a barrier to access to the necessary expertise, it is not surprising that IP start-ups turn to self-help methods, often with unfortunate results, as the examples below illustrate.

In this report's first case study, *Patent Co* (see Appendix 1), a firm at its earliest stages wanted to cut its costs by drafting its own patent claims. It engaged an external IP lawyer to double check the draft and do the patent filing. Later, though, it discovered that it had drafted the claims too narrowly and missed the opportunity to capture a broader set of inventive activity, which might have provided it with additional licensing revenue. As the founders reported to the interviewer:

> Early communication with external counsel was largely "one-sided" and, in hindsight, there is a general feeling that the services received, on account of the company's small size and the limited work it provided the firm, were not as comprehensive as they would have been were they not a start-up. Indeed, reliance on the external counsel for IP strategy resulted in a major opportunity being missed to file additional patents to create a patent set. It is believed that had this opportunity been recognized that affirmative action would have paid major dividends in the company's level of IP protection and significantly strengthened their market position. The ramifications of this misstep continue to be felt.[40]

This company attributed lost time, effort and especially lost opportunity to its IP missteps. By trying to limit its exposure to high legal fees, the company "got what it paid for" and suffered as a consequence. Although the company had consulted an experienced IP lawyer, it felt that it had

38 Tanya M Marcum & Eden S Blair, "Entrepreneurial decisions and legal issues in early venture stages: Advice that shouldn't be ignored" (2011) 54:1 Business Horizons 143 at 148. See also Lawrence J Trautman, Anthony J Luppino & Malika Simmons, "Some Key Things US Entrepreneurs Need to Know about the Law and Lawyers" (Rochester, NY: Social Sciences Research Network, 2015), online: <http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2606808##>; Jean Lorrain & Sylvie Laferté, "Support Needs of the Young Entrepreneur" (2006) 19:1 J Small Business and Entrepreneurship 37; Matthias Staehelin, "Legal Challenges and Pitfalls for Start-Up Companies: 48 Common Questions and Answers" (2014) 68:1 Chimia 850; BM Gaff, "IP Issues for Start-ups" (2015) 48:1 Computer 16.

39 See James Hinton & Kent Howe, "The New Innovator's Commercialization Dilemma", CIGI Special Report, 29 April 2015.

40 Interview July 3, 2015. See Appendix 1.

only received limited attention because it could not afford to pay the fees for more comprehensive service.

In order to avoid future errors of the same nature, *Patent Co* engaged in self-help initiatives, travelling to Israel, for example, to learn about IP and IP strategy from the IP start-ups there. To further decrease its reliance on lawyers, it has developed its own internal IP legal capacity; one of the founders has become a registered patent agent and manages the IP portfolio. While it is certainly necessary for IP start-ups to take a keen interest in their IP portfolios, policy makers should ask themselves whether these efforts really are the most efficient use of time and limited resources. IP start-ups should not be compelled to develop IP legal expertise in-house solely as a "work-around" because they could not find or could only afford limited expert legal services.

In another example cited in the literature, one company wanted to save legal fees by downloading a licence agreement it found on the Internet and using that contract with its licensees.[41] The company did not realize that one of the clauses allowed the licensees to freely license the technology to third parties. Without realizing it, and in an effort to save costs, the company gave up control over its IP. Obviously, the value of the company was significantly depreciated as a result. This error was only discovered by a potential purchaser during negotiations for the sale of the company. Needless to say, the sale did not proceed.

The Internet is increasingly becoming an important "go to" resource for start-ups and entrepreneurs looking for legal advice and for downloadable templates of legal documents.

While the Internet is a good source of basic information and a useful starting point, it cannot act as an effective substitute for specialized IP legal knowledge. However, the often prohibitive cost of IP legal services is driving IP start-ups to rely on freely available but inadequate resources to make strategic IP legal decisions. As Cari Sommer writes: "Businesses will often run at the start on shoe-string budgets and…the cost-benefit analysis of investing in experienced legal counsel attracts them to 'Do-it-Yourself' sites across the internet….using these sites result [*sic*] in a wide range of mixed consequences, some of which wind up being more costly down the line."[42]

In the area of trademarks, common mistakes often arise at the moment an IP start-up is developing its brand name and marketing strategy. A classic example can be found in a case involving a computer software company that selected a brand name that was identical to that of a major multinational company. Not surprisingly, it received a cease-and-desist letter from the trademark holder, but only after having invested in marketing and having begun to generate goodwill in the infringing brand name: "The new venture was put in the position of changing its name or facing costly litigation. As this example illustrates, it is important that entrepreneurs understand the concept of intellectual property, what it entails, and when permission must be sought for its use. Legal counsel can assist entrepreneurs in this endeavor."[43]

In contrast, a very similar example drawn from this author's experience had a more salutary outcome, because early-stage IP legal intervention was available to mitigate harm. It highlights the importance of early-stage IP legal advice in preventing unexpected legal surprises down the road.

This case arose at the Centre for Enterprise and Law (CEL) at the University of Windsor. CEL brought together business students and law students to provide, for course credit, business and legal support to local start-ups and entrepreneurs.[44] In this example, two computer science students had developed an Android app and had chosen a brand name that could be confused with a number of trademarks registered by Google in Canada. They chose the name precisely because it evoked the famous brand without actually reproducing the exact trademark. They thought that this was permissible and, indeed, clever on their parts. Fortunately, these individuals had not yet used the infringing trademark on any significant marketing initiatives.

Because CEL offered free IP legal services, delivered by law students who were supervised by a licensed practitioner, the error was quickly corrected and the student innovators were advised to select a different name. The early intervention prevented financial loss and possible litigation down the road. The clients also learned some basic trademark law principles for future reference. In addition, the business students were able to integrate the principles of lawful trademark selection in their marketing and branding advice to the client.

What all of these examples demonstrate is that IP start-ups and other early-stage ventures have limited knowledge of IP and consider the legal costs and complexity of

41 Mary Juetten, "Three Intellectual Property Mistakes That Are Killing Your Startup" (May 2015), *Start Up Grind* (blog), online: <www.startupgrind.com/blog/three-intellectual-property-mistakes-that-are-killing-your-startup/>.

42 Cari Sommer, "How Entrepreneurship Is Reshaping the Legal Industry" (24 July 2013), Forbes Online, online: <www.forbes.com/sites/carisommer/2013/07/24/how-entrepreneurship-is-reshaping-the-legal-industry/#51c984581cfe>.

43 Marcum & Blair, *supra* note 38 at 148.

44 This interdisciplinary course won the Canadian Council for Small Business and Entrepreneurship's 2011 National Award for Most Innovative Entrepreneurship Course.

IP protection as significant inhibiting factors. Recent surveys and other empirical studies of the Canadian entrepreneurial and innovation communities confirm this state of affairs.

Starting in 2007, CIPO has held a series of high-level consultations and round tables to survey the current landscape for Canadian start-ups and SMEs. Its first report, *Canadian Small and Medium Sized Enterprises (SMEs): Baseline Awareness of Intellectual Property*,[45] described the results of 2,106 telephone surveys conducted with Canadian companies having fewer than 500 employees. More than half the total number of companies surveyed had five or fewer employees. Twelve percent of the companies surveyed were "start-ups" in business for less than five years. The purpose of the survey was to gauge the IP knowledge of Canadian SMEs, but more specifically to provide an environmental scan of the visibility and importance of CIPO in the IP registration process.

The overall findings were that Canadian companies could be divided into two camps: those with low familiarity with IP and those with high familiarity. The former included such sectors as agriculture, forestry, health services and retail. This group was "[m]ore likely to indicate that they do not have IP assets or do not know if they have IP assets or not. Respondents in this cluster are also more likely to work in a company that does not have an active research and development function."[46]

High-familiarity companies included information and cultural industries, STEM clusters, arts and entertainment, manufacturing, mining and oil and gas extraction. This group was "more likely to indicate that they do have IP assets. They are also more likely to work in SMEs that have [*sic*] active research and development function."[47] By high familiarity, the report identifies this as a "*somewhat informed* understanding and appreciation for Intellectual Property and its application to their business."[48]

Drilling more deeply into particular survey results, the report found that 62 percent of senior business representatives were unable to identify any form or types of IP protection. In terms of perceived impediments to filing for IP protection, the survey results were somewhat more vague, as "the vast majority of respondents could not indicate a top-of-mind impediment to filing for intellectual property protection."[49] However, where they did respond, cost was identified as the most significant impediment. The second most commonly identified impediment was lack of information or too much information.[50] Finally, in terms of where the companies went for IP help, larger companies of 26 employees or more said that lawyers were their first choice for expertise (59 percent) but that Internet search engines were often used for general advice (24 percent).[51]

Unfortunately, the report does not identify those responses drawn specifically from smaller companies and start-ups. Further, while the report did recommend that CIPO get feedback from intermediaries such as lawyers and IP agents, this did not include a more broadly based inquiry of lawyers and IP agents of their views of the kinds of IP legal services that IP start-ups need but may not be getting. The focus was more on feedback about these IP experts' experiences working with CIPO.

Building from this study, CIPO followed with a targeted study of IP awareness within the environmental sector. Its *Final Report: 2008 SME Awareness Survey*[52] surveyed 501 firms with between five and 499 employees. Overall, the findings were consistent with the broader 2007 study, although this targeted sector had a greater measure of IP awareness.

Importantly, the study noted that while this sector was generally familiar with IP, "very few SMEs…surveyed had in fact filed for protection."[53] Of the group that actively protected their IP (54 percent of respondents), 77 percent believed that their IP increased the value of their business and 67 percent agreed that their IP assets made them more competitive.

For businesses that had not specifically filed for patent or trademark protection, 11 percent cited cost as the reason. Forty-five percent of those surveyed said they relied on lawyers for expert advice and 34 percent would consult lawyers for general advice. Fourteen percent would seek general information on the Internet.

Unfortunately, this report did not distinguish between early-stage start-ups (five years or less in business) and those that were more established. It was also limited in its scope, in that "the focus given to the environmental sector makes it difficult to interpret whether the increase

45 The Strategic Council, *Canadian Small and Medium Sized Enterprises (SMEs): Baseline Awareness of Intellectual Property* (Ottawa: CIPO and Industry Canada, 2007), online: www.ic.gc.ca/eic/site/icgc.nsf/vwapj/FinalReportCIPO-SME.pdf/$file/FinalReportCIPO-SME.pdf>.

46 *Ibid* at 42.

47 *Ibid*.

48 *Ibid* at 43 (emphasis added).

49 *Ibid* at 31.

50 *Ibid*.

51 *Ibid* at 37.

52 Canada, CIPO, *Final Report: 2008 SME Awareness Survey*, POR No POR-295-07 (Gatineau: CIPO, 2008), online: <www.ic.gc.ca/eic/site/icgc.nsf/eng/04399.html>.

53 *Ibid* at 22.

in awareness observed is a sub-group phenomenon or an overall increase in awareness for SMEs…writ large."[54]

In 2012-2013, CIPO conducted a series of round tables with a number of key stakeholders to gain further understanding of the IP needs and gaps, and CIPO's role, in the IP commercialization process.

In the first report, 18 round table discussions were undertaken with innovative SMEs across Canada, divided into three groups (users of the patent system, IP users outside of patents, non-users of the IP system). Because it was a CIPO study, the focus was on users of the registration and other CIPO systems, rather than a more broadly based exploration of more generalized IP needs. Nevertheless, the findings are useful for the purposes of this report.

Among the key findings was that "[p]articipants said the main barriers to seeking IP protection were costs and complexity of the IP system. They indicated having to make the difficult decision between investing time and effort on research and development…or in other corporate activities, such as seeking IP protection….Developing an effective IP strategy is considered challenging by SMEs, mainly due to the complexity of IP and the lack of information or advisory resources to coach or counsel."[55]

The second report canvassed SMEs that were current or potential users of CIPO services, and included discussion around "the high cost of legal fees at a point in the innovation phase when entrepreneurs typically don't have funding. Participants stated that they were interested in having a place where they could get general advice and impartial credible information at no cost."[56]

In the TTO roundtable, a number of respondents raised the issue that "securing IP protection is expensive, and TTOs have financial constraints when managing a limited budget. Patenting and the related commercialization effort require substantial financial investment, including agent and IP office fees."[57] This group relied mainly on patent agents for assistance, including in IP strategy.

In 2013, the federal Standing Committee on Industry, Science and Technology was mandated to "study the intellectual property…regime in Canada and how this regime contributes to advancing innovation."[58] The committee's report concluded, among other things, that SMEs have limited awareness about IP and its importance and that they need to develop "better IP 'strategic thinking.'"[59] In particular, SMEs are very poor at "strategically managing their intellectual property assets."[60]

In a survey of IP management[61] conducted by Industry Canada in 2011, 3,000 businesses were surveyed from among three revenue groups ($100,000 to $249,999; $250,000 to $4,999,999; and $5,000,000 or greater). The results showed that:

> Enterprises with revenues greater than $5 million in 2010 were more likely to employ patents, copyrights or trade-marks than enterprises with revenues between $100,000 and $249,999.
>
> For the largest enterprises, 23% held or used patents compared with 3% of the smallest enterprises. Similarly, 25% of the largest enterprises held or used copyrights, twice the proportion of 12% among the smallest.
>
> In addition, 41% of the largest enterprises held or used trade-marks in 2010, compared with 11% of the smallest.[62]

While the report did not distinguish between start-ups and more mature ventures, it could be assumed that the data relating to the smallest enterprises would cover at least

54 *Ibid* at 21.

55 Canada, CIPO, *CIPO Roundtables: Report Following May and June 2012 (Wave One)* (Gatineau: CIPO, 2012) at 2, online: <www.ic.gc.ca/eic/site/cipointernet-internetopic.nsf/eng/wr03646.html>. Wave Three focused more specifically on SMEs that engaged with CIPO for patent and trademark protection and with registered patent agents and trademark agents.

56 Canada, CIPO, *CIPO Roundtables: Report following November and December 2012 (Wave Two)* (Gatineau: CIPO, 2012) at 5, online: <www.ic.gc.ca/eic/site/cipointernet-internetopic.nsf/eng/wr03650.html#roundtablefindings>.

57 *Ibid* at 9.

58 Canada, Standing Committee on Industry, Science and Technology, House of Commons, *Intellectual Property Regime in Canada* (Ottawa: Speaker of the House of Commons, 2013) at 1 (Chair: David Sweet, MP), online: <www.parl.gc.ca/content/hoc/Committee/411/INDU/Reports/RP6038442/indurp03/indurp03-e.pdf>.

59 *Ibid* at 12.

60 *Ibid*.

61 Canada, Industry Canada, *Economic Analysis and Statistics: Survey of Intellectual Property Management (SIPM) 2010* (Ottawa: Industry Canada, 2012), online: <www.ic.gc.ca/eic/site/eas-aes.nsf/eng/h_ra02210.html>.

62 Canada, Statistics Canada, *Intellectual Property Management in Selected Industries, 2010* (Ottawa: *The Daily*, 18 December 2012), online: <www.statcan.gc.ca/daily-quotidien/121218/dq121218b-eng.htm>.

some start-ups whose revenue streams are more likely to be limited.[63]

The Canadian International Council (CIC) offered its take on Canada's IP performance in its 2011 report, *Rights and Rents: Why Canada must harness its intellectual property resources*.[64] The CIC studied the IP system "in light of the highly competitive international context, and with an eye to national strategies for innovation and increased productivity."[65] This study found that "[t]he majority of Canadian start-ups simply don't know that they are doing when it comes to IP strategy and IP management."[66] The report said this state of affairs arose "partly because Canada's education system is not grooming IP coaches to help [SMEs] map out a strategy — and some of the blame rests with universities…."[67] In addition, "[a]s well as offering no training, Canada provides little financial support to start-ups that want to file patents but cannot afford the tens of thousands of dollars required to do so."[68]

A 2011 study and report by Quebec's Conseil de la Science et de la Technologie found that the SMEs under consideration "often lack an innovation strategy and have poor knowledge of available IP management tools and very little or no experience in negotiating with universities. They rarely have the skills, financial resources or support required to develop more ambitious strategies. IP management is a black box for many SMEs. Not only do they fail to understand how IP protection can benefit them, they indicated that their main problems were red tape, delays and inefficiency."[69] The report also identified the complexity of international IP management as a significant irritant.

Smaller regional studies in Ontario have elicited similar results. In 2004, a team from the University of Windsor's Faculty of Law conducted an IP needs-assessment study of Windsor and Essex County, Ontario.[70] Among its findings was the following:

> Most striking was that 11% of respondents who had, at first, stated that they had no IP/IT [information technology] issues did, indeed, in their daily operations, have IP/IT issues but were unable to identify them as such. It was only through our discussions with the respondents that we were able to identify their concerns as IP/IT ones. It became evident to us that there is a general lack of awareness in the community about what IP/IT law is; people are confused especially regarding the operations of copyright law, trademark law and patent law….We found that these respondents could not identify, let alone resolve, an existing IP/IT concern.[71]

Building upon this report, a similar study was conducted by a team at Western University's Faculty of Law in relation to London, Sault Ste. Marie, St. Catharines and Ottawa.[72] Their conclusion was that "the demand for publicly available IP expertise is high across Ontario," and, in 2010, this demand was not being met.[73]

The Hinton and Howe report, which looked at clients of Communitech, a specialized technology accelerator in Waterloo, Ontario, was to similar effect:

> While most of the start-up companies engaging the clinic had a preliminary understanding of IP, they had not yet developed a comprehensive IP strategy. In fact, a good number of innovators were still in the process of completing their undergraduate studies

63 In another federal study conducted in 2011, IP was not considered an obstacle by most of those surveyed and, where it was, 60 percent said they were successful at mitigating the issue. The survey subjects consisted of 6,233 enterprises of more than 20 employees. This is an important study by virtue of the sheer number of those surveyed. However, the study expressly excluded from consideration the precise groups this report is most concerned with, namely, the education sector, IP start-ups and very small SMEs so, although instructive, the study's value is limited for the specific purposes of this report. See Canada, Industry Canada et al, *Business Innovation and Strategy: A Canadian Perspective* (Ottawa: Public Works, 2011), online: <http://publications.gc.ca/collections/collection_2011/ic/Iu173-3-2011-eng.pdf>.

64 Canadian International Council, *Rights and Rents: Why Canada must harness its intellectual property resources* (Toronto: CIC, 2011), online: <http://docplayer.net/262424-Rights-and-rents-why-canada-must-harness-its-intellectual-property-resources.html> [CIC Report].

65 *Ibid* at 3.

66 *Ibid* at 66.

67 *Ibid*.

68 *Ibid*.

69 Quebec, Conseil de la Science et de la Technologie, *Advisory Report: Intellectual Property Management in University/Business Relations: Promoting Dynamic Strategic Alliances* (Quebec: Government of Quebec, 2011) at 26, online: <http://collections.banq.qc.ca/ark:/52327/bs2103873>.

70 Myra Tawfik, Jacqueline Chan & Telly Lebedev, Intellectual Property Legal Information Network, *Report to the Law Foundation of Ontario*, 18 November 2004, online: <http://web4.uwindsor.ca/units/law/IPLIN/main.nsf/IPLINreport.pdf>.

71 *Ibid* at 16–17.

72 Margaret Ann Wilkinson, Mark Perry & Richard McLaren, "Mobilizing Intellectual Property Expertise [MIPE] Final Report" (2012) 7:1 Law Publications 1 at 3, online: <http://ir.lib.uwo.ca/cgi/viewcontent.cgi?article=1081&context=lawpub>.

73 *Ibid* at 3.

> and, as such, had very limited resources and business experience.[74]

Finally, the scholarly literature on the question of IP protection and management strategies among Canadian businesses is consistent in its findings and conclusions. For example, a 2006 comparative analysis of IP and business management practices in Australia, Canada, the European Union, Japan and the United States found that, overall, "small firms are less likely to use IP than larger ones and multinational corporations…more likely than firms owned by nationals. The reluctance of small firms to use IP is, to a certain degree, explained by the financial burden that patenting and patent litigation represents for small companies."[75]

In respect to Canada specifically, and drawing from a 1999 Statistics Canada Innovation Survey, the same comparative analysis confirmed that "the cost of learning and effectively using the protection of IP discourages small and medium-sized firms from using such protection as frequently as larger firms do."[76]

More recently, a study conducted by Douglas Cumming and Eileen Fischer reported that "patents are more likely for firms with a product before entering the program, as well as firms with older founders, [and] higher business acumen rankings."[77] While their paper attempted to determine whether there was a correlation between hours spent with expert advisers and rates of patenting, their findings were inconclusive because it was hard to establish direct causality. Nevertheless, they did conclude that there was a "positive association between hours spent and patents."

The work of researchers Isabelle Deschamps, Maria Macedo and Christian Eve-Levesque concluded that "most SME leaders do not have an adequate knowledge of IP management, do not perceive any urgency to improve their capabilities, and do not seek IP training or external advice (i.e., "they don't know what they don't know")."[78] The authors also found that generalist advisers in universities, who act as intermediaries between researchers and industry, do not have the requisite IP expertise: "If most intermediaries know almost nothing about IP management, as reported in our survey, it becomes highly probable that any type of IP subject matter will easily become a dispute."[79]

Drawing from these various reports, surveys and studies, a clear consensus emerges. Canadian SMEs and IP start-ups have very limited knowledge of IP and its importance for their businesses. For the most part, they fail to systematically protect their IP and to strategically exploit or capitalize on it. They are wary of the complexity of the IP system, and the requisite external advice to help them build capacity is either unavailable or too costly.

Although there is a culture among entrepreneurs that failing and failing again should be celebrated — since failure allows corrections to be made for the next business initiative — Canadian policy makers must not permit IP start-ups to fail solely because they could not afford the costs associated with protecting and strategically managing their IP. The question, then, is how to get meaningful and affordable IP knowledge, legal expertise and strategic advice to those who most need it, when they need it.

ENVIRONMENTAL SCAN OF THE CURRENT IP COMMERCIALIZATION ECOSYSTEM IN RELATION TO RESOURCES FOR IP LITERACY AND THE AVAILABILITY OF AFFORDABLE IP LEGAL SERVICES

Developing greater IP literacy among IP start-ups requires that they be exposed to IP legal principles, the way in which IP law is practised and the know-how that drives IP strategic planning. To this end, they must have meaningful access to the necessary IP legal experts to support them.

Lawyers are certainly not infallible or all-knowing, but they do possess specialized training and skills that could make the difference between IP failure and IP success. While this report is certainly not intended to exclude any other important IP professional from the discussion

74 Hinton & Howe, *supra* note 39 at 7. Similar conclusions were reached by the law students at the 2015 CIGI/LTEC-Windsor/Communitech Summer Clinic. One interesting observation was that clients in the Waterloo Region appeared to have a good baseline knowledge of IP. This level of IP literacy may be different in other communities in the province. While more research needs to be conducted on this point, it does suggest that innovative and entrepreneurial communities are somewhat ahead of the curve, and that more attention and resources might have to be directed to communities that struggle a bit more in this regard. See Canada, Conference Board of Canada, *Six Canadian Cities out of 50 Receive Top Marks for Attracting Newcomers* (Ottawa: Conference Board of Canada, 2014), online: <www.conferenceboard.ca/press/newsrelease/14-09-18/six_canadian_cities_out_of_50_receive_top_marks_for_attracting_newcomers.aspx>.

75 Petr Hanel, "Intellectual Property Rights Business Management Practice: A Survey of the Literature" (2006) 26:1 Technovation 895 at 896.

76 *Ibid* at 905.

77 Douglas J Cumming & Eileen Fischer, "Publicly-Funded Business Advisory Services and Entrepreneurial Outcomes" (2012) 41:1 Research Policy 467 at 477.

78 Isabelle Deschamps, Maria G Macedo & Christian Eve-Levesque, "University-SME Collaboration and Open Innovation: Intellectual-Property Management Tools and the Roles of Intermediaries" (2013) Technology Innovation Management Rev 33 at 35, online: <www.timreview.ca/article/668>.

79 *Ibid* at 6.

(especially non-lawyer registered patent or trademark agents), its premise is, nevertheless, that IP lawyers must be embedded within the IP commercialization ecosystem. IP lawyers provide advice, services and experience, in addition to the more technical elements of patent or trademark prosecution and their expertise must be made more fully accessible to IP start-ups, especially to early-stage IP start-ups who are caught in the "new innovator's IP commercialization dilemma."

How do IP start-ups currently develop IP literacy and obtain access to IP legal services, especially at the earliest stages of business formation?

RAISING AWARENESS ABOUT IP: INFORMATIONAL TOOLS AND RESOURCES

Among our interviewees, the vast majority felt that they and their clients were fairly well served in terms of free IP workshops and presentations, most often delivered by IP lawyers. These lawyers also often held brief pro bono meetings with individual innovators and entrepreneurs at the close of their formal presentations. Some interviewees wondered, however, whether groups outside of major city centres had similar access to these legal informational tools and pro bono services; it is clear that coverage across the country is spotty. In some cases, law students at supervised IP clinics delivered these presentations and workshops.[80]

In addition, a number of free or cost-effective online learning tools continue to be developed to shore up the IP start-up's knowledge base, often delivered through the various intellectual property offices (IPOs) around the world. Similarly, the World Intellectual Property Organization (WIPO) has a useful set of e-learning tools on both the basics of IP law and more in-depth modules on IP strategy. WIPO also offers online IP courses and other educational programs.[81]

CIPO is currently expanding its outreach and educational capacities. Its business strategy for 2012–2017 commits the agency to developing "a deeper understanding of the needs of the innovators and businesses that generate ideas and wealth in order to provide the information and services they need to successfully leverage IP for innovation and economic success."[82] It is also enhancing its menu of IP services, including greater outreach and educational initiatives. To this end, it is engaging in a significant upgrade of its website and its online presence via social media. It is also in the process of deploying a number of IP business development officers at various key locations throughout the country. Finally, it is looking to develop strategic partnerships with a variety of organizations and experts to assist in their capacity-building objectives.

However, CIPO's current service offerings lag behind those of its global competitors, as the comparative assessment of IPOs by Stephen Dalby indicates (see Dalby Field Study, Appendix 3). In looking at the menu of "self-help" IP legal services available to innovators through IPOs in Australia, Canada, the United Kingdom and the United States, he was led to the following conclusion in respect of CIPO:

> The online resources must go beyond the basics of the various forms of IP protection and associated application processes and include an array of both educational tools for promoting IP awareness and free-to-access services that assist in developing essential skills in IP management and strategy. Such tools and services are critical to promoting the value in obtaining IP rights as a defensive measure and as a commercial opportunity. Particularly in this respect, CIPO must do better — in comparison to the other jurisdictions, there was a far greater sense that traditional legal services were the only available option.[83]

In the comparator jurisdictions, the IPOs were more proactive and offered tools and services beyond referrals to traditional legal services. For example, the Intellectual Property Explorer tool developed by the governments of Australia, Singapore and Hong Kong (available through their IPOs) provides a free auditing and consulting service, during the course of which clients can get tailored advice about IP ownership and recommendations about strategies. In the United Kingdom, a free online IP "Healthcheck" tool takes a client through an IP audit and offers recommendations on IP strategy. In the United States, the United States Patent and Trademark Office (USPTO) offers a *pro se* assistance program that allows early-stage IP start-ups to file their patents on their own, without the help of a lawyer.

In sum, the current resources available to Canadian IP start-ups include live or online educational workshops and information sessions, often delivered by experienced Canadian IP lawyers, although sometimes by law students through law school initiatives. IP practitioners also frequently offer some pro bono time to give basic advice. Affordable online e-learning and "self-help" resources are also available to IP start-ups in Canada, whether sourced from Canadian or foreign agencies. Some are

80 For example, through the LTEC at the Faculty of Law, University of Windsor; the CIGI IIP Summer Clinic in Waterloo (2014); and the CIGI/LTEC/Communitech Summer Clinic (2015) in Waterloo.

81 See generally the WIPO Academy, online: <https://welc.wipo.int/acc/index.jsf>.

82 Canada, CIPO, *CIPO Business Strategy 2012–2017: Inspired by Innovation; Committed to Success* (Ottawa: CIPO, 2012) at 5, online: <www.cipo.ic.gc.ca/eic/site/cipoInternet-Internetopic.nsf/eng/wr03472.html>.

83 See Dalby Field Study, Appendix 3.

designed to provide general knowledge about IP law and IP rights. Others are more specifically designed as "do it yourself" tools to enable individuals to prepare their own applications for registration of patents and trademarks. Especially in this latter respect, Canada's capacity is not as highly developed as compared to that of some global counterparts.

ACCESS TO AFFORDABLE TRANSACTIONAL LEGAL SERVICES

While informational workshops and presentations are fairly straightforward and easy to deliver, the provision of transactional services is of an entirely different character. It is, however, the latter services that early-stage IP start-ups need the most. Transactional work, such as providing legal opinions, conducting IP searches, preparing patent or trademark registration applications or drafting contracts, engages the lawyer in a qualitatively different way than do informational presentations. First, a solicitor-client relationship is formed with its attendant professional obligations, such that lawyers will be selective about their clientele and disinclined to formally engage with every IP start-up who requires legal services, given that most early-stage ventures are not in a position to pay for these services. In addition, transactional work requires more time and skilled effort on the lawyer's part, especially on the patent prosecution side. Because of the particular complexity of IP law and practice, legal costs are especially high. It is not surprising, then, that the availability of free or affordable IP transactional legal services is largely ad hoc and sporadic.

On university campuses, TTOs are the primary support service for the commercialization of research conducted by academic researchers. Based on the results of our interviews, the findings suggest that in terms of access to IP legal services, these university researchers are among those best served under the current system, even though cost remains a factor in decisions about whether and how to pursue IP commercialization. In cases where the university decides to commercialize and secure ownership of the IP from the researcher, the institution generally assumes the legal costs. Questions remain, however, about the overall capacity of TTOs to handle more complex IP files and to provide leadership in the strategic aspects of IP.[84] For example, the Council of Canadian Academies suggested that: "[l]ow rates of growth in patents and licensing agreements at Canadian higher education institutions, relative to new investments in research and technology transfer personnel, suggest existing technology transfer processes are not effective."[85]

In contrast, the situation for undergraduate students or independent (non-employee) graduate student innovators is quite the opposite. This group is the least well-represented and the most vulnerable. In fact, most universities do not specifically include students within their IP policies and no clear direction is provided for access to independent legal advice and assistance with their IP commercialization issues.[86] Often a student will first turn to the university's tech-transfer personnel for guidance. In all but a few cases, the TTO staff interviewed were not specifically mandated to handle "non-employee" (that is, student) IP commercialization issues. Some of these interviewees expressed frustration and concern at not being able to offer meaningful and affordable options for these student innovators.

Community- and campus-based incubators, accelerators and similar entrepreneurial supports are the agencies to which student IP start-ups and start-ups in general are expected to turn. Our interviewees reported some ongoing relationship with three or four large Canadian law firms to whom they referred clients with IP or other legal matters. These were not referrals for free services but some of the interviewees were aware that some of these firms offered discounted rates for IP start-ups. Few, if any, of those interviewed knew, however, whether the clients referred were actually ever taken on as clients of the law firm and, if they were, the kinds of services they received. A mere referral to a law firm does not necessarily resolve the problem of access to meaningful legal services for the IP start-up. The *Patent Co* example in Appendix 1 illustrates the fact that a law firm's level of commitment to the client often depends on the latter's capacity to pay.

When the TTO interviewees were pressed on the particular dilemma of the early-stage IP start-up, a number of respondents recognized the problem but could not provide any meaningful options or solutions for this particular client group. A few agencies reported having some funds of their own to assist their clients in managing some of the costs of patenting. Among those interviewed in Alberta and British Columbia, reference was made to provincial voucher programs that provide some funding to assist with business services, including the cost of legal services. These voucher programs will be discussed further in the next section.

84 See e.g. Deschamps, Macedo & Eve-Levesque, *supra* note 78. Note also TM Bubela & T Caulfield, "Role and Reality: Technology Transfer at Canadian Universities" (2010) 28:1 Trends in Biotechnology 447, in which the authors find an incompatibility between government and institutional expectations and the actual role that TTOs play on campuses. They suggest different metrics to properly assess TTO success. See also Karima Bawa, "Leveraging University-Generated Intellectual Property to Benefit Canadian Industry", CIGI Policy Brief, September 2016.

85 CIC Report, *supra* note 64 at 15.

86 See Myra Tawfik, Francine Schlosser & Wissam Aoun, *Strategies and Best Practices for Overcoming Obstacles to the Effective Commercialization of Student Innovation on University Campuses*, Report to SSHRC: Knowledge Synthesis Grant on Higher Education R&D (2012), online: <http://scholar.uwindsor.ca/cgi/viewcontent.cgi?article=1025&context=lawpub>.

In general, most of the interviewees agreed that early-stage IP start-ups and especially student ventures (the "garage entrepreneur") were more likely to have to fend for themselves in terms of access to meaningful and affordable IP legal services. The interviewees recognized that, for this group, the cost of legal help was prohibitive and constituted a serious obstacle to their developing, protecting and managing their IP.

In some cases, law school clinics are available to provide some free IP legal services to IP start-ups, but these initiatives are still too sporadic to satisfy the demand and, while these clinical initiatives go a long way to meeting some of the unmet needs of the IP start-up, they do not have the capacity to provide ongoing transactional services, especially in highly complex areas such as patent law. In addition, under current funding and regulatory models in Canada, IP law clinics are often unsustainable over the long term. Appendix 4 provides a description and breakdown of services currently being provided by law school IP and business law clinics in Canada. More detailed discussion of the potential for law school IP clinics to fill the gap in legal services for IP start-ups will be undertaken in the fifth section of this report, "Capacity Building in IP Literacy, IP Strategy and Access to Affordable IP Legal Services."

GOVERNMENT PROGRAMS TO PROVIDE DIRECT ASSISTANCE WITH IP LEGAL COSTS

Some provinces have instituted programs designed to provide direct financial assistance to IP start-ups and other entrepreneurs. In some cases, IP legal work can be subsidized through voucher programs that provide a lump sum allocation to enable IP start-ups to pay the costs of eligible business services. For example, the Alberta Innovates Technology Futures voucher programs consider IP assessments and patent development as eligible expenses. These programs offer up to $10,000 for early-stage companies and up to $100,000 for those in the middle to late development stages.[87] Similarly, Springboard Atlantic has an Innovation Mobilization Program, which provides up to $15,000 funding for IP legal services to post-secondary institutions throughout the Maritimes. Innovacorp's Early Stage Commercialization Fund provides Nova Scotia universities with up to $50,000 that can be used to "assist with intellectual property protection strategies."[88] Manitoba's Commercialization Support for Business Program provides up to $50,000 for product development that includes IP registration.[89] Some post-secondary institutions have followed suit by offering their students vouchers that can be redeemed for IP legal services.[90]

Quebec has taken a different approach. That province will provide dedicated funds toward paying the costs of a first patent, industrial design or integrated circuit topography registration. The eligible expenses are broad and not limited to filing fees and searches. The grant extends to cover IP legal advice and can be applied toward the development of an IP strategy in respect of the forms of IP covered. A maximum of $25,000 is available under this program.[91]

Ontario seems to be the least well developed in providing direct funding for IP legal services. For example, OCE has a Voucher for Commercialization program but it does not systematically include some allowance for legal costs. Instead, "IP costs are the responsibility of the applicant; however, OCE may consider supporting a start-up which has the right to commercialize the IP, with up to $5,000 for IP filing costs."[92] What this means is that the IP start-up will have to figure out, on its own, questions of IP ownership and the forms of IP protection it is entitled to. And while support for IP filing costs does provide some relief, an award to cover these costs is discretionary only. The situation is even more restrictive in the case of OCE's On Campus Entrepreneurship Activities program, which is investing $5 million over two years to "ignite and build on entrepreneurial activities in Ontario's universities and colleges." Here, legal services have been expressly deemed ineligible expenses:

> …any of the money that each project is given cannot be used for these budding entrepreneurs to seek legal advice on their potentially patentable ideas….That could mean that students will be connected externally with lawyers who can assist them with better understanding the patentability of their ideas, but, unfortunately, because the OCEA money cannot be used for legal costs, any advice will have to be offered pro

87 See Alberta Innovates Technology Futures, online: <http://albertatechfutures.ca/BusinessServicesandIndustryFunding.aspx>.

88 See Dalhousie University, "Industry Liaison and Innovation: Connect with Industry", online: <www.dal.ca/dept/research-services/ili/researchers/funding-sources.html>.

89 See Manitoba, "Commercialization Support for Business Program", online: <www.gov.mb.ca/jec/busdev/financial/csb/>.

90 The University of British Columbia has established its own vouchers, which provide up to $5,000 to new ventures that can be used for services related to "intellectual property strategy." See University of British Columbia, "Research + International", online: <https://research.ubc.ca/>.

91 Quebec, Economie, Science et Innovation, "Programmes: Programme Premier Brevet", online: <www.economie.gouv.qc.ca/index.php?id=20817>.

92 Ontario, Ontario Centres of Excellence, "How Funding Works", online: <www.oce-ontario.org/programs/industry-academic-collaboration/collaboration-voucher-program/voucher-for-commercialization-%28vc%29/how-it-works>.

> bono. There is no guarantee that pro bono legal services will necessarily be available and…there is no information on whether or not regional Business/IP Legal Clinics at law school in each respective jurisdiction with OCEA funded programs will assist with legal services.[93]

This situation is clearly unacceptable and requires a shift in thinking. Whether through voucher programs, first registration initiatives or other suitable mechanisms, policy makers must take a more direct and active role in helping IP start-ups fund their IP legal needs.[94] Closer study of the efficacy of each existing provincial model at easing some of the IP legal burdens would be a good first step toward determining whether to deploy some or all of these mechanisms in Ontario and throughout the country.

From the foregoing discussion, it is clear that some IP legal resources are currently available to Canadian IP start-ups. These generally take the form of informational workshops and presentations on basic IP law offered by practising lawyers and other IP experts or, in some cases, by law students in clinic programs. In terms of IP transactional services, the situation is more problematic. IP lawyers do provide some limited pro bono services and some firms have adopted differential rates for some IP start-up clients. In addition, some free transactional services are provided by IP clinics currently operating at some law schools in Canada. However, these free or affordable IP legal services remain largely ad hoc, sporadic and dependent on individual champions rather than on any comprehensive policy strategy. Further, coverage throughout the country is spotty and uneven.

Finally, while some provinces have tackled at least some of the problems by instituting voucher or first patent mechanisms to facilitate access to IP legal services, a more comprehensive approach is necessary. Not only is there an overarching national economic imperative that solutions be found to correct this deficiency in the IP commercialization ecosystem, the inability for IP start-ups to readily secure affordable IP legal services raises serious access-to-justice concerns as well. Shoring up the IP literacy of IP start-ups and providing them with timely and affordable IP legal services requires a more deliberate and overarching strategy than the piecemeal approach that is currently in place.

CAPACITY BUILDING IN IP LITERACY, IP STRATEGY AND ACCESS TO AFFORDABLE IP LEGAL SERVICES

As seen in the previous section, the IP legal services currently being provided throughout the commercialization ecosystem in Canada is ad hoc, not pervasive outside of major centres and dependent upon individual champions, whether from the academy or from private practice. This is simply not good enough.

In spite of the existence of these IP services, the most recent Conference Board report still concluded that:

> Although the provinces have seen growth in patents per population, they have not been able to close the very large gap with international peers. To do so, businesses need to increase their R&D spending and activity in order to get more ideas and potential innovations (and thus patents) in the pipeline.
>
> At the same time, Canada's low BERD-[business enterprise R&D] to-patent-conversion ratio confirms that Canadian business capacity to commercialize research continues to lag. As with other areas of innovation performance, *Canadian businesses appear to suffer from deficits of management and legal expertise*.[95]

Taking up the suggestion that James Hinton and this author offered in a recent op ed in *The Globe and Mail*, the Conference Board concluded that "some firms may need better legal expertise than they get now to help them successfully navigate the process of acquiring and protecting their intellectual property, including patents. Given that this may be especially challenging and costly for smaller firms, policy makers may want to consider providing legal workshops and clinics, as well as supporting pro bono legal advice for innovating small and medium-sized businesses."[96]

A working paper from the Organisation for Economic Co-operation and Development (OECD), released in 2012 and titled *Unleashing Business Innovation in Canada*, told a similar story and suggested that strengthening the IP

93 2014-2015 OCEA Program Eligible Expenses. Hard copy with author. This commentary is no longer available online for the current funding round (2015-2016). However, this round still excludes legal services as eligible expenses. Online: <www.oce-ontario.org/docs/default-source/default-document-library/ocea_eligible_expenses.pdf?sfvrsn=4>.

94 The Intellectual Property Institute of Canada (IPIC) has urged the Province of Ontario to implement direct measures to help SMEs with their IP legal costs. See Canada, IPIC, *Response to Pre-Budget Consultations 2014: Ontario Ministry of Finance* (Ottawa: IPIC, 2014), online: <www.ipic.ca/english/submissions/view/102/response-to-pre-budget-consultations-2014-ontario-ministry-of-finance.html>.

95 *How Canada Performs*, *supra* note 13 (emphasis added).

96 *Ibid*, citing Tawfik & Hinton, "To Support Canadian Startups, Offer Pro Bono Legal Clinics", *The Globe and Mail* (17 June 2015), online: <www.theglobeandmail.com/report-on-business/rob-commentary/to-support-canadian-startups-offer-pro-bono-legal-clinics/article24984676/>.

system in Canada requires providing "IP management services to SMEs, e.g., within regional centres of excellence."[97] The author also drew from an earlier OECD report that suggested such services be "'SME-friendly' by diffusing knowledge and know-how about IPR."[98]

In order to make a real and sustained difference, capacity building requires a comprehensive IP knowledge mobilization strategy that must address three interconnected objectives:

- raising the literacy levels of IP start-ups in the basics of IP law and IP strategy;
- ensuring that IP start-ups have meaningful access to affordable IP legal services at the earliest stages of the business venture; and
- building greater capacity in IP strategy expertise among IP lawyers and the other intermediaries who support IP start-ups.

In addition, any comprehensive national IP strategy must take into account differences in the availability of IP legal resources from city to city, region to region, province to province. Reaching out to communities outside the main city centres and ensuring that they have meaningful access to IP legal resources (whether on site or virtual) must be integral to any overarching strategy.

INCREASING IP LITERACY SKILLS AMONG IP START-UPS AND THE NON-LAWYER INTERMEDIARIES WHO SUPPORT THEM

Empowering IP start-ups with IP literacy skills requires providing them with enough IP knowledge to know what they need to do — or to *not* do — to protect and optimize their IP. It also means providing them with the skills needed to properly instruct their IP lawyers and to make informed business decisions based on the advice given. Further, any training or skills-development for IP start-ups must take into account the fact that whatever is offered must be not overly legalistic or time-consuming and must be affordable.

In spite of the fact that workshops, presentations, self-study tools and other educational resources are available, the empirical data continues to point to a pervasive lack of awareness of IP and IP strategy among Canadian SMEs and IP start-ups. This raises a number of questions:

- What tools(s), if any, are Canadian IP start-ups accessing?
- How useful are these individual programs, tools or self-help programs?
- Are these various educational programs and tools available equally to interested parties throughout the country or are they largely designed for and concentrated in the major centres?
- What is the actual utility and effectiveness of these forms of delivery in meeting the desired outcome of shoring up IP knowledge and IP literacy among IP start-ups?
- How should these courses and programs be delivered to maximum effect?
- How can the existing availability of international tools be leveraged to the benefit of Canadian businesses?

Perhaps the more fundamental question is how IP start-ups actually learn about the myriad of informational and self-help resources available to them and which delivery models they prefer. Would a central repository that compiles, consolidates and regularly updates the various offerings be useful?

The Canadian federal government has launched a new Concierge Service on its website. This service is designed to be "a single access point to information on funding, expertise, facilities, and global opportunities for SMEs seeking to grow through innovation. The only service of its kind in Canada, it offers free, one-on-one assistance from expert advisors who provide customized guidance in selecting the most relevant programs and services to help you grow your business."[99]

However, this online resource is principally focused on providing information on governmental programs and funding opportunities for businesses. It is not currently designed as a one-stop reference point or directory for resources in IP law and IP strategy. Perhaps building from the existing Concierge Service, or through CIPO, a centralized database of this nature would be worth considering, especially if it encourages IP start-ups to take greater advantage of the available resources and materials. In addition, some form of indexing and categorization of these resources would go a long way toward assisting IP start-ups in determining the delivery models best suited to them. Admittedly, this could be a monumental task, but if the directory were limited in scope to key resources, it could function similarly to a virtual library. In addition, this might present CIPO with an opportunity to collaborate with law schools and law students in building the online library.

97 Alexandra Bibbee, *Unleashing Business Innovation in Canada*, OECD Economics Department Working Paper No 997 (Ottawa: OECD Publishing, 2012) at 44.

98 *Ibid* at 40.

99 See Canada Concierge, "About us", online: <https://concierge.portal.gc.ca/en/about-us/about-concierge-service>.

Recommendation 1: That an online "one-stop" directory or library of key available resources be developed and centralized for easy access and ease of use by IP start-ups and other interested stakeholders.

In addition to providing a virtual library of resources, CIPO must continue to expand its business development portfolio. As was highlighted in the previous section through the Dalby Field Study (see Appendix 3), IPOs in other countries are providing fairly sophisticated self-help material and electronic tools, as well as telephone or online consultations directly to businesses. CIPO should aggressively enhance its role on these fronts.

Recommendation 2: That CIPO aggressively expand its role in the provision of "direct to business" self-help tools and resources.

Encouraging IP literacy would also militate in favour of IP educational programs throughout the post-secondary system. A number of jurisdictions around the world have studied or implemented initiatives that provide "IP training throughout the curriculum."

South Korea is perhaps the prime example of this approach. Its innovation and commercialization programs are highly developed and South Korea competes favourably in global innovation rankings. An integral part of Korea's innovation strategy includes developing a systematic program of IP education under the stewardship of the Korean Intellectual Property Office (KIPO). KIPO's website reports: "Since 2006, we have offered standard IP courses to implement systemic IP education in both undergraduate and graduate schools, and we developed and supplied IP textbooks customized to various levels and majors."[100] Is there a correlation between this kind of capacity building in IP knowledge and awareness and the country's solid innovation growth?

Currently, some universities in Canada offer some courses on IP law for engineering students or others enrolled in STEM disciplines. However, these courses are not offered annually or systematically as part of a mandatory curriculum. Whether, as in the Korean example, this initiative is spearheaded through the agency of CIPO, or it originates within the post-secondary sector itself, it is well worth introducing and funding a similar comprehensive educational strategy in Canada.

Recommendation 3: That an "IP throughout the curriculum strategy" be implemented within, but not limited to, the post-secondary sector.

As the research demonstrates, not only are Canadian businesses, including IP start-ups, woefully unprepared in the basics of IP protection, they are even less adept at recognizing the strategic use of IP to advance business goals. Understanding IP strategy is a qualitatively different engagement from the acquisition of basic IP literacy skills. In other words, knowing the difference between a patent, a trademark or a trade secret is but one piece of the larger literacy issue. More sophisticated expertise around leveraging IP to commercial advantage must be a cornerstone of a larger IP literacy strategy.

Enhancing IP strategy skills must extend especially to the intermediaries who support innovative businesses throughout the country. These intermediaries include business development professionals, angel investor organizations, professional staff at incubators and accelerators and technology transfer officers, among others. Obviously, lawyers are important players in this environment. However, the focus of this section is on the non-lawyer intermediaries. The education of lawyers and future lawyers in IP strategy is the subject of a separate heading later in this report.

"Training the trainers" requires specific consideration about what the non-lawyer intermediary needs to know about IP law, practice and, more importantly, about the strategic uses of IP to advance business goals. To this end, e-learning and other resources and tools should be put in place on the subject of IP strategy and especially how multiple forms of IP can be combined to achieve the overall business goals of the IP start-up.[101]

Recommendation 4: That targeted educational programs be introduced for IP start-ups and "non-lawyer" intermediaries to develop their literacy in the area of IP strategy.

TIMELY AND AFFORDABLE EARLY-STAGE ACCESS TO IP LEGAL ADVICE AND TRANSACTIONAL SERVICES

Tackling the question of costs of legal services is crucial to providing meaningful policy solutions for IP start-ups. This problem is especially acute in communities that are not based in major city centres. Although they are establishing IP commercialization ecosystems, they lack networks of

100 KIPO, *Annual Report 2014* (Daejeon: KIPO, 2014), online: <www.kipo.go.kr/upload/en/download/annualreport_2014_07.pdf>. See also Samah Rahman & Shashanth Shetty, "Comparing Transnational IPR Policy: Closing the Gap in Canada's Patenting Regime" (Waterloo: CIGI, 2015), CIGI Graduate Fellows Policy Brief No 5, online: <www.cigionline.org/publications/comparing-transnational-ipr-policy-closing-gap-canadas-patenting-regime>.

101 Implementation of this recommendation has begun, through CIGI's "Foundations of IP Strategy," a massive online open course (MOOC) co-authored and co-developed by the author and CIGI Senior Fellow Karima Bawa. See "Foundations of IP Strategy," online: https://opencourses.desire2learn.com/cat/course/foundations-of-ip-strategy-7354/.

local IP lawyers to whom to refer clients, even assuming that these clients could afford to be paying clients.

A number of solutions present themselves:

Law School IP Clinics

IP law clinics in Canadian law schools can be important avenues for correcting some measure of the IP legal services deficit. While they cannot fill all the gaps identified in this report, they can play a valuable role as part of a larger, multi-faceted strategy. Not only can they provide free transactional services, they can also train the next generation of IP lawyers in a supervised and controlled setting. Further, they can play an important triage role by providing basic IP legal services to IP start-ups and then referring them on to IP practitioners when the files require greater, more specialized expertise. Finally, encouraging the establishment of these transactional IP clinics throughout the Canadian law school system would enable them to collaborate in a "network" of service delivery to ensure that free IP legal services are available to IP start-ups throughout the country.[102]

James Hinton and Kent Howe, in their report on the CIGI-Communitech International IP Summer Law Clinic, elicited the fact that, "had it not been for the Clinic, [the clients] would have done one or more of the following:

- written an application and filed it on their own;
- delayed their work;
- waited and made no decision on IP strategy;
- hired an IP lawyer;
- been much further behind on their patent status;
- delayed a long time until they had the funds to hire a law firm to prepare the documents; and
- avoided high legal costs by doing a lot of the work on their own and less efficiently, but still have spent a lot of money on legal costs."[103]

The Hinton and Howe report also noted:

> The clinic clients needed substantial assistance and found tremendous value in the process of patent drafting with the clinic staff. Often the innovators would have a draft one- or two-page document describing their invention idea for submission as a provisional patent application. The clinic was able to review these preliminary documents, guide the innovators on what a patent application requires and ultimately provide the innovator with a detailed draft patent application. This hands-on patent drafting fulfilled two of the practical objectives of the clinic: the innovators acquired valuable knowledge and understanding of when an application may be necessary and the basics of how to prepare one; and the students gained the practical experience of patent drafting, a complex skill that requires significant practice. The opportunity for the innovator-clients to engage and work with clinic staff underscores the potential value of the clinical model for providing tailored legal advice as well as IP legal information. Further, the innovator-clients' understanding of the available IP legal mechanisms increases by seeing those legal mechanisms applied to the facts of a particular case.
>
> Without the clinic's intervention, there was a real possibility that clients would have filed their initial one- or two-page description as their application — or not filed at all. Although the clinic did not file any applications on behalf of clients with any patent and trademark office, a number of innovators were able to file on their own or through law firms after receiving help from the clinic in drafting their patent applications.[104]

There are more than 20 law schools in Canada. A good number of them offer some form of IP clinical opportunities for law students but the clinic activities vary greatly in scope and mandate, from public policy advocacy to certain kinds of transactional work. Only a very small number currently offer free, broadly based IP transactional work that includes IP searches, IP strategy advice and IP contract drafting. Even fewer handle basic patent work. (See Appendix 4 for a list of these law school clinics and their areas of practice.)

There are structural reasons why law schools have shied away from transactional clinics outside of traditional poverty law and legal aid areas. These kinds of clinics require a full-time licensed practitioner as clinic supervisor (such as the LTEC model at the University of Windsor) or the participation of law firms willing to supervise law students (such as the Osgoode model at York University). In addition, uncertainty in provincial licensing and regulatory rules over the nature of the supervision required and the activities law students can pursue in clinical

102 Canadian IP lawyers tend to be concentrated in key centres, in particular Ottawa, Toronto and Montreal, and therefore physical access to these lawyers is more difficult for innovators outside of these areas.

103 Hinton & Howe, *supra* note 39 at 8.

104 *Ibid* at 7.

settings has inhibited their expansion into non-poverty law areas of practice. For example, historically, the by-laws of the Law Society of Upper Canada only recognized law student participation in poverty law clinics funded by Legal Aid Ontario, leaving open the question of whether IP law clinics were permitted at all. However, very recent changes now allow for a broader range of experiential opportunities for Ontario law students, as long as they are directly supervised by a licensed practitioner.[105]

In Alberta, law students are permitted to provide legal services "in a course of practical instruction approved by the faculty, if the services are provided under the supervision of an active member."[106] In New Brunswick, a student is permitted to engage in the practice of law "in a legal aid or clinical law program operated by or under the supervision of the Faculty."[107] Other provincial law societies are silent on the question, although law school clinics have been established within most of those jurisdictions. It would be advisable for each provincial bar to clarify its position on law student clinical work so that law schools, law students and the communities the clinics serve would have certainty from which to build capacity.

This is an opportune time for IP legal clinics to proliferate. The contemporary law school curriculum is undergoing significant transformation and greater emphasis is being placed on skills training and practice competencies.[108] Questions surrounding upper-year law student disengagement, the impact of technologies in the classroom and on the practice of law, and the access-to-justice concerns relating to unrepresented or underserved individuals or groups have been at the forefront of discussions at law schools, law societies, bar associations and among the public at large.

One of the most effective modalities through which skills and practice competencies can be taught is through clinical learning, especially live client transactional, advocacy or public policy work. Such work provides important skills training, re-engages otherwise disengaged law students and satisfies societal access-to-justice concerns.[109] The expansion of clinical opportunities for law students is therefore becoming an important preoccupation among law schools as well as among those advocating for reform of the profession. For example, in response to the national crisis in access to justice and access to legal services, the Canadian Bar Association recommended that "[w]here they exist, legal and other constraints should be minimized to broaden the participation of law students in appropriate services in legal educational clinics."[110] In her recent address at the 2015 Canadian Bar Association annual meeting, Chief Justice Beverley McLachlin spoke about the need for the legal profession to change to meet the demands of the twenty-first century. She included legal education within her remarks, recommending "an early emphasis on practical experience, through supervised apprenticeships."[111]

Although the collective will exists among law schools to encourage greater clinical and experiential opportunities for law students, questions of sustainability remain. How might these law school IP clinics be funded, given that it is extremely difficult for cash-strapped universities to fund these initiatives on their own?

One straightforward solution might be for funding to be made available through government programs that already support the IP commercialization ecosystem. For example, the OCE program already provides financial support to the post-secondary sector for entrepreneurship and innovation related activities.[112] In 2014, OCE invested $3.3 million for the various entrepreneurship activities at the University of Waterloo and Wilfrid Laurier University, including for the Conrad Business, Entrepreneurship

105 Law Society of Upper Canada, "By-law 4 (as amended June 2015)", online: <www.lsuc.on.ca/WorkArea/DownloadAsset.aspx?id=2147485805>.

106 Law Society of Alberta, "Rules of the Law Society of Alberta", s 81(1(a)), online: <www.lawsociety.ab.ca/lawyers/regulations/rules.aspx>.

107 Law Society Act, 1996, SNB 1996 c 89, s 33(1)(d).

108 See Gemma E Smyth & Maggie Liddle, "Lulling Ourselves into a False Sense of Competence: Outcomes and Clinical Legal Education in Canada, the United States and Australia" (2013) Can Leg Education Annual Rev 15 and Lorne Sossin, "Experience the Future of Legal Education" (2014) 51:4 Alberta LR 849. See also Federation of Law Societies of Canada, "National Requirement", online: <http://docs.flsc.ca/National-Requirement-ENG.pdf>.

109 In the United States, a number of influential studies have documented the problem of upper-year law student disengagement and an overemphasis in law school curricula on cognitive knowledge without sufficient emphasis on other fundamental practice and communication skills. These reports highlighted the importance and pedagogical benefits of clinical and experiential learning models. See Robert MacCrate et al, *Report of the Task Force on Law Schools and the Profession: Narrowing the Gap* (Chicago: American Bar Association, 1992); Roy Stuckey et al, *Best Practices for Legal Education: A Vision and a Roadmap* (Columbia: Clinical Legal Education Association, 2007) and William M Sullivan et al, *Educating Lawyers: Preparation for the Profession* (Stanford: Carnegie Foundation for the Advancement of Teaching, 2007), which included a discussion of Canadian legal education. Similar trends are occurring in the United Kingdom and other European centres. See the European Network for Clinical education, online: <www.encle.org>.

110 Canadian Bar Association, *Legal Futures Initiative: Transforming the Delivery of Legal Services in Canada Legal* (Ottawa: Canadian Bar Association, 2014) at 60, online: <www.cbafutures.org/cba/media/mediafiles/PDF/Reports/Futures-Final-eng.pdf>.

111 Beverley McLachlin, PC, "The Legal Profession in the 21st Century" (14 August 2015) Canadian Bar Association Plenary at 19, online: <https://malcolmmercer.files.wordpress.com/2015/08/cj-mclachlin-remarks-august-14-2015-2015-cba-legal-conference.pdf>.

112 Centres of Excellence, *supra* note 28.

and Technology Centre; the Velocity program, St. Paul's GreenHouse and the Accelerator Centre. Another $1.1 million went to the University of Windsor for its Entrepreneurship and Innovation Cluster. Other funded institutions included Western University, to develop the Entrepreneurship, Engagement and Economic Development Project, and Ryerson University, to build entrepreneurship centres.

However, as was discussed earlier, none of these grants currently contemplate built-in IP legal support. In Ontario, for example, financial resources could be dedicated to facilitating the establishment of law school IP clinics to provide services throughout the OCE-funded entrepreneurship ecosystem. Other possible government funding could emanate from provincial ministries of post-secondary education or through federal innovation or post-secondary grants.

IP law clinics are an important feature of the American innovation and commercialization strategy and the United States has been significantly shoring up its capacity in this regard. In 2008, the USPTO initiated a Law School Clinic Certification Pilot Program to permit law students from six certified law schools to provide a wide range of IP legal services to eligible clients. The program was so successful that it was incrementally expanded to include many more participating law schools.

> The participating law school clinical programs provide patent and trademark legal services to independent inventors and small businesses on a pro bono basis. Clinic clients can expect to receive searches and opinions, advice from clinic law students regarding their intellectual property (IP) needs under the supervision of a faculty practitioner, drafting and filing of applications, and representation before the USPTO. The law school clinical programs possess solid Intellectual Property curricula supporting a participating student's hands-on learning in the Program; a commitment to networking in the community; comprehensive pro bono services; and excellent case management systems. Students in the patent and/or trademark portions of the Program can expect to draft and file applications and respond to Office Actions. Each law school clinic must meet and maintain the requirements for USPTO certification in order for student practitioners to practice before the USPTO.[113]

As a further reflection of the importance that the US government places on capacity building in IP legal services for its innovative businesses, the USPTO law school program has been expanded by legislation to allow participation by all law schools accredited by the American Bar Association.[114]

Although the USPTO provides no direct funding for the clinics, the reputational benefits to the law school of being "certified" and the high-level IP skills training and practice opportunities available to law students through this program encourage their formation, with financial support from philanthropic foundations and alumni donations. Further, the creation of dedicated, full-time and tenure-track IP clinic professorships at US law schools makes a career switch to the academy an attractive option for practitioners, especially clinic alumni, thereby enabling law schools to sustain and grow their service delivery capacity. In contrast, Canadian law school clinic directors are often precarious in their employment, and ongoing funding struggles prevent Canadian clinics from expanding to meet demand.

The IP clinic movement for IP start-ups has not only accelerated in the United States, it has also gained traction in the European Union. Co-funding from the United Kingdom and the European Union has enabled the creation of the ICT Law Incubators Network (iLINC). This network states its goals as follows: "encouraging IP clinic formation at law schools throughout the EU to provide IP legal services…provision of free legal support to start-ups while, at the same time, offering postgraduate law students the opportunity to engage in professional practice in the fast-moving and highly exciting world of technology start-ups. This way, iLINC is helping to create both the companies and the lawyers of tomorrow."[115]

The dual imperatives of assisting IP start-ups and training the next generation of European IP lawyers are clearly identified as the fundamental objectives of this program.

Canadian law schools must develop in step with these models and for the same reasons. Ideally, a network of Canadian IP law clinics should link up with their US and European counterparts to offer transnational and international IP legal services to Canadians seeking to do business outside the country or to foreign IP start-ups wanting to establish in Canada. In addition, exposing Canadian law students to the international and transnational IP legal environment would have enormous educational value. Future generations of Canadian IP lawyers would enter the profession with an existing and

113 US Patent and Trademark Office, Press Release, 14-22, "USPTO Adds Additional Schools to Law School Clinic Certification Pilot Program" (30 July 2014), online: <www.uspto.gov/about-us/news-updates/uspto-adds-additional-schools-law-school-clinic-certification-pilot-program>.

114 HR 5108 (113th), *To establish the Law School Clinic Certification Program of the United States Patent and Trademark Office…with all law schools accredited by the ABA eligible to participate* (9 December 2014).

115 iLINC, "ICT Law Incubators Network", online: <www.ilincnetwork.eu/>.

built-in familiarity in the practice of IP law in a global context.

Recommendation 5: That provincial and federal levels of government provide financial support and other incentives for law schools to establish and sustain IP legal clinics. These IP clinics should operate in a network to ensure coverage throughout each province and should be connected to the growing transnational network of IP clinics.

Recommendation 6: That provincial law societies enhance their rules regarding legal services delivered by law students, and ensure that they facilitate the establishment of a wide range of subject-matter-specific clinics.

Embedding an "In-House" IP Lawyer within the IP Commercialization Ecosystem

Law school IP clinics can go a fairly long way in assisting IP start-ups with some of their basic IP needs. However, resolution of the problem cannot begin and end with IP clinics. A number of other approaches must be rallied to the cause in a complementary manner.

One such initiative would be for funding to be directed to agencies within the IP commercialization ecosystem to hire an "in-house" IP lawyer to provide free early-stage IP transactional services. The funding model would be similar to that advocated in respect of IP clinics, namely, financing could be built into provincial and federal governments' entrepreneurship and innovation strategies. The CIC report cited above advanced a similar approach when it argued that "special funds should be earmarked to situate IP coaches, patent agents and lawyers in existing regional centres such as Communitech."[116] The Bibbee study also made a similar recommendation that IP management services be embedded at regional centres of excellence.

Just as in the case of funding for IP law clinics, it would not seem too difficult to specifically include within the funding envelope a provision to hire IP lawyers to work within this IP commercialization ecosystem. These lawyers would act in a manner akin to a company's in-house counsel and would be paid a salary or a flat rate per day or per service performed. Although issues of professional responsibility and conflict of interest would have to be considered under this business model, the in-house structure has the advantage of eliminating the expensive "billable hour" model of traditional law practice, which is the major obstacle for access to IP legal services. Further, and perhaps most importantly, like the law school IP clinic model, in-house counsel can provide disinterested IP strategic advice because they are not governed by an hourly billing system. This is especially important for early-stage IP start-ups, whose need for dedicated time and attention could never be sustained under the billable hour model.

In addition to cost savings and greater dedicated attention to the individual client, this model offers another valuable feature. Currently, the IP commercialization ecosystem is largely staffed by business development professionals trained in business and/or a STEM discipline. Adding an IP lawyer to a multidisciplinary team of commercialization professionals would significantly enhance the client services offered to IP start-ups. In fact, two lawyers were interviewed who worked within the IP commercialization ecosystem alongside tech-transfer and business development professionals. They reflected positively on the value added to clients resulting from their multidisciplinary collaborations. A similar benefit was noted in the CEL example discussed above, where business students and law students gained a greater understanding of their respective disciplinary cultures and perspectives, and were better advisers as a result. More discussion about the advantages of "multidisciplinary lawyering" appears toward the end of this section.

Recommendation 7: That provincial and federal policy makers consider funding "in-house" IP counsel positions in strategic locations throughout the country.

Pro Bono IP Legal Services

Current lawyer billing structures provide little encouragement for IP lawyers to provide IP start-ups with affordable legal services. As an Ontario Court of Appeal judge recently remarked in respect of the traditional billable hour model: "There is something inherently troubling about a billing system that pits a lawyer's financial interest against that of its client and that has built-in incentives for inefficiency."[117]

However, the Canadian legal profession is facing a number of game-changing pressures. The billable hour business model is under close scrutiny as the growing number of self-represented litigants and the prohibitive costs of legal services raise serious access-to-justice concerns. Further, increased global competition and disruptive technologies for legal practice are causing seismic disruptions in the status quo. The legal profession is having to engage in serious soul-searching about the nineteenth- and twentieth-century assumptions under which it has governed itself to date. Some Canadian law firms are responding by establishing firms with low overhead to

116 CIC Report, *supra* note 64 at 70.

117 *Bank of Nova Scotia v Diemer*, 2014 ONCA 851 (CanLII), Pepall J (Ont CA).

bring costs down.[118] Other firms are catering specifically to start-ups by offering business law services at flat rates and providing strategic services outside of "standard legal advice."[119] Specifically on the IP side, one large national firm offers a free "innovation clinic" for eligible clients, largely staffed by its articling students under senior lawyer supervision.[120]

Unfortunately, these progressive initiatives remain few and far between in Canada and remain inadequate to meet the demand for legal services among IP start-ups. Given the especially high costs of IP legal services and the national economic imperative of stimulating innovation, experimenting with different compensation models for IP practice would seem a priority.[121] In addition, the pressure brought to bear by IP start-ups and other entrepreneurs looking for cheaper alternatives to legal services should compel the legal profession to find more client-centred billing options to secure its future. For example, one interesting possibility is the "rent-a-general-counsel" law firm model that exists in the United States. These innovative firms recognize "that start-ups (and other companies) may have legal needs that are too few to justify full-time in-house counsel, but also do not justify a traditional law firm's steep hourly rates and learning curve."[122] Often comprised of former in-house counsel, these firms provide more competitive rates than traditional law firms.

To date, however, the IP practice in Canada has been slow to embrace these kinds of structural changes. In the interim, greater participation by IP lawyers in pro bono transactional services would be a way to help without necessitating a radical reformulation of the way in which they practice. Pro bono services could be delivered by way of supervision of law students at IP clinics. Pro bono hours could also be delivered directly to clients at an accelerator or innovation hub.[123] Even in this case, a law school IP clinic might assist with some of the burdens by providing early-stage intervention before the client is referred to the lawyer for more specialized pro bono services.[124]

Once again, as evidence of the importance the United States places on effective IP commercialization strategies to secure its economic future, the *America Invents Act* mandates the USPTO to "work with and support IP law associations across the country in the establishment of pro bono programs designed to assist financially under-resourced independent inventors and small businesses."[125] There are currently more than 120 individuals or firms, in 13 states, providing pro bono services under this program.

Recommendation 8: That policy makers in government and within the legal profession encourage greater participation by IP lawyers in providing pro bono transactional services to IP start-ups.

Recommendations five through eight have specifically addressed the issue of the cost of IP legal services. However, the costs associated with IP protection are greater than lawyers' fees and often include filing costs, maintenance fees and other disbursements.

As was discussed in the previous section regarding provincial voucher programs, more effort should be directed toward developing a comprehensive and nationwide program of direct financial support to IP start-ups for filing and other disbursement costs, including some lawyers' fees where free transactional services are not made available or where the specific case is more complex and requires greater, more skilled attention. In addition, consideration should be given to other direct funding strategies to alleviate some of the more significant legal pressures and challenges that IP start-ups face. For example, the CIC report suggested that, in addition to

118 For example, Caravel Law advertises that it dispenses with high overhead costs: "Retaining a traditional law firm or hiring full-time, in-house counsel is too expensive for most start-ups and smaller companies who need to make every dollar count….Working with Caravel Law saves the average business tens of thousands of dollars each year and virtually none of the money you spend goes towards keeping our lights on. Or pinstripe suits, imported stogies or corporate jets." See Caravel Law, "Our Story", online: <www.caravellaw.com>.

119 For example, the firm of Labarge Weinstein declares: "We pride ourselves on being a client-centric firm by providing prompt, creative, and effective advice and solutions. We think of our clients as business partners, and our goal is to ensure every one of them receives the most practical and economical legal advice possible. One founding principle that we still maintain today is focusing on our client's strategic business issues, not just providing standard legal advice." See Labarge Weinstein, "About us", online: <www.lwlaw.com/about-us/>.

120 See Norton, Rose, Fulbright Canada LLP.

121 See e.g. Mitchell Kowalski, *Avoiding Extinction: Reimagining Legal Services for the 21st Century* (Chicago: American Bar Association, 2012).

122 Darian M Ibrahim, "How Do Start-Ups Obtain their Legal Services?" (2012) Wisconsin L Rev 333 at 351. See this firm in Boston, for example: Outside GC, "On-Demand General Counsel: Outside General Legal Counsel Services", online: <www.outsidegc.com/>.

123 There are some positive developments on this front. Four law firms (about 12 lawyers) based in Kitchener-Waterloo are offering pro bono business law and IP law services at the Communitech accelerator. See Communitech, "Legal Briefs", online: <www.communitech.ca/how-we-help/support-for-startups/legal-briefs/>. In addition, Pro Bono Lawyers Ontario has recently launched a free Corporate Law Summary Advice Clinic to assist low-income entrepreneurs, among others (Pro Bono Ontario, "LawPRO approved Pro Bono Ontario Projects", online: <www.lawpro.ca/insurance/pdf/LawPRO_approved_ProBonoProjects.pdf>.

124 In this system, developed at Communitech in Waterloo, clients were cross-referred based on need between the IP practitioner providing pro bono hours and the CIGI-University of Windsor-Communitech Summer IP Clinic (2015).

125 See Pro Bono Advisory Council, "Volunteer Patent Pro Bono Attorneys", online: <http://probonoadvisorycouncil.org/volunteers.html#cali>.

funding patent costs, governments should establish a fund to assist small companies in defending themselves in IP litigation.

Recommendation 9: That provincial and federal policy makers introduce a comprehensive, nationwide funding strategy to provide direct financial support for initial IP filing costs and IP legal advice where free services are unavailable or where the specific file requires particularly skilled intervention.

While the primary focus of this report is on early-stage legal intervention for IP start-ups to address the "new innovator's commercialization dilemma," this is but one piece of a much larger puzzle. Capacity building in IP expertise requires a more comprehensive strategy that identifies and corrects weaknesses along the entire IP commercialization chain and throughout the life of the IP-intensive venture to ensure that Canadian businesses are competitive in the global innovation economy.

Some commentators have expressed the concern that, regardless of whether the IP start-up can afford to pay for IP strategic advice, the relevant IP legal experts may not be readily available, especially those well versed in the subtleties of IP strategy. For example, the CIC report suggested that there is a dearth of experienced IP lawyers in Canada and recommended that: "Canadian lawyers and patent agents should be given a higher level of training so that Canadian companies are not required to hire foreign professionals to help them manage their IP."[126] Other reports and studies have raised similar concerns about lack of training and professional development for IP lawyers and IP agents in IP strategy.[127] Some refer to a shortage of registered IP agents, especially patent agents.[128]

It is ironic to consider that Canada may not actually have too many lawyers. Instead, this country may not have enough of *certain kinds of lawyers*, especially IP lawyers, whose expertise is becoming more central to national economic growth and prosperity. More encouragement is needed to enable lawyers to access the IP bar and IP practice — starting with law schools and their curriculum, but not ending there. The practice itself needs to open up more professional opportunities to a more disciplinary-diverse group of law students and new lawyers. Ideally, IP strategists, who must have expertise in understanding how different forms of IP could be combined for commercial advantage, should not be drawn almost exclusively from individuals with STEM backgrounds.[129] Further, even assuming that STEM backgrounds are by far the most relevant for IP practice, one must then consider the fact that law schools do not usually have admission "quotas" based on specific educational backgrounds. Without greater attention being paid to admitting more STEM students into law schools, there is the very real possibility that there will be an insufficient pool of future IP lawyers to draw from.

If Canada is intent on building its capacity to compete effectively in the knowledge economy, policy makers need to be concerned about this data. Without sufficient numbers of qualified IP experts to support and enhance business innovation and commercialization acumen, Canadian businesses cannot hope to compete effectively in the global marketplace. Long-term planning is required to ensure that sophisticated and high-level IP legal advisers are available to IP start-ups and other IP-intensive SMEs, in sufficient numbers to meet future demand, and better trained to provide critical advice on the strategic deployment of IP. This last section addresses some ways in which to achieve this objective.

TRANSFORMING THE IP LAWYER INTO A MULTIDISCIPLINARY IP STRATEGIST/COACH

"If you find a lawyer who talks about solutions, not problems, hold on to them."[130]

Knowledge of IP law and practice does not automatically bring with it skills in IP strategy. For example, Karima Bawa's recent policy brief has suggested a number of strategies to enable universities to better leverage and exploit their IP.[131] These kinds of considerations do not necessarily arise out of a traditional IP law practice, nor would they be part of the established practice of TTOs. Canadian IP lawyers need to be better trained in IP strategy and the next generation of IP legal experts needs to develop IP strategic skills from the outset.

For example, what was the responsibility of the lawyer in the *Patent Co* case study? Should they have had an obligation

126 CIC Report, *supra* note 64 at 35.

127 Barry Sookman, "Intellectual Property Education: Are Canadian Law Schools Doing Enough to Support Innovation?" (26 November 2013), *Barry Sookman: Copyright, Intellectual Property, Computer, Internet, e-Commerce Law* (blog), online: <www.barrysookman.com/2013/11/26/intellectual-property-education-are-canadian-law-schools-doing-enough-to-support-innovation/>. See also, Maheshwari, Kumar & Vedmani, *supra* note 21.

128 CIC Report, *supra* note 64. This shortage is largely self-created as the failure rate for the patent agents' examinations is very high.

129 Of the 27 lawyers certified with the Law Society of Upper Canada as IP specialists, in at least two of the three subject areas of patents, copyright and trademarks, only eight had non-STEM backgrounds (and one undisclosed from their website). Of these, two had business backgrounds, two economics and the rest were from the humanities and social sciences. All the STEM lawyers were certified as experts in all three forms of IP. None of the non-STEM lawyers were certified as patent experts.

130 Steve Blank, "Why Lawyers Don't Run Startups" (27 March 2010), *Steve Blank* (blog), online: <http://steveblank.com/2010/05/27/why-lawyers-don%E2%80%99t-run-startups/>.

131 Bawa, *supra* note 84.

to advise the client of some basic patent strategies, even though the client sought only specific drafting and filing services? If the lawyer had not been on the "billable hour" clock, would more dialogue have occurred that would have facilitated a more comprehensive discussion of the client's strategic needs? The client may well have been willing to pay a bit more for that kind of advice, if it had been suggested or made available.

The new generation of IP lawyers must have a solid grasp of transnational and international IP law and practice, including the larger geopolitical circumstances within which these laws and practices operate, and a solid grounding in the nature of the client's business and overall business goals. These legal experts must also be adept at managing the e-commerce environment, with its own particular minefields.

The second case study in this report, *Polar Pen* (see Appendix 2), offers a sobering example of the difficulties associated with the strategic management of IP in a global context. This IP start-up was quickly engulfed in a quagmire of transnational and international IP problems from the moment the inventor and company founder sought to finance his business through an Internet crowdfunding site. In very short order, his copyright, trademarks, industrial design rights, personality rights and patent rights were infringed by producers of knock-off products competing with him for online sales. Although he had engaged an IP lawyer to assist with securing a European patent, neither the lawyer nor the client was at all prepared for the speed at which these online competitors entered the field and aggressively appropriated the IP.

This case illustrates just how important it is to be prepared with an IP strategy at the outset, especially in the global e-commerce context. What could *Polar Pen* have done differently under the circumstances? As the inventor himself reflected, if he could do it over again, he would have been much better prepared to launch his product quickly, before starting the crowdfunding campaign, and he would have been better prepared to pursue online retailers for IP infringement as soon as the knock-offs began to appear. He also wondered whether he might have been better off had he put the money spent on securing his IP into aggressive marketing instead.

Would he have been further ahead in terms of product sales if he had opted for public disclosure and "first mover" advantage through aggressive marketing and production capabilities? Alternatively, would he have had a better chance of stopping counterfeiters if he had pursued industrial design protection in key jurisdictions, including Asia, as a first step, instead of focusing on securing European and North American patent rights?

There are, of course, no clear or definitive answers to these difficult questions. However, raising these issues, assessing the IP legal environment within which the client is operating, and formulating strategic approaches designed to advance the client's business interests must become part and parcel of the services that IP legal experts provide from the outset.

What follows are some suggestions as to how IP strategy skills could be developed at the very start of a lawyer's professional career.

Enhancing the Law School Curriculum: IP 2.0

IP courses at law schools have grown since the early 1990s and most Canadian law schools employ at least one full-time IP scholar. In 2013, Barry Sookman, an IP lawyer and senior partner at a major Canadian firm, surveyed IP course offerings in Canadian law schools. He asked: "[Is] the quality of IP education across the country sufficient to meet the needs of our knowledge economy? Is the IP legal education producing a sufficient number of properly qualified and trained lawyers and academics?"[132]

The survey revealed that while Canadian law schools routinely offer IP law courses, very few offer a course in IP strategy.

> Very few programs offer courses or opportunities that focus on teaching lawyers about commercializing IP or IP law strategies. The clinical programs offered in the Group 1 law schools [Osgoode, Ottawa and Toronto] provide the most offerings in this regard. Apart from those programs, Osgoode offered a course on commercializing IP, Victoria offered a course in managing IP, and Calgary offered a course in IP transactions. Canadian businesses' trading partners often have access to very experienced IP lawyers, many of whom have specialized in providing their clients with strategies for obtaining, commercializing, exploiting, and litigating IP rights. Commercializing IP and developing strategies for IP is an area of increasing importance for businesses. In light of the importance of IP to our knowledge-based economies, should more programs offer these types of courses? For law schools with limited budgets and resources, should these courses be given more or less priority than teaching the core areas…?[133]

Canada's international business competitors have better access to IP legal strategists, placing Canadian businesses at a clear disadvantage. Canadian law schools, among

132 Sookman, *supra* note 127.

133 *Ibid.*

other interested parties, can help level the playing field. As the University of Calgary's law dean, Ian Holloway, recently remarked, "our duty is to prepare students for the profession they're joining, not the one we joined."[134]

The training of IP legal strategists must become a priority for Canadian law schools, law societies and policy makers grappling with ways to shore up Canada's innovative capacity. One fairly easy way to begin this process is by introducing senior-level IP strategy courses, if law schools do not already do so.[135]

Recommendation 10: That law schools build into their existing IP curriculum a senior-level course in IP strategy. Consideration should be given to multidisciplinary enrolment of students from cognate disciplines such as (but not limited to) business and science, technology, engineering and math (STEM).

Integrated IP/Business Clinics

Research and anecdotal evidence suggests that integrated and multidisciplinary teams offer advantages to the IP start-up that lawyers alone cannot.[136] Lawyers who work in multidisciplinary teams become more highly skilled at weighing the legal considerations alongside the company's business goals and are therefore more adept at offering strategic legal solutions.

As the research has shown, IP clinics are an important tool in the capacity-building tool box. Integrated and interdisciplinary clinics, similar to the CEL example outlined in this report, can offer even more salutary outcomes in terms of both IP start-up client service and experiential skills development for clinic students. The suggestion here is to introduce business students into the IP clinic mix especially in, but not limited to, those universities that have both business schools (entrepreneurship programs) and law schools. As Sean M. O'Connor has written: "Professionals with specific expertise in serving entrepreneurs are a critical, yet overlooked, part of the 'innovation ecosystem' necessary to commercialize university research. Because these professionals will often work together to support entrepreneurs and start-ups, it is also crucial to develop multi-disciplinary professional school programs that help participants coordinate their activities in serving entrepreneurs."[137]

This is not at all easy to accomplish. CEL was not sustainable in the long term. However, its demise occurred for a number of reasons entirely unrelated to the pedagogical value of the collaboration or the calibre or quality of the services delivered. It is therefore a model worthy of further consideration. In this respect, it would be useful to engage in a critical analysis of the structural obstacles to these kinds of multidisciplinary collaborations that inhere in "siloed" university-governance models. Surely some innovative strategies can be developed to achieve these kinds of integrated models, whether within single post-secondary institutions or in multi-institutional partnerships.

Recommendation 11: That, to every extent possible, universities that have or can partner with faculties of law, faculties of business and STEM faculties should collaborate on the development of integrated clinical and experiential programs to support early-stage IP start-ups and to train future lawyers and business consultants, among other intermediaries. Further multidisciplinary integration should be considered, including with the arts and humanities.

Multidisciplinary Graduate, Professional and Certificate Programs in IP Commercialization: Advanced Skill-Training for the IP Legal Strategist

A third step in the strategy for capacity building rests in the introduction of new programs and courses of study designed specifically to train the new IP professional.

While IP lawyer skills and training are especially important, raising awareness of IP law, practice and IP strategy would have to include programs designed to "train the trainers," including technology transfer and other business development professionals. At the present time, there are very few comprehensive educational resources in IP strategy specifically geared toward Canadian IP professionals, whether lawyers or non-lawyer intermediaries.[138]

134 Ian Holloway, "What we know about legal education", *Canadian Lawyer* (16 February 2015), online: <www.canadianlawyermag.com/5465/What-we-know-about-legal-education.html>.

135 Implementation of this recommendation has begun at the University of Windsor, Faculty of Law, through the introduction of an IP strategy course that builds upon the CIGI "Foundations of IP Strategy" MOOC.

136 See e.g. William F Fisher & Felix Oberholzer-Gee, "Strategic Management of Intellectual Property: An Integrated Approach" (2013) 55:1 California Management Rev 157; Ruth Soetendorp, "Developing the Curriculum for Collaborative Intellectual Property Education" (2006) Special Issue from University of Warwick, JILT, online: <www2.warwick.ac.uk/fac/soc/law/elj/jilt/2006_1/soetendorp/soetendorp.pdf>. The interviews conducted by the author elicited similar comments about the added value of multidisciplinarity in this area of practice, especially in complementary skills between business professionals and legal professionals.

137 Sean M O'Connor, *Navigating the Issues of Multidisciplinary Student Teams Serving University Spin-Offs* (Rochester, NY: Social Sciences Research Network, 2010) at 2, online: <http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1684812>.

138 CIGI's "Foundations of IP Strategy" MOOC is the first of its kind in Canada.

In fact, some resources that had previously existed are no longer available. A voluntary association of Canadian technology transfer professionals, the Alliance for Commercialization of Canadian Technology (ACCT), was recently disbanded, to the regret of a number of the technology transfer professionals who were interviewed for this report. In their view, this group had been an important vehicle for networking, mentoring and knowledge sharing on the latest developments in IP law and best practices on IP strategy. While a number of these individuals continue to participate in the activities of ACCT's American counterpart, the Association of University Technology Managers, the overall sense was that this was not an effective substitute. Professional development opportunities in IP strategy must be accelerated throughout the IP commercialization ecosystem.[139]

In addition to providing resources for associations such as ACCT to re-emerge as part of the capacity-building landscape, a robust strategy would also foster the emergence of new graduate, professional and executive certificate or degree programs. These programs should be multidisciplinary in nature, consistent with the view that IP start-ups are better served by an integrated support team rather than different professionals working in silos. While Canadian business schools are establishing new MBA programs in technology and commercialization, they are not geared toward business professionals and therefore do not provide sufficient exposure to the legal aspects IP strategy, nor are they geared specifically toward IP lawyer training.[140] The ideal, then, is a multidisciplinary program that engages more fully with the complexities of IP law and practice and which is more expressly designed to include lawyers within their student cohort.

As but one salient example, the master's degree in IP management and markets, offered through Chicago-Kent College of Law and the Illinois Institute of Technology, is a 10-month multidisciplinary graduate program that promises to equip its graduates "to take strategic and leadership roles in leveraging and managing intellectual property whether through marketing, research and development, portfolio management, legal protection or business transactions."[141]

Another example is a European master's-level program through the Centre d'Etudes Internationales de la Propriete Intellectuelle. The master of IP law and management program "combines legal, economic and management sciences and includes lectures from leading scholars in the field of IP law and management. Its ultimate objective is to qualify experienced IP professionals for acting as practically skilled IP managers with sound knowledge on wealth creation in our knowledge-based economy."[142]

What is critical about both these programs, and others like it, is that they are expressly designed to train the new generation of IP *legal* professionals alongside and integrated with a larger, multidisciplinary cadre of IP experts.

Recommendation 12: That universities and other interested stakeholders establish multidisciplinary graduate, professional and/or executive degree or certificate programs to offer specialized training to lawyers, among others, in IP commercialization and strategy.

CONCLUSION

This report has identified a current weakness in Canada's innovation strategy relating to the availability of appropriate IP legal tools to support IP start-ups. It offers recommendations and solutions to shore up this country's IP commercialization ecosystem. There is urgency here and complacency is not an option. Not only is Canada's performance worrisome as compared to similarly situated industrialized countries, emerging players will further exacerbate our current challenges. China is transitioning from its "made in China" past to a "created in China" future. And its entry into the IP commercialization environment represents a game-changing threat for countries already struggling to find their place among the top international competitors.

Those in Canada who have the power to effect change — especially governments, the legal profession and law schools — must work together to provide the necessary legal tools to enable Canadian IP start-ups to succeed in this increasingly crowded and competitive global marketplace of ideas. Capacity building in IP literacy, IP strategy and access to affordable IP legal services must become a top priority for this country.

139 See e.g. CIPO, *Modernizing the IP Community* (Ottawa: CIPO, 2012), online: <www.ic.gc.ca/eic/site/cipointernet-internetopic.nsf/eng/wr03836.html?Open&pv=1>. It recommends mandatory continuing professional development for all registered patent and trademark agents in Canada.

140 For example, the University of Alberta, "MBA in Innovation and Entrepreneurship", online: <https://business.ualberta.ca/programs/the-alberta-mba/degree-programs/innovation-entrepreneurship>.

141 Chicago-Kent College of Law, "Master of IP Management & Markets", online: <www.kentlaw.iit.edu/academics/master-of-ip-management-and-markets>.

142 Centre for International Intellectual Property Studies, "The Master of Intellectual Property Law and Management", online: <www.ceipi.edu/uploads/media/MIPLM_Details_01.pdf>.

APPENDIX 1: *PATENT CO* CASE STUDY

The following case report is based on an interview with the company's internal IP manager. Questions targeted early-stage experience in IP-related matters. In the interest of anonymity and by request of the company and its agents, identities have been omitted. The interview was conducted by Stephen Dalby, law student at the University of Windsor.

The Canadian company in question has filed patents domestically and abroad, including Asia, Europe and the United States. Given the nature of its particular industry, the company relies heavily on patent protection as compared to trade secrets. Awareness of the need for patent protection was obtained early on through personal connections of the founding engineers to individuals in the legal profession. As an early-stage cost-saving measure, internal engineers performed initial drafting of patent applications. Engagement with external counsel was limited to proofreading and, when necessary, amending such applications. At this stage, the company was especially reliant on external counsel for advice on IP management and strategy.

Early communication with external counsel was largely one-sided and, in hindsight, there is a general feeling that the services received, on account of the company's small size and the limited work it provided the firm, were not as comprehensive as they would have been were they not a start-up. Indeed, reliance on the external counsel for IP strategy resulted in a major opportunity being missed to file additional patents to create a patent set. It is believed that, had this opportunity been recognized, affirmative action would have paid major dividends in the company's level of IP protection and significantly strengthened their market position. The ramifications of this misstep continue to be felt.

In an effort to decrease reliance on external counsel and further reduce associated costs, the company has since created an internal IP team, led by its IP manager. This group is responsible for drafting and filing patents, patent prosecution, managing IP strategy, and is actively involved in fostering a culture of innovation. The IP manager started as an engineer and has since acquired their patent agent designation in concert with the evolution of the company's emphasis on internal IP management.

Accumulation of knowledge and training on the practical aspects of patent drafting, filing and prosecution has come from a broad range of sources. The company has benefited greatly from online resources available from WIPO and training courses offered by IPIC and the Patent Resources Group in the United States. The company also learned a great deal from its experiences with external counsel concerning best practices, and subsequently incorporated these lessons into the general operations of its internal IP team. In the realm of IP strategy, the company has acquired considerable advice from peers at industry conferences, online forums and blogs. Notably, the company has also obtained important expertise from industry counterparts within the Israeli innovative community, derived from several trips to the country by the IP manager.

The company has learned a great deal from its experiences in navigating Canada's IP regime and has advice to share for new start-ups and policy makers alike. For start-ups? Do your homework! They stress the imperative for early-stage companies not to rely exclusively on external counsel to instruct them on all things IP-related. It is their assertion that start-ups must educate themselves and develop a coherent IP strategy before seeking counsel. In particular, this strategy must take into consideration prospective expansion into other jurisdictions and, in this respect, start-ups should not feel limited by perceived immediate budget constraints. The company further emphasizes the importance of educating technical staff (for example, engineers and research scientists) on IP issues, including the importance of being attentive in identifying potential patent opportunities in their work.

For policy makers, they recommend that greater support be given to Canada's network of business incubators in assisting start-up companies financially and logistically, in particular at the critical early stages when pursuing initial patents. This advice draws heavily on comparisons to the important role incubators have played in supporting Israel's numerous successful start-ups. They also recommend that major improvements be made to the user experience in navigating CIPO's online filing system: WIPO's online international patent filing system is given as an example to emulate. Such improvements, they believe, are necessary to facilitate better access of the filing system by companies independent of external counsel.

APPENDIX 2: *POLAR PEN* CASE STUDY

The following case study is based on the author's interview with Andrew Gardner, founder and president of Indiedesign Ltd, based in Kitchener-Waterloo, Ontario, on July 27, 2015.

Polar™ pens were designed and invented by Andrew Gardner in 2013. The pens consist of a series of rare earth magnets that can be taken apart and reassembled in engaging and entertaining ways.

As the first step in securing his IP, Gardner drafted a provisional utility patent application, which was reviewed and filed by a lawyer for a reasonable fee. The provisional patent was filed in the United Kingdom. He subsequently registered a design patent (industrial design) in the United States and at a later date filed in Europe, claiming priority of the US filing. Gardner also filed for a design patent in China but was unable to achieve the US priority filing date.

Unfortunately, a Chinese firm had registered his precise design, claiming an earlier priority date. The inventor has trademark registrations for the word "polar" in association with pens in the United States and the European Union but his application to register his trademark in China failed. He has filed utility patent applications in the United States, the European Union and China, which are making their way through the system.

In Gardner's estimation, his most valuable IP assets are his design patents (industrial designs) and his trademarks, even though he continues to prosecute his utility patent in the three respective regions. He does believe, however, that having registered a utility patent in the European Union enabled him to secure a licensing arrangement that he would not otherwise have been able to enter into.

In order to be able to manufacture his products for sale, Gardner required upfront financing, which he secured by launching a Kickstarter campaign. The campaign went semi-viral, with roughly 14,000 purchasers of the product within a very short period of time. The crowdfunding campaign raised roughly $800,000 in financing for the company. It remains the largest Kickstarter campaign in Canada.

Almost immediately after going public through Kickstarter, Gardner discovered that someone had taken his entire Kickstarter campaign and launched it under Gardner's name on a competing crowdfunding site, Indiegogo. Indiegogo took the site down after Gardner complained. However, he only learned about this Indiegogo site from a Kickstarter customer who thought Gardner had launched the Indiegogo campaign as well.

After that, Gardner was hit by a series of companies producing and selling knock-offs and counterfeits of his product. This began even before his own product was released. He learned of these activities when he began receiving comments and product feedback from "customers" who were buying the knock-offs through online retail sites such as Alibaba, eBay and Amazon. These unlawful competitors also copied Gardner's promotional video and other marketing material so as to appear to be legitimate outlets.

Notices of infringement sent to the various online retailers were met with mixed results. Amazon was the most compliant and the sites were taken down. Gardner says it is much harder to get the others to comply and even when they do, new infringing sites take their place almost immediately. These competitors are not only manufacturing and selling his product (his patent and his designs), they are also appropriating his name, his brand name (trademarks) and his photos, videos and promotional material (copyright). For Gardner, enforcement of his IP is an enormous challenge and very costly. The unlawful competitors are small companies and hard to find. When he has managed to locate some of them, he has been unsuccessful at compelling them to stop their infringing activities.

The primary markets for the products are the United States and Europe, and Gardner wants to expand to Southeast Asia, especially Singapore and Japan. Manufacturing is done in China, with a view to sell the products globally. Gardner cannot sell his product in Canada due to a health and safety prohibition. Canadians can, however, buy the knock-offs and counterfeits online.

From these experiences, Gardner is left with the question of whether all the IP protection was worth the effort. How much money should one spend on registration fees and lawyers before it stops being worthwhile? Are utility patents really worth it or would he have been better off publicly disclosing and taking all that money and putting it into marketing instead?

When asked whether this same concern could be applied to his design registrations, which cost less than patenting, Gardner felt that design patent protection (industrial designs) was worth the cost, as they are recognized by the online marketplaces. However, the ease of acquiring this kind of protection has allowed trolls to squat on his IP in Europe (a situation that is temporarily resolved) and China (which is an ongoing and potential costly issue).

Gardner is considering buying the services of a trademark enforcement company — roughly $12,000 to go after infringers online until the infringing material is removed. He believes it might be worth the cost and effort.

When reflecting on lessons learned, Gardner notes that crowdfunding is a huge risk because products could be knocked off before the inventor/business is able to get the product to market. This risk exists regardless of IP protection, making one question whether securing IP rights is worth the effort, cost and frustrations, especially in an online environment. The biggest problem with Gardner's Kickstarter campaign was its immediate success: competitors saw the market potential and seized on it.

If Gardner could do it over, he would be better prepared before he launched on Kickstarter so there would not be as much lag time between the campaign launch and his ability to get his product to market. He would also try to think of strategies to prevent unlawful competitors from using Amazon and eBay (among others) to get out there so quickly.

Gardner has been doing the online IP policing himself and he finds it to be a "slow and clunky" process. From his vantage point, there need to be stronger and more accessible enforcement rules for the Internet so that product knock-offs would no longer be a concern. He suggests that there should be a cache with all of his IP registrations available

for viewing so that he doesn't have to start from scratch every time. Potential infringers might be deterred if his IP rights were all clearly laid out in black and white.

The reasons Gardner took on so much of the IP protection and enforcement himself was to reduce his legal fees and to understand all facets of his business, including his IP. Through his experiences, he has developed quite a bit of expertise in the various forms of IP and how to manage them in a global context. This acquired knowledge and expertise will allow him to do things differently the next time around.

APPENDIX 3: THE DALBY FIELD STUDY

The following comparative study was intended to identify the relative ease of access to IP information and advice by a fictional start-up company situated in various jurisdictions around the world seeking to protect a new innovation. Efforts to acquire the necessary information were taken from the perspective of an entrepreneur with little or no appreciable knowledge in IP-related matters and limited financial resources. Study conducted by Stephen Dalby, law student at the University of Windsor, from June 19 to July 6, 2015. Dalby posed as a prospective "inventor" to test the available tools and resources in the jurisdictions under study. The information is accurate to July 6, 2015.

UNITED STATES

Starting with a simple Google search of "how to protect an invention in the United States" led to a USPTO page entitled "General Information Concerning Patents."[143] This extensive guide provided clear and concise information on the IP rights afforded by patents and the process involved in applying for patent protection in the United States. Of particular value in the guide was the wealth of resources it listed for accessing educational materials on IP and in acquiring IP legal advice.

Following the links provided in the general patent guide led to the USPTO's "Inventor & Entrepreneur Resources" page.[144] There was an abundance of critical patent information and educational tools. Clicking on the "Patent Process Overview" tab listed under "Patents for Inventors," one is directed to a step-by-step instructional page that first addressed whether a patent was the appropriate IP mechanism under the circumstances.[145] This included an 18-minute educational video that offered comprehensive information on the process to follow, from initial idea conception to eventual patent application. With respect to information on obtaining IP advice, in addition to a directory of licensed patent attorneys and agents, important information was offered on the actual services they provided and the value of such services. Notably, one was further directed to information on the "Nationwide Pro Bono Program"[146] and the "Pro Se Assistance Program"[147] made available to early-stage innovators who lack the necessary resources to cover patent attorney or agent fees. The latter was particularly helpful in providing clear and simple instructions on how to independently navigate the patent filing system.

Returning to the Inventor & Entrepreneur Resources page, one can click on a link to the "Inventors Assistance Center" (IAC).[148] From the information provided, one can contact an IAC representative by phone and receive considerable information on the costs associated with a patent application, the necessary documentation for filing, and procedural steps involved in an application. When the "inventor" asked if it would be possible to meet with someone in person, the IAC representative recommended contacting the nearest Patent and Trademark Resource Center (PTRC) or checking for a certified law school IP clinic within one's area. A search of the online PTRC directory showed a nearby location in Detroit, Michigan, at the Detroit Public Library. From their website,[149] Detroit's PTRC provides a broad range of free services, including access to IP training and materials as well as referrals to local business incubators and other support organizations. Of the law schools affiliated with the USPTO's certification program, there was an IP clinic at the University of Detroit Mercy School of Law. The services provided by the IP clinic are specific to patents and include assistance with patent drafting and application.

A final tool available through the USPTO's Inventors & Entrepreneurs Resources that was particularly helpful was its "IP Awareness Assessment."[150] After completing the questionnaire, an individualized package of educational material is provided, based on one's specific IP needs and level of awareness. The training modules ranged from basic information on patents to best practices in IP management and strategy. As part of the package, one is directed to the training resource database at stopfakes.gov, which offers numerous business tools for protecting one's innovation, including an online IP training module, IP educational

143 www.uspto.gov/patents-getting-started/general-information-concerning-patents

144 www.uspto.gov/learning-and-resources/inventors-entrepreneurs-resources

145 www.uspto.gov/patents-getting-started/patent-process-overview#step1

146 www.uspto.gov/patents-getting-started/using-legal-services/pro-bono/patent-pro-bono-program

147 www.uspto.gov/patents-getting-started/using-legal-services/pro-se-assistance-program

148 www.uspto.gov/learning-and-resources/support-centers/inventors-assistance-center-iac

149 www.detroitpubliclibrary.org/specialservice/patent-and-trademark-resource-center-ptrc

150 www.uspto.gov/inventors/assessment/

webinar series, resources for acquiring IP rights in foreign jurisdictions and discussion boards to speak with peers on IP-related issues.

UNITED KINGDOM

A Google search of "how to protect an invention in the United Kingdom" led to a UK government page entitled "Patent your innovation."[151] This site provided general information on the application process, instruction on how to file a patent, the associated free structure of patent filing, a patent application guide and guidance on applying for IP protection abroad. Of particular importance was a link provided in the general overview, prompting one to "check if a patent is the right protection." Following the link led to a second page entitled "Intellectual property and your work."[152] In addition to providing general information about the various types of IP protection, this site facilitated access to the IPO's "IP Equip Service."[153] The IP Equip Service is an invaluable tool that tests a prospective applicant's level of IP awareness through specific modules on trademarks, patents and copyright. IP knowledge is tested in several areas, including IP benefits, management and dispute resolution, as well as awareness of available tax incentives.

Upon completing the patent module of IP Equip, one gains access to the IPO's extensive library of training tools and resources. These tools included an "Online IP Healthcheck"[154] that allows registered users to conduct an IP audit and, in return, receive free recommendations on IP management and strategy. The link for "Business Support for SMEs"[155] provided a comprehensive list of support programs and services to aid in maximizing the commercial value of the innovation. Information provided included descriptions and contact information of available IP asset management services, innovation voucher programs, pro bono IP services, and educational courses and workshops.

From the patent library service, one is also directed to several affiliated organizations including the Chartered Institute of Patent Attorneys (CIPA).[156] Under CIPA's "Need Advice?" tab on its homepage, there is a guide on patent basics, information on free IP advice clinics offered by CIPA members, and a directory of registered patent attorneys in the United Kingdom. A second affiliated organization is the British Library's network of Business & IP Centres.[157] Upon accessing the Business & IP Centre homepage, one can follow the "Protecting your ideas" link and learn of the many free IP training workshops and webinars offered by the centres. Services offered also include free one-hour sessions with IP specialists.

AUSTRALIA

A Google search of "how to protect an invention in Australia" leads one to the homepage of IP Australia,[158] the Australian government's IP administrative agency. Following the tab "Understanding Intellectual Property,"[159] there is a wealth of instructional material intended to provide general knowledge on the basics of IP protections and the value of obtaining IP rights. Additional information is also available on the basics of IP strategy and the various methods of commercializing IP. Then, under the "Get the right IP"[160] tab, one can use the "Choosing the right IP" interactive program to identify the correct form of IP needed. Following the patent link provided, there was considerable information on the application process along with a breakdown of the associated costs of an application, required documentation for an application, and basic advice on IP management once the patent was granted. Among the resources offered was a comprehensive patent application guide.[161] Interestingly, the guide strongly recommended seeking the professional advice of a patent attorney to assist in filing a patent application, and a link to the Institute of Patent and Trade Mark Attorneys of Australia (IPTA)[162] was provided. According to the information available on the IPTA site, free 20-minute consultations with a patent attorney are available.

In searching for free advisory services, there is a link on the IP Australia website entitled "IP for business."[163] There is access to critical information pertaining to IP strategy, with particular emphasis on best practices for incorporating IP assets into general business plans. Valuable information was also available on IP-related tax incentives and Australia's Innovation Investment Fund for early-stage start-ups. However, the most significant resource provided was a link to the "Intellectual Property

151 www.gov.uk/patent-your-invention/overview

152 www.gov.uk/intellectual-property-an-overview

153 www.ipo.gov.uk/blogs/equip/how-to-identify-business-assets/

154 www.ipo.gov.uk/iphealthcheck.htm

155 www.ipo.gov.uk/blogs/equip/wp-content/uploads/sites/3/2013/08/businesssupportforsmes.pdf

156 www.cipa.org.uk/pages/home

157 www.bl.uk/bipc/index.html

158 www.ipaustralia.gov.au/

159 www.ipaustralia.gov.au/understanding-intellectual-property/

160 www.ipaustralia.gov.au/get-the-right-ip/

161 www.ipaustralia.gov.au/uploaded-files/publications/Patent_application_guide.pdf

162 https://ipta.org.au/

163 www.ipaustralia.gov.au/understanding-intellectual-property/ip-for-business/

Explorer,"[164] a joint venture between the governments of Australia, Hong Kong and Singapore. This program is designed to assist SMEs in identifying and protecting their IP through a publicly accessible auditing and consultation service. After registering one's innovation with the service, one is prompted with a set of questions concerning ownership, confidentiality and foreign markets. Based on the responses, a report on recommended actions and potential future problem areas is compiled free of charge.

CANADA

A Google search using the phrase, "How to protect an invention in Canada," led to a CIPO page entitled "Protect your innovation,"[165] which offered basic information on patents, including basic strategy and methods of commercializing an invention. Clicking on the "Patents" tab on the sidebar led to a directory page[166] that included a sub-heading entitled "Learn," which had a link to a "Guide to Patents."[167] This guide provided considerable information on a wide range of patent-related topics, including the importance and value of patenting, an overview of the filing and application process, associated fee structure and a contact directory of registered patent agents.

At this point it had been made fairly clear that applying for a patent was the correct course of action in the particular circumstances, but the "inventor" wanted further confirmation before paying for the services of a patent agent. Using the contact information provided in the guide, CIPO's Client Service Centre was contacted by phone for general advice. The CIPO representatives were helpful in providing a number of online resources beyond those already accessed, including CIPO's patent application tutorial and a number of WIPO resources. Unfortunately, if one hopes to meet with a CIPO representative in person for additional information, the only Client Service Centre is located in Gatineau, Quebec. The CIPO representative advised the caller to reach out to a registered patent agent from CIPO's online directory. The CIPO representative could not, however, recommend a particular agent or give any specific information as to the cost of these services. No reference was made to any sources of free IP advice.

In an attempt to ascertain the cost of legal advice, a second Google search was conducted for "cost of patent services in Toronto." Unfortunately, this merely provided a list of websites to various law firms, with no concrete estimates of the cost of their services. An entrepreneur friend, contacted for advice on accessing additional IP training materials, recommended the online forum "Intellectual Property Law Server,"[168] the listserv of American patent attorney Carl Oppedahl, and several IP blogs, including patentlyo.com. It was also suggested that the "inventor" investigate potential training opportunities through IPIC. The IPIC homepage, under the "IP Assistance" tab, offered basic information on services provided by a patent agent and the value of these services. The "Courses and Events" tab provided a list of upcoming classes and webinars. For example, McGill University offered a comprehensive IP summer course. Registration for the weeklong "Understanding Patents" segment of the course was available for a cost of $2,375 or $1,187 for a full-time student. From the brochure available online, the course seems oriented toward members of the legal community.

Finally, unable to find free IP services, the "inventor" resorted to contacting a random set of patent agents in Toronto from CIPO's online directory for pricing information. Five patent agents were contacted in total. Of the five, none could provide a clear indication of the exact cost of their services without an initial consultation. The average cost of an initial consultation was approximately $300.

Concluding Remarks

In each jurisdiction, initial contact with the IP system was made through the domestic IP office, which suggests that, as the front line for inquiries, national IP offices must provide comprehensive and easily accessible services. The online resources must go beyond the basics of the various forms of IP protection and associated application processes and include an array of both educational tools for promoting IP awareness and free-to-access services that assist in developing essential skills in IP management and strategy. Such tools and services are critical to promoting the value in obtaining IP rights as a defensive measure and as a commercial opportunity. In this respect in particular, CIPO must do better. In comparison to the other jurisdictions, there was a far greater sense that traditional legal services were the only available option. Moreover, as the primary contact for start-ups in Canada, CIPO must recognize the integral role it plays in connecting innovators to the network of IP resources and services available to them, including business incubators and law school IP clinics. Infrastructure in place to support Canada's early-stage innovators is of little use to those innovators if they are not made aware of it.

164 http://intellectualpropertyexplorer.com/

165 www.ic.gc.ca/eic/site/cipointernet-internetopic.nsf/eng/wr03586.html#secret

166 www.ic.gc.ca/eic/site/cipointernet-internetopic.nsf/eng/h_wr00001.html

167 www.ic.gc.ca/eic/site/cipointernet-internetopic.nsf/eng/h_wr03652.html?Open&wt_src=cipo-patent-main&wt_cxt=learn

168 http://intelproplaw.com/

APPENDIX 4: LAW SCHOOL CLINICS AND EXTERNSHIP PROGRAMS

This survey of law school clinics in business law and/or IP law, as well as externship programs, was compiled from website data by Samantha Pillon, law student at the University of Windsor. Current as of October 2015.

ONTARIO

University of Windsor, Faculty of Law	
Clinic	**Description**
Law, Technology and Entrepreneurship Clinic www.uwindsor.ca/law/ltec/	Provides business law and IP law experience to upper-year students. LTEC gives its clients legal services regarding "business organization and incorporation; shareholder agreements, trademarks, patents, copyright issues, licensing, and commercial agreements." This clinic is specifically geared toward entrepreneurs and start-up companies. Students provide legal services and workshops for their clients. Offered in partnership with Downtown Windsor-Essex Business Accelerator, the Odette EPICentre, University of Windsor's Cross-Border Institute, WEtech Alliance, the Windsor-Essex Small Business Centre, and the Windsor-Essex Economic Development Corporation.
University of Ottawa, Faculty of Law	
	Description
University of Ottawa Business Law Clinic /Clinique juridique en droit des affaires http://commonlaw.uottawa.ca/business-law-clinic/	This clinic assists start-up companies, SMEs and entrepreneurs with business law matters. The specific areas of law covered by the clinic are "corporate/commercial law, basic tax law, intellectual property law, employment, charities, and commercial arbitrations." This pro bono clinic is run by upper-year law students. The clinic is offered from September to May and students are expected to contribute at least 10 hours per week to the clinic. In addition to working in the clinic, students also give specific training seminars in the fall term to teach basic business law responsibilities and practical skills. The clinic offers services for both common law and civil law matters and in both official languages.
Canadian Internet Policy and Public Interest Clinic https://cippic.ca/en/students	Students can apply for either an academic internship for academic credit or as a volunteer throughout the school year. There are some paid positions during the summer as well. Students are expected to attend training and seminars during their work at the clinic. The areas of law covered by the clinic include copyright, privacy, telecom privacy and open information. The students follow and aid lawyers as they tackle various cases, which include both research assignments and advocacy.
Université d'Ottawa, Faculté de droit (civil)	
	Description
No additional business or IP law clinic	

University of Toronto, Faculty of Law	
	Description
Innovation Law Clinic at MaRS www.law.utoronto.ca/course/clinical-legal-education-innovation-law-clinic-mars-advising-entrepreneurs-and-innovators www.marsdd.com/media-centre/innovation-law-clinic-tech-startups-launches-partnership-norton-rose-fulbright-mars/	This business law and IP law clinic is in collaboration with Norton Rose Fulbright. This clinic is for upper-year law students and is completed for credit toward the student's JD. The prerequisites for this course are business organization and IP: copyright, trademark and patent. The clinic is aimed to help start-up businesses and other businesses in the early stages of development. Students work closely with Norton Rose Fulbright lawyers and the MaRS community and engage in client interviews, creating business agreements and other business law matters. Students enrolled in the course are also expected to attend training seminars hosted by Norton Rose Fulbright and MaRS "Entrepreneurship 101" lectures throughout the term.
York University, Osgoode Hall Law School	
	Description
Intellectual Property Law and Technology Intensive Program www.osgoode.yorku.ca/programs/jd-program/clinics-intensives/intellectual-property-law-technology-intensive-program/	This program is a mix of lectures and clinic. The program begins with two weeks of lectures to give the theory of IP law, followed by an 11-week externship at any IP-based firm, agency or industry. The course also requires students to blog about their experience, complete a research project, seminars and make a presentation.
Business Law Intensive www.osgoode.yorku.ca/programs/jd-program/clinics-intensives/business-law-intensive/	Similar to the Intellectual Property Law and Technology Intensive Program, this program is also a mix of class work and clinic work. The first two weeks of the program are lecture based, to give students a basic understanding of business law. Next, students work in the legal sector of the business or organization of their choice. During the clinic work, students are expected to attend seminars to further their learning in the area of business law. After the clinic work is completed, students return to a classroom setting where they complete various assignments, papers and presentations about their respective experiences. The areas of business law covered by this program are "corporate income tax, banking securities, competition, intellectual property, pension, real estate, and general corporate/commercial law."
Osgoode Business Clinic www.osgoode.yorku.ca/programs/jd-program/clinics-intensives/osgoode-business-clinic/	This clinic is in collaboration with Stikeman Elliott LLP. It is specifically geared toward business start-ups and small businesses who cannot afford other legal services. The clinic is open to both first-year and upper-year law students. Upper-year students can earn credit for their work in the clinic. The students must also participate in seminars, some of which are hosted by Stikeman Elliott LLP.

Osgoode Innovation Clinic www.iposgoode.ca/ccr-ip-osgoode-innovation-clinic/ http://iy.info.yorku.ca/ip-osgoode/	This clinic is in partnership with Innovation York and Torys LLP. This clinic is for entrepreneurs and start-up companies that are unable to afford any other type of legal service. This clinic focusses on IP and business law matters. Osgoode students are able to volunteer with the clinic to gain experience in these legal areas.
Osgoode Venture Capital Clinic http://hennickcentre.ca/programs-projects/osgoode-venture-capital-clinic/	Osgoode students work with entrepreneurs and start-up companies to help them through the early stages of establishing their business. The clinic is in partnership with Wildeboer Dellece LLP. Lawyers assist upper-year students as they work on drafting various agreements and meeting with clients. There is additional training provided for the students, run by Wildeboer Dellece LLP. This clinic fulfills a student's Osgoode Public Interest Requirement.
University of Western Ontario, Faculty of Law	
	Description
Western Business Law Clinic http://law.uwo.ca/legal_clinics/western_business_law_clinic/index.html	This clinic is focused on helping start-up companies. Upper-year students are given the opportunity to assist on case files in the area of business law, including "incorporation, shareholders agreements, corporate maintenance, partnership agreements, employment agreements, licensing agreements, supplier agreements, franchise agreements, government agreements, confidentiality agreements, business name registration, liability assessment, trademarks, drafting and reviewing contracts." The following law firms in London contribute to the clinic: Harrison Pensa, Lerners, Anissimoff & Associates, Cobalt, Szemenyei MacKenzie Godin, and McKenzie Lake. This clinic also works alongside other businesses and organizations in the community, which include InterNetwork London, London Economic Development Corporation, London Public Library, London Small Business Centre and BizInc.
Community Legal Services http://law.uwo.ca/legal_clinics/community_legal_services/index.html	This clinic encompasses many different areas of law, including IP law (copyright, patent and trademark matters). The clinic will not aid in registering a patent or trademark. Law students of any year are eligible to volunteer with the clinic.
Lakehead University, Faculty of Law	
	Description
No business or IP law clinic	

Queen's University, Faculty of Law	
	Description
Business Law Clinic http://law.queensu.ca/clinics/queens-business-law-clinic	This clinic is directed toward start-ups, entrepreneurs and not-for-profit organizations in southeastern Ontario. This clinic is in partnership with Gowling Lafleur Henderson LLP. Upper-year students can obtain credit for their work in the clinic. The clinic addresses matters in the area of "leases and licences, privacy policies, trademark registration and non-disclosure agreements."

QUEBEC

McGill University, Faculty of Law	
	Description
Legal Clinic Course www.mcgill.ca/law-studies/undergrad-programs/clinical-legal-education/legal-clinic-course	This course permits students to gain experience in different areas of law for clients of low socio-economic status. Organizations affiliated with the course permit students to work for the term. Many of these placements involve social justice areas of law. A student can also find an independent placement, which leaves the possibility open to students to find a placement at a firm that assists with business law or IP law. Another placement is a clinic that specializes in art and entertainment law, Clinique juridique des artistes de Montréal (Legal Clinic for Montreal Artists). The typical clients for this clinic are musicians and artists. Although it does not explicitly say that the clinic handles IP matters in the description of the clinic, it is conceivable that copyright issues could arise.
StartUp Law Clinic www.mcgill.ca/law-studies/files/law-studies/lcc_application_booklet_2015-2016_round_1.pdf	This is a new clinic. The clinic seeks to aid start-up and small businesses with legal services that they could not otherwise afford. The clinic is made up of McGill law student volunteers and lawyers from the community. The areas of law covered by this clinic include business law and IP law. This clinic can also be done for academic credit. The services provided by the clinic cover both common law and civil law in both official languages.
Legal Information Clinic/ La clinique d'information juridique http://licm.mcgill.ca/?lang=en&page=legalclinic	Addresses Quebec law and federal law only. The clinic is run by McGill law students and, as such, provides legal information only, not legal services. It does not service any questions regarding criminal law, tax law or construction contracts, but all other legal issues are welcome.

Université de Montréal, Faculté de droit	
	Description
Clinique juridique (Legal Clinic) http://droit.umontreal.ca/ressources-et-services/clinique-juridique/	This clinic provides legal information to students and others in the Montreal community. Students are able to volunteer in the clinic and to provide clients with information regarding various legal matters. It is not explicitly stated what area of law the clinic focuses on, leaving open the possibility for students to address business law and IP law issues.
Université du Québec à Montréal, Département des sciences juridiques	
	Description
Clinique juridique (Legal Clinic) www.cliniquejuridique.uqam.ca/fonctionnement-usagers/	This clinic also provides legal information to members of the public. Students can volunteer for the clinic and it is not defined what areas of law the clinic specifically covers. Presumably, the clinic could address any business or IP law issues.
Université de Sherbrooke, Faculté de droit	
	Description
Clinique juridique juripop (Juripop Legal Clinic) http://juripop.org/services-aux-entreprises/ www.usherbrooke.ca/droit/fileadmin/sites/droit/documents/Etudiants/GUIDE_2015-2016_-_Activites_cliniques.pdf	This clinic helps start-up companies, small businesses, and not-for-profit organizations with any legal issues. Upper-year students are able to assist lawyers in the clinic for academic credit. The clinic covers many different areas of law including business law, family law and criminal law.
Université Laval, Faculté de droit	
	Description
Stages (Externship/Internship) www.fd.ulaval.ca/etudes/2e-3e-cycles/stages	The university provides upper-year students with the opportunity to do an externship with an organization of their choice for academic credit (including any business or IP law firms). The student is expected to assist the organization in meeting with clients and helping research legal questions for case files. At the end of the externship, the student must write a report outlining their experiences and the knowledge that they have gained from the experience.
Clinique juridique pour entreprise en démarrage (Legal Clinic for start-up Businesses) www2.ulaval.ca/les-etudes/cours/repertoire/detailsCours/drt-2224-clinique-juridique-pour-entreprises-en-demarrage.html	This is a clinic course offered by the university. The clinic's aim is to assist start-up companies/entrepreneurs who are otherwise unable to afford a lawyer with legal services. Upper-year students work alongside a professor or lawyer and assist with client files.

Clinique Pro Bono droit des affaires (Pro Bono Business Law Clinic) http://pbsc-ulaval.tumblr.com/cliniques	This is a new clinic that provides University of Laval law students with experience in business law. This clinic helps young entrepreneurs by providing them with information on various business law and IP law matters, as well as providing young entrepreneurs with advice regarding their start-up business. The students are supervised and guided by professors and lawyers from the community.

ALBERTA

University of Alberta, Faculty of Law	
	Description
No business or IP law clinic	
University of Calgary, Faculty of Law	
	Description
Legal Centre for Business and Technology www.ucalgary.ca/biztechlaw/clinic	This is a legal clinic that addresses business law matters for start-up companies, as well as legal advice regarding IP matters. The clinic does not handle any disputes. The students are aided by lawyers from the Calgary community who donate their time to the clinic and who have an extensive background in business and IP law. The students are grouped into teams and each team works on one file together, from beginning to end. Mentors guide the students through the case files.
BLG Business Venture Clinic www.ucalgary.ca/utoday/issue/2014-09-18/law-students-and-entrepreneurs-benefit-new-partnership	A new clinic was opened last year at the University of Calgary in partnership with Borden Ladner Gervais. The clinic is open to third-year law students and addresses business law matters for start-up companies. Each student is provided a mentor who will guide and oversee the student throughout their time in the clinic.

BRITISH COLUMBIA

Thompson Rivers University, Faculty of Law	
	Description
No business or IP law clinic	
University of British Columbia, Peter A. Allard School of Law	
	Description
The Global Environmental and Resources Law Externship Program www.allard.ubc.ca/clinical-programs-and-student-experiential-learning-opportunities	The program permits students to gain practical and hands-on experience in the areas of environmental law, government law and business law. The students will work at an organization that is partnered with the program and assist on various case files.

University of Victoria, Faculty of Law	
	Description
Business Law Clinic www.uvic.ca/law/jd/lawclinics/businessclinic/index.php	Upper-year students can work in the clinic either on a volunteer basis or for credit. Lawyers from the community volunteer at the clinic to help advise students on case files. The law firms Miller Thomson, Borden Ladner Gervais LLP, McCarthy Tétrault LLP, and McMillan LLP contribute to the clinic. The clinic addresses matters regarding "incorporation, financing, charitable registration, intellectual property protection, shareholder agreements, franchise agreements, partnership agreements, contracts, business liability, employment law, government regulation, taxation."

MANITOBA

University of Manitoba, Faculty of Law	
	Description
L. Kerry Vickar Business Law Clinic http://law.robsonhall.ca/clinical-learning/business-law-clinic	The clinic gives upper-year students the opportunity to help start-up companies with business law matters. Lawyers from the community volunteer with the clinic to assist students with their work.

NEW BRUNSWICK

Université de Moncton, École de droit	
	Description
No business or IP law clinic	
University of New Brunswick, Faculty of Law	
	Description
Fredericton Legal Advice Clinic http://fredericktonlegaladviceclinic.ca/	This clinic takes on law students from the University of New Brunswick to help with case files and gain experience. There is no set of area of law that the clinic deals with, but business law and IP law do not fall under their "not" list. Students have the possibility of gaining some business law and IP law experience with clients who cannot afford other legal services.

NOVA SCOTIA

Dalhousie University, Schulich School of Law	
	Description
Externships www.dal.ca/faculty/law/programs/jd-admissions/externships-clinics.html	University of Dalhousie law students can arrange for an externship with a law firm that deals with business law or IP law to gain experience outside the classroom. These externships generally take place over the summer months.

SASKATCHEWAN

University of Saskatchewan, College of Law	
	Description
No business or IP law clinic	

ABOUT CIGI

The Centre for International Governance Innovation is an independent, non-partisan think tank on international governance. Led by experienced practitioners and distinguished academics, CIGI supports research, forms networks, advances policy debate and generates ideas for multilateral governance improvements. Conducting an active agenda of research, events and publications, CIGI's interdisciplinary work includes collaboration with policy, business and academic communities around the world.

CIGI's current research programs focus on three themes: the global economy; global security & politics; and international law.

CIGI was founded in 2001 by Jim Balsillie, then co-CEO of Research In Motion (BlackBerry), and collaborates with and gratefully acknowledges support from a number of strategic partners, in particular the Government of Canada and the Government of Ontario.

Le CIGI a été fondé en 2001 par Jim Balsillie, qui était alors co-chef de la direction de Research In Motion (BlackBerry). Il collabore avec de nombreux partenaires stratégiques et exprime sa reconnaissance du soutien reçu de ceux-ci, notamment de l'appui reçu du gouvernement du Canada et de celui du gouvernement de l'Ontario.

For more information, please visit www.cigionline.org.

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