Innovation and Intellectual Property

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Outline

• Background
• Innovation
• Intellectual property (IP)
• Discussion
Background

- Ph.D. Biochemistry
- Early stage new product development
- Venture Capital
- Independent Consultant
- Entrepreneur
- Technology Transfer
Technology Transfer Office

- Capture value of research
  - Intellectual property and licensing
  - Proof of concept fund (hopefully)
- Increase economic impact of U of M
  - Collaborative partnerships with industry
  - Mitacs
- Develop entrepreneurs
  - Game Changer
  - Newco creation
- Education
  - Ensuring common expectations
IP Policy

• University of Manitoba has a jointly owned IP policy (50:50 with inventors)
  • Applies to all staff and students
  • Obligation to disclose inventions
• Copyright belongs to creators
Invention Disclosure Form

• Filled out by researchers
• Early is better – draft publication stage
• 2-3 week turnaround

• [http://umanitoba.ca/research/tto/media/IDF.doc](http://umanitoba.ca/research/tto/media/IDF.doc)
Innovation
Case study

Time of Flight Mass Spec

- Werner and Ens (Physics)

Research from early 1990s-present
Innovation Definitions

Creating value by doing new things

• Innovation is: production or adoption, assimilation, and exploitation of a value-added novelty in economic and social spheres; renewal and enlargement of products, services, and markets; development of new methods of production; and establishment of new management systems. It is both a process and an outcome.
Definitions

Creativity ≠ Innovation

• Creativity is coming up with the big idea. Innovation is executing the idea successfully.

• **Creativity** is thinking up new things. **Innovation** is doing new things.

  Theodore Levitt
Another Innovation Definition

Doing cool $#*^ that matters
Innovation opportunities

~1870

1970- Bernard Sadow

1987 – Robert Plath

~2500 BC
Two basic types of Innovation

- Radical
  - iPhone
  - Blockchain
  - Flight

- Incremental
  - 5G
  - Car models
  - Process improvements
TYPES OF INNOVATION

https://doblin.com/ten-types
Types of Innovation

- Useful to diagnose and improve a current innovation or to analyze the competition.
- Structured into three color-coded categories.
Why is Innovation Important?

• The word is full of problems that are hard to solve and aren’t going away
• Adapting to Black Swan events – random and unpredictable events
• Global Entrepreneurship movement
• Blue Ocean – there are no permanently excellent companies
• Technology is advancing rapidly
• Workplaces are dynamic
• Customer expectations
Innovation is a process

- Start with customer pains/problems
- Understand constraints
- Explore options
- Test and validate quickly
“Ends” are what the customer values

Goal is a product with real value for the end user

From Cooper, R.G. 2001 Winning at New Products
Intellectual Property (IP)
What is IP

Four Pillars of IP

• Copyrights
• Trademarks
• Trade Secrets
• Patents (includes Industrial Designs)
Copyrights

- Apply to original “works”
- literary, music, art, photography, software
- Purely statutory rights
- Rights arise on creation
- Rights belong to the author
- No need to register (but can if you want to)
- Rights last for the life of the author + 50 years (Canada), +70 years (US)
Trademarks

• Legally protected names & designs for commercial use
• Registered trademarks issued by Patent Offices
• Use them or will lose them
• Rights can be perpetual
Trade Secrets

- Must have business value
- Able to be kept a secret and efforts made to do so
- Common law only; no statutory protection
  - Rights will last as long as secrets remain secret
  - Maintained with:
    - employee contract language
    - non-disclosure agreements
Trade Secrets

- **Pros:**
  - Never expire – as long as the secret remains secret
  - No government filings or approval required
  - Can be very successful e.g., Coke, KFC, resins

- **Cons:**
  - Not everything can be protected – e.g. technology can be reverse-engineered
  - If the secret is exposed, then it’s no longer a secret
  - Can be expensive to maintain, requires security, contracts, complicated processes
Patents

- Applies to inventions that are **new, non-obvious & useful**
- Must file a patent application with a Patent Office to acquire legal rights
  - Country specific
- Rights will be lost by public disclosure before filing an application
- Rights belong to the inventor but are assignable
- Patent rights last for 20 years from application date
Patent Requirements

• Novelty
  • the invention is “new”

• Non-obviousness
  • not a minor tweak
  • Not predictable

• Utility
  • does something useful
Patent Value Factors:

- Can competitors design around the patent?
- Will the patent be challenged?
- How expensive is it to develop compared with the revenue potential?
- What other IP is required?
- Will external factors impact the IP?
  - Ie legal changes, new laws
- Can competitors design around the patent?
- Look at the legal and economic life of the patent that will allow YOU to generate revenue.
When to Patent??

- Invention is easy to reverse-engineer
- Significant business opportunity
- Secure a competitive advantage
- Canada & USA: within 1 yr of a public disclosure
- Everywhere else: before any public disclosure
Killing a Patentable Idea

• Public disclosure before filing is FATAL
• Forgiveness only possible in:
  • Canada and USA – 1 yr
  • Japan – 6 months (if disclosure was at a conference)
• TALK TO THE TTO ASAP after you realize you may have a valuable invention
What is a Public Disclosure???

- Conference or poster presentation with slides?
- Telling someone over a beer?
- 5-min presentation @ Pitch’Day with no slides?
- Submitting a paper to a journal?
- Outlining hypothesis in a grant proposal?
- Showing someone during a lab tour?
Patenting is not about the technology!!

It’s all about protecting the business opportunities created by the technology
## Patenting Process

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<th>Cost</th>
<th>Cumulative Cost</th>
<th>Time</th>
<th>Cumulative Time</th>
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<td>Patents Issue and ongoing maintenance</td>
<td>$5,000 - $10,000/country</td>
<td>$125,000 - $500,000+</td>
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<td>20 years</td>
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</table>
Financial Performance

Phase / Activity / Time

Idea phase
R&D phase
Product & process development phase
Production & market launch
Sales & distribution
Phase out

Sales
Profits
Costs

“Valley of Death”

File patent applications
Patents issue

File patent applications

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www.umanitoba.ca/research/tto
www.umanitoba.ca/partnerships