



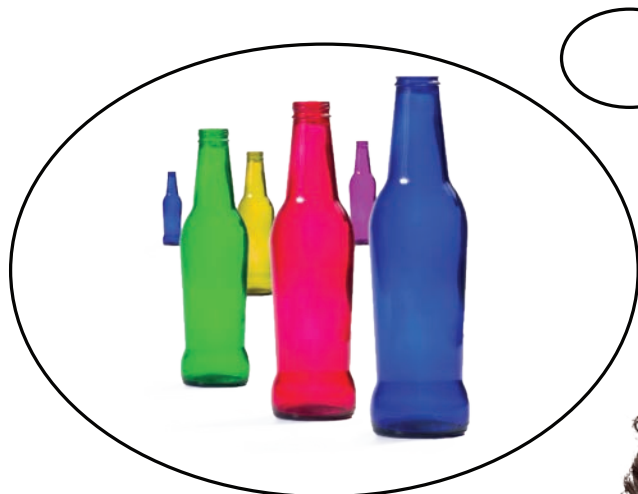
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JOHN THOMPSON Case Study



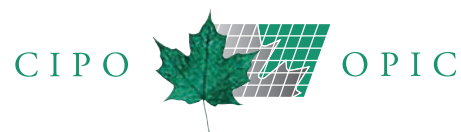
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John Thomson

How to market an invention

John Thomson had big dreams. He had grown up on a farm in southern Alberta and was no stranger to hard work. Out of necessity, John could fix anything. He could fix tractors and plows, chainsaws and hay balers, all terrain vehicles (ATVs) and snowmobiles. He had even learned to drive the tractor at the age of eight and by ten, he was an expert on the ATV and snowmobile.

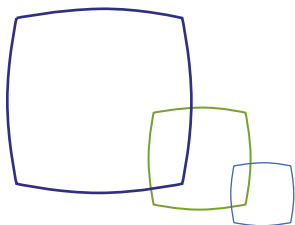
When John finished high school, he decided to study mechanical engineering at Southern Alberta College. He didn't just want to learn how to fix things, but how to design new and better machinery, or at least machinery that didn't break down continuously. In his first year, he caught the eye of one of his instructors, Ben Adams, who invited him to participate in an international green innovations competition. Even though John and his team did not win, John was inspired to learn all he could about green innovation and how to become an entrepreneur. In his second year, John picked up some business classes that included topics on starting your own business and bringing new technologies to market.

John Thomson had **big dreams**. He had grown up on a farm in Southern Alberta and was no stranger to hard work. Out of necessity, **John could fix anything**.

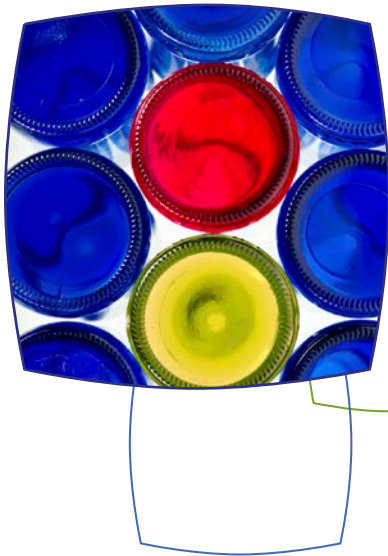
John's lucky break came close to graduation at the end of his third year at college. His uncle, Frank, who had a contract with the local municipality to collect, sort and resell glass wanted to retire and was looking to sell the business. Frank's company, Frank's Hauling Inc., had built up a very good reputation with the municipality and with his customers for recycled materials. John was interested and did his

homework carefully. He started to work for his uncle part time so that he could learn the ropes. He went to a small business seminar organized at the college, developed a business plan and filed an application for a small business loan. John's parents were very supportive and agreed to act as guarantors for his loan to buy Frank's Hauling Inc. Now the pressure was on; John could not fail.

Frank agreed to stay on as manager for a six-month transition period. Frank's Hauling Inc. had four trucks, each with a crew of two people. One person drove and the second emptied the recycling boxes into the back of the truck. After the bottles were collected, they were brought back to Frank's small warehouse where the really boring work began. The workers at Frank's warehouse sorted the glass into colours by hand to increase its value. Glass sorted by colour is much more valuable than mixed glass because it can be used to make new glass products. Mixed glass looks like mud when it is melted and is not very valuable. It can only be used in industrial



NOTE: The facts described in this teaching case are fictional and not based on any true case. Although the principles relating to patents are correct, references to particular companies and processes are purely fictitious and should not be relied on as actual engineering or manufacturing processes.



applications like being mixed with asphalt for roads. Once sorted, the glass was crushed in a machine called the EcoCrusher made by a Danish company, EcoCrusher Ltd., that specializes in making and selling high performance machines for the recycling industry. EcoCrushers were sold throughout Western Europe, the United States, and Canada. The crushed glass was the end product sold by Frank's Hauling Inc.

After one year in business, John realized that his company incurred significant costs from the labour required to sort the glass. John went home to his sketch pad and design software and got to work. Over many sleepless nights, he came up with an idea to automate the glass sorting process using lasers. In his garage back on the farm, over a number of weekends, he constructed a prototype from old toy "laser guns."

The prototype was inserted into a box with a mechanical sorting lever and multiple shoots (like a wheat thresher) that could sort the glass by colour into separate bins. He designed these bins to fit onto the EcoCrusher (although they could easily be modified to work on

other similar machines) and empty at the push of a button into the crushing machine. He decided to call his prototype the SuperSorter. The test of the prototype suggested that John could really improve his company's productivity, by enabling his staff to spend more time collecting glass, thereby increasing the volume of crushed glass they could produce.

Over many sleepless nights, John came up with **an idea to automate the glass sorting process using lasers.**

John was very excited. He did some homework on the Internet. He looked to see whether EcoCrusher Ltd. or any other company in the recycling business had a machine similar to the SuperSorter. He was pretty sure that his SuperSorter invention was unique, but wasn't certain. It was time to think seriously about fulfilling his dream to become an innovative entrepreneur.

John decided to seek some advice from his old instructor at college, Ben Adams. He told Ben about his new business venture in the recycling sector and his cool new invention, but Ben stopped him before he got to the details. Instead, he recommended to John that he visit the College's Office of Applied Research. However, infected with John's enthusiasm, Ben suggested that he could pull together a student team to help John further refine and develop his prototype, depending on the assessment of the Office of Applied Research. Further development would be required before attracting the resources necessary for scale-up to manufacture and sales.

John made an appointment with Ms. Jeffries at the Office of Applied Research. He came with the business plan he had prepared for Frank's Hauling Inc., a summary of the company's accounts, and a printout of the design for the SuperSorter. He was very nervous, but treated the meeting as an opportunity to test run a pitch for expanding his business and his invention.



Ms. Jeffries was instantly impressed with John's professional attitude and presentation. As he came to the part about the invention, she stopped him and asked him to enter into a confidentiality agreement with the Office of Applied Research. She explained that this was standard practice and protected both the College and John in the case of any further commercialization activities. Ms. Jeffries indicated that even though John had not used College resources to develop his invention and prototype, he could, as a local small business operator, still get help from the relevant departments¹ to pursue his commercialization venture .

John finished his pitch and showed Ms. Jeffries the design for the SuperSorter. Ms Jeffries then explained the coordinating role of the Office of Applied Research. She reiterated Ben's suggestion of a cross-discipline team of students and faculty to help John finalize the prototype and assess the commercial value of the SuperSorter. In addition, Ms. Jeffries said that a patent agent or an intellectual property (IP) lawyer could help him decide on the right mixture of IP to cover his invention, including whether and where to patent the invention based, in part, on John's budget and selected option for commercialization. The Office of Applied Research could also help to develop linkages with interested companies (local or international), with EcoCrusher Ltd. being an obvious candidate. In exchange for helping John, the College would receive a percentage of the profits from commercializing the SuperSorter. Commercializing the SuperSorter would usually mean licensing the invention to a company in exchange for something of value, such as percentage royalties or an equity share. A license is a permission to use.

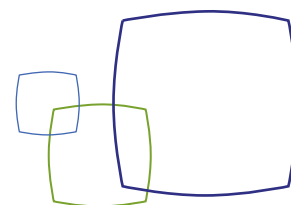
At the close of their meeting, Ms. Jeffries warned John not to speak openly about his invention, and certainly

John left the office feeling as though **his life had just taken off**. He had a lot to think about and a lot to be excited about.

not to show it or the design plans to anyone for the time being. John was a little surprised, but promised to follow the advice although his dad and younger brother had already seen the prototype while he was working on it. His uncle Frank had also helped him to fit the SuperSorter on the EcoCrusher to see if it worked.

John left the office feeling as though his life had just taken off. He had a lot to think about and a lot to be excited

about. John couldn't wait until the next meeting with Ms. Jeffries and was eager to work with the team she would put together from students and faculty to help him develop the SuperSorter.



¹ Note that the services available at Canadian colleges for technology and entrepreneur support vary from one institution to another. There are also usually costs associated with these services. You should become familiar with the services available at your institution as well as its IP policy.



PRE-CASE STUDY DISCUSSION ACTIVITY

Come to the discussion having done some research into the services available at your institution for technology and entrepreneur support. What are the costs associated with these services? How would you find out? Also familiarize yourself with the IP policy of your institution.

Discussion questions

On patenting and trade secret protection

1. Can John's invention, the SuperSorter, be protected as a trade secret and what are the costs and benefits of that option?
2. Why did Ms. Jeffries warn John not to discuss his invention with anyone?
3. Is John's invention patentable — does it meet the criteria of novelty, utility and ingenuity? Is a prototype sufficient to obtain a patent?
4. In what countries should John seek patent protection and how should he decide?
5. Is there a process whereby John can apply for patents in many countries, or does he need to apply in each country separately?
6. When discussing his invention with Ms. Jeffries or others, what steps should he take to protect his business and IP interests?

On trade-mark protection

1. Should John consider seeking trade-mark protection for the name SuperSorter? If so, what are the costs and benefits of registering a trade-mark?
2. How would John go about registering his trade-mark and where?



On commercializing the SuperSorter

1. Based on the facts, what are the main commercialization options available to John?
For example:
 - a. Should John get into the business of making and selling SuperSorters?
 - b. Should John try to license his invention and to whom?
 - c. Are there any other options?
2. How should John choose among these commercialization options?



GUIDELINES FOR PREPARING TO DISCUSS THIS CASE

The objective of this case study is to answer the questions that are asked and, in the process, learn about patents, trade-marks and IP management. All participants are expected to take part in the case discussion and so should have conducted additional research on the topics and points raised prior to attending the workshop.

To get started, you can review the presentation *Introduction to Intellectual Property* at www.cipo.ic.gc.ca/introip and the IP PANORAMA ^{tm 2} modules 02, 03, 04, 06 and 07 at www.ippanorama.com. You can also consult the *Questions and Answers on IP and Commercialization* that you will find as Appendix A.

An important aspect of using a case study is to identify the different issues that are raised. Are there other questions to ask or additional information to gather before you can answer?

When you have identified the relevant issues, assemble information on those issues. For example, in answering the question in this case about whether John's discovery is really a patentable invention, you will need to consider whether his invention meets the tests of novelty, utility and ingenuity in each country of interest. You will also need to give careful consideration to the question of whether seeking patent protection is the best option for John. The *Cost Estimates for IP Protection* (Appendix B) document can also help you in your decision-making.

You will need to obtain your own institution's policy on IP to help understand some of the issues of ownership and role of the Office of Applied Research (or equivalent), especially as it relates to students' involvement in research projects. Ultimately in a case like this, you need to decide on what you believe the best course of action is and why. Be prepared to defend your choices with relevant facts and information.

USEFUL WEBSITES

John Thomson's Video

- www.cipo.ic.gc.ca/john

On Intellectual Property

Canadian Intellectual Property Office

- www.cipo.ic.gc.ca

US Patent and Trademark Office

- www.uspto.gov

World Intellectual Property Organization

- www.wipo.int

European Patent Office and Database

- www.epo.org/patents/searching

On Technology Transfer and Commercialization

The Association of University Technology Managers

- www.autm.org

The Intellectual Property Handbook

- www.iphandbook.org

² IP PANORAMAtm is a user-friendly e-learning product on intellectual property that was jointly developed by the Korean Intellectual Property Office (KIPO), the Korea Invention Promotion Association (KIPA), and the World Intellectual Property Organization (WIPO).



Appendix A

QUESTIONS AND ANSWERS ON IP AND COMMERCIALIZATION

1. *What is intellectual property?*

The World Intellectual Property Organization (WIPO) defines intellectual property (IP) as referring “to creations of the mind: inventions, literary and artistic works, symbols, names, images, and designs used in commerce.” For example, a book is a tangible thing that can be bought and sold. However, the content of the book may be protected by copyright that limits the owner of the book from making and distributing copies. The same applies to patents. For example, you may buy or sell a car, but you may not manufacture the identical car because of patents and other IP rights.

IP rights are negative rights in that they give the holder the right to PREVENT others from using the IP in an infringing way.

2. *What are the most common types of IP?*

The most common types of IP are patents, trade secrets, trade-marks, industrial designs, and copyright. Each protects a different type of intellectual asset.

- Patents protect for a period of 20 years, inventions that are new, useful and non-obvious, meaning that they require some degree of ingenuity. They give the inventor the right to prevent others from making, selling or distributing his invention. For example, a combination of patents will protect any pharmaceutical product. Generic pharmaceuticals come on the market after the patents have expired on the name-brand pharmaceutical.
- Trade secrets protect the information that companies or people keep secret to give them an advantage over their competitors. The most famous example of a trade secret is the recipe for Coca-Cola. Other examples include customer lists. Trade secret protection is easily lost since it is often difficult to keep secrets.
- Trade-marks protect words, symbols or designs (or a combination of these items) used to distinguish the goods or services of one person or company from those of another.
- Industrial designs protect the shape, configuration, pattern and/or ornamentation applied to a finished article. For example, it protects the shape of a chair or the ornamentation on the handles of cutlery. The article may be made by hand, tool or machine.
- Copyright protects original literary, artistic, dramatic or musical works that are set down in a concrete form (fixed). For example, it protects books, music, songs, sculptures, paintings, photographs, movies, plays, television and radio programs, and computer programs. Copyright does not cover themes, ideas, data, most titles, names, and short-word combinations with no real substance.

Some other less common types of IP apply to plant breeder's rights for new plant varieties and integrated circuit topographies for the three-dimensional configuration of electronic circuits used in microchips and semiconductor chips.



3. *Can more than one type of IP apply to the same thing?*

Yes. Different types of IP are often used in combination to protect the same asset. For example, in this case study, John could try to patent the SuperSorter, he could get copyright over the instruction manual on how to use the SuperSorter, and he could get a trade-mark for the name, SuperSorter.

4. *Where do you go to get IP protection in Canada?*

The Canadian Intellectual Property Office (CIPO) (www.cipo.ic.gc.ca) administers most IP in Canada. CIPO manages the patent system, trade-marks, industrial designs, and integrated circuit topographies. CIPO also registers copyright. Note that copyright arises automatically when a work is set down in a tangible form or fixed. It does not need to be registered. However, registration of important works gives certain practical advantages if problems of copyright infringement arise.

5. *How can you protect a trade secret?*

Trade secrets are usually protected through non-disclosure or confidentiality agreements. These are binding legal contracts meaning that a person or company can be sued for breach of contract if the secret is divulged. While one may recover some damages, there is no more protection once the secret is out.

6. *Do trade-marks need to be registered?*

Trade-marks do not need to be registered and may be used as unregistered trade-marks represented by the TM symbol. Registering a trade-mark, however, gives the trade-mark owner additional protection under the national trade-marks legislation (in Canada the *Trade-marks Act*). The symbol of a registered trade-marks is ®. Separate trade-mark registrations are required in each country of interest.

7. *What is a license?*

A license is a type of contract. The person or company giving the license is called the licensor and the person or company getting the license is called the licensee.

A license is a grant of permission for a party to enter onto the physical property of another, that is, an agreement not to hold the party liable for illegal trespass. With respect to IP, a license is a promise not to sue a party for actions that would otherwise amount to IP infringement.

Licenses may divide up IP rights, such as the rights to manufacture, sell, and use, given by a patent. They usually consider things such as the type of use (known as field of use), where that use may take place (geographic scope or territory), and a time limit on the use. For example, the IP over the same invention may be licensed to Company A to manufacture in the United States for two years, to Company B to distribute in the United States for two years and to Company C to manufacture and distribute in Europe for five years.

With a brand new invention, a license may also include milestones along the way to developing a product that may be sold in the marketplace. The main focus of a license is an exchange of use for something of value, usually either an upfront cash payment or payments when specific milestones are met or a percentage of eventual profits (royalties). Licenses will generally also consider how or under what circumstances the agreement comes to an end or how and where any disputes that arise will be settled. In commercial situations, licenses may be long and complicated.



8. *Are there different kinds of licenses?*

There are three different types of licenses: **exclusive**, **sole**, and **non-exclusive**.

Exclusive does not mean that only one license will be granted, but that the licensor agrees to grant none that have the same rights within the scope or field covered by the exclusive license. For example, if an exclusive license has been granted to Company A to manufacture the product in the United States for two years, the same license cannot be granted to Company B. However, Company C may still receive an exclusive license to manufacture in Europe for five years.

A **sole** license gives rights to one person or company but the owner of the patent also keeps the same rights. This means that the licensor and licensee may compete in the same market.

A **non-exclusive** license means that the same IP rights may be licensed to many people or companies simultaneously.

9. *Are there any other ways to transfer the ownership of IP?*

While a license may divide the IP rights among the licensor and a number of different licensees, an assignment in essence transfers the ownership and control over the IP from the original owner (the inventor in the case of a patent) to another person or company.

The person or company making the assignment is known as the assignor and the person or company receiving the assignment is known as the assignee.

Under the Canadian *Patent Act*, only an inventor or their legal representative (often the assignee) may apply for a patent. However, the assignment must be registered with the Patent Office.

For example, in some universities, employment contracts and the IP policy state that the university owns all of the IP developed in the university. This means that the inventor may be the professor, but the rights must be assigned to the university, which becomes the actual owner of the patent. The assignment is made in exchange for payment, usually in the form of royalties.



Appendix B

COST ESTIMATES FOR IP PROTECTION

PATENTS

Note: The fees outlined below are approximations only. Legal fees vary by the hourly rate of the lawyer — these vary by law firm and province. Applicable taxes, such as GST are in addition. Fees to prepare a patent application vary according to the complexity of the invention, the number of claims, and the countries in which patent protection will be sought (remember that patents are required in each country of interest). Preparing a patent application will require significant input from the inventor who must meet with the consulting patent agent and/or IP lawyer.

The total cost will be in the order of **\$10 000-\$15 000 Canadian** to prepare a simple patent application, conduct prior art searches, and file the patent in one country, such as Canada or the U.S. The cost of filing the same application both in Canada and the U.S. is approximately **\$15 000-\$20 000 Canadian**. Total costs for Canada and the U.S. for a moderately complex invention are approximately **\$15 000-\$27 000** and approximately **\$21 000-\$33 000** for a high technology invention. Note that you will likely need to pay a retainer (an upfront portion of total costs) to the IP law firm that you hire.

Drafting and filing a U.S. provisional patent costs approximately **\$5 000**.

Patent Cooperation Treaty filings are considerably more expensive in all aspects — filing fees, legal fees, maintenance fees, patent translation fees, etc. After filing, the costs could easily exceed **\$10 000** per country, for the national phase entry to issuance of national patents, each of which then needs to be maintained for the life of the patent.

- Patent prior art searches: Conducted by a professional patent search company, likely in Canada or the U.S. (\$800-\$1 600), followed by a legal opinion on patentability (\$500-\$1 500).
- Preparation of patent application: Costs depend on the time needed to review the material describing the invention provided by the inventor and drafting the application (including claims). Formal drawings cost approximately \$80 per page.

Task (U.S. and Canada)	Drafting Time	Approximate Legal Fees
Simple invention	10-20 hours	\$3 000-\$6 000+
Moderately complex invention	20-40 hours	\$6 000-\$12 000+
High technology (e.g. information technology/ biotech)	40-60+ hours	\$12 000-\$18 000+



- c. Patent application filing: Service charges for an agent to file a patent application range from \$500 to \$1 000 per country. Note that assignments must be registered and require additional fees. National patent offices also charge fees. In Canada, CIPO's filing fee is \$400 for a large entity or \$200 for independent inventors, universities and small companies (< 50 employees).
- d. Examination of applications: Before many national patent offices will examine a patent, a formal request for examination must be made. In Canada, the fee for requesting examination is \$800 for a large entity or \$400 for independent inventors, universities and small companies (< 50 employees). At this point, the patent enters the examination stage and the patent examiner will issue an "examiner's report" or "office action" that will list any objections and cite any prior patents that are relevant. The cost of prosecuting a patent application depends on how the claims were drafted (narrowly or more broadly). The cost of prosecuting the application can be substantial and can exceed the cost to prepare and file the application. This is because the concerns of the patent examiner must be addressed for the patent to be granted and may require significant redrafting of the patent, depending on the breadth of the claims, which may need to be narrowed. Prosecuting the application before each national patent office for a simple invention will likely cost between **\$2 000-\$5 000+** in legal fees.
- e. Issuance of patents: The government fee for obtaining the grant of a patent in Canada is \$300 for a large entity or \$150 for independent inventors, universities and small companies (< 50 employees).
- f. Maintenance of applications and patents: Most countries require payment of a maintenance fee on a regular basis (annual or at set times during the patent term (U.S.)) and fees vary by country. In addition, patent agent or IP lawyer requires fees for a patent annuity service. The costs per country per year will be approximately \$500-\$1 000.

Links to national office fee schedules

CIPO Tariff of Fees—Patents

- www.cipo.ic.gc.ca/eic/site/cipointernet-internetopic.nsf/eng/wr00142

USPTO Patent Fees

- www.uspto.gov/web/offices/ac/qs/ope/fee100512.htm

TRADE-MARKS

Trade-marks do not need to be registered and may be used as unregistered trade-marks represented by the TM symbol. Registering a trade-mark ®, however, gives the trade-mark owner additional protection under the national trade-marks legislation (in Canada the *Trade-marks Act*). Again, separate trade-mark registrations are required in each country of interest. Filing an international application is done at a national trade-marks office and will result in additional fees and costs, when prepared by a trade-mark agent or lawyer.¹

Obtaining a trade-mark registration takes approximately 12-18 months from the date of filing to registration and costs approximately **\$1 500-\$2 000**. A full trade-mark availability search and registerability report for Canada adds approximately an additional **\$1 200-\$1 900**.

¹ Please note that some individuals may choose to file their trade-mark applications themselves. CIPO's website provides all the information required for submitting an application online.



The steps required to register a trade-mark are:

- a. A trade-mark availability search performed by an expert search provider prior to the preparation of an application to ensure its feasibility. The cost of the search is approximately \$500 and legal fees to review the search and prepare a report are approximately \$700-\$1 400. A full availability search for Canada and the U.S. is approximately \$1 200.
- b. The preparation of a trade-mark application by a trade-mark agent or lawyer (approximately \$600).
- c. Filing the trade-mark application with a national trade-marks office (\$250-\$300).
- d. Responding to the concerns of the trade-marks examiner (\$100-\$500, depending on hourly rates of the lawyer).
- e. Advertising the successful trade-mark application in the *Trade-marks Journal*.
- f. Handling any oppositions to the trade-mark filed by a third party in a 2-month period following the date of the advertisement. This will depend again on the number of hours and the hourly rates of the lawyer.
- g. If no oppositions are filed, payment of the official registration fees (\$200 registration fee plus approximately \$350 in legal fees).
- h. After 15 years, renewal for an additional term by paying the \$400 fee in Canada.

Links to national office fee schedules

CIPO Tariff of Fees—Trade-marks

- www.ic.gc.ca/eic/site/cipointernet-internetopic.nsf/eng/h_wr02003

USPTO Trade-mark Fees

- www.uspto.gov/web/offices/ac/qs/ope/fee100512.htm
- www.bpmlegal.com/ptofeeptat