



Turning ideas into
solutions

Innovator's Guide

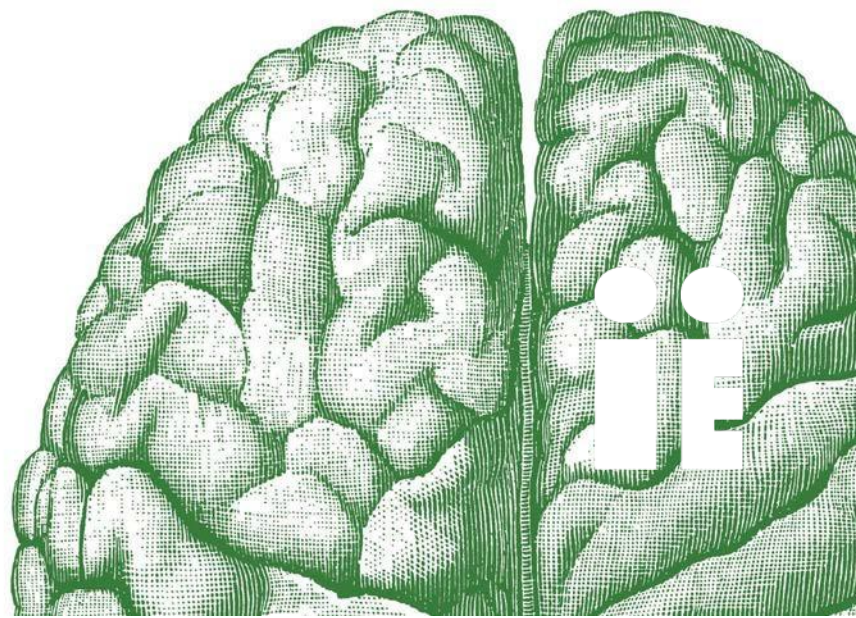


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I. The purpose of this guide

This guide has been prepared as a tool to help innovators within our University of Saskatchewan community learn more about the process of protecting and commercializing the results of the innovative work you are doing. A campus innovator can be anyone, from a student to staff to a senior faculty member, because we believe good ideas can come from anywhere. This guide is intended to answer questions around innovation development, and to prepare you for a conversation with Research Excellence and Innovation.

II. Who is REI?

Research Excellence and Innovation (REI) is a unit within the Office of the Vice-President of Research at the University of Saskatchewan. From a practical perspective, we are the unit on campus responsible for commercialization and value realization of campus innovations. That means idea and innovation development - everything from entrepreneurship and start-ups to patenting and licensing.

The University of Saskatchewan's colleges, centres, and institutes conduct world-class research, foster talent, and test the limits of current knowledge and technology. In the context of the University's vision of connectivity, diversity, and sustainability, REI is leading the efforts towards the empowerment of creative minds across campus. REI is here to bring the future forward, faster.

Our mission at REI is to work relentlessly to create significant, sustainable and measurable value – for our society, our economy and our environment – by leveraging the combined intellect of everyone within the University of Saskatchewan community.

Why work with us?

As campus leaders in entrepreneurship we can assist and engage in taking your work to the next level. Working with Research Excellence and Innovation to develop your innovations benefits not only your programs but society at large. We want to work with you early in the process of developing your innovation, because that is the best way to realize the value for you, the University and society. Speaking to us early allows us to advise you on how to meet your goals as an innovator, and to make sure we build familiarity with your work so that we can anticipate the resources that may be required to develop it down the road. We also have proof of concept funds available to you, which we invest to aid in prototyping or other work that helps you advance toward commercialization. Working with us can help you:

- **Create impact** – your innovation could have the potential to create a positive impact. Research Excellence and Innovation seeks to create value for a sustainable future and you are a fundamental source of knowledge-intensive solutions to address challenges in our society, economy and environment.
- **Build networks** – REI can help you access and grow local and international networks, including connections to business resources and leading start-up incubators and accelerators.
- **Protect your intellectual property** – if you speak to us about your idea or innovation early, before making any publication or presentation, we can provide strategies to help balance your desire to share information about your innovation with peers or in publications, but to also preserve and

protect it for commercial purposes. With respect to patenting, most geographic jurisdictions – including Canada and the US – have a “first to file” rule. This means that the first person to file a patent has priority over anyone else claiming the same invention, even one day later, which is an important reason to contact us as early as possible.

- **Trigger new funding and achieve self-reward** – royalties gained through profitably licensing your innovation to industry could be used to fund future research. Developing connections with industry that are potential licensees could also trigger funding in the form of research or collaboration agreements. Also, a fruitful license agreement or shares in a flourishing start up-company may bring you some financial returns.

A. What does innovation and entrepreneurship mean to us?

We see an innovation as a new idea or invention that could have value and impact, within our campus community or in society at large. This could be a scientific invention, or a knowledge-based product or process that contributes to creating sustainable economic growth and social well-being.

All of these pursuits are entrepreneurial in nature, in the sense that success requires a positive perspective with focus on solutions instead of problems. In this way, innovation development demands enthusiasm, creativity, energy and a result-oriented method.

Research Excellence and Innovation helps innovators transform their ideas into solutions by working together with you to apply entrepreneurial thinking to the process of developing your innovation and bringing it out into the world.

■ *The entrepreneurial ecosystem is a mutually beneficial network of linked individuals, companies, institutions and organizations that stimulates and nurtures start-up ideas until they are fully fledged products or services.*

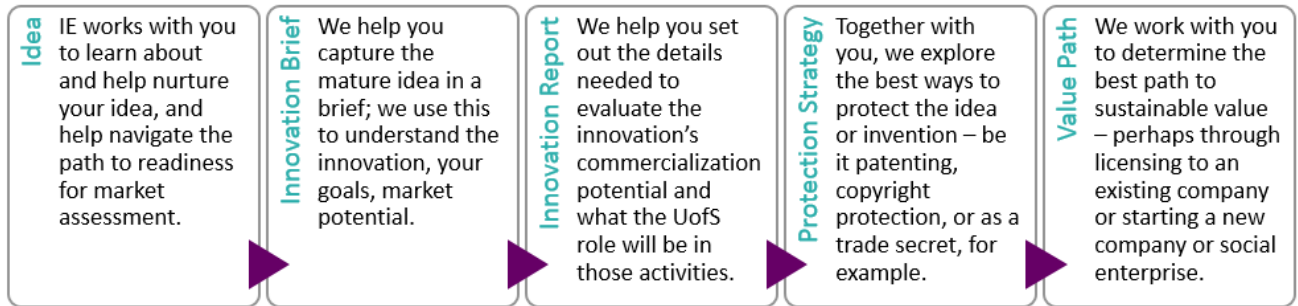
B. Innovation development support services

At Research Excellence and Innovation, our experts have broad experience in academia, industry, and networks in the stakeholder community, enabling us to provide relevant direction and advice at all stages of commercialization. We offer learning and innovation tools and support programs, help for key business operations functions, and finance and legal services and support.

Programs and Services	Business Operations	Finance and Legal
<ul style="list-style-type: none"> • Industry engagement • Communications advice and guidance • Market survey/assessment • Student engagement programs • Entrepreneurial programs • Educational programs • Mentorship 	<ul style="list-style-type: none"> • Innovation development • Business development and planning • HR/staffing strategy for innovation projects and early stage companies • Network development • Start-up initiation and development 	<ul style="list-style-type: none"> • Finance strategy • Intellectual property management • Licensing • Legal services and strategy • Funding • Advice and assistance with negotiations

III. The innovation development process

The figure below is an example of the steps in this process. Although this is represented as a linear progression, in practice it can – and should – involve iterations and feedback loops.



A. Idea

The ideation phase of development could occur over weeks or years, and is virtually always iterative. In fact, as innovations and businesses grow, foundational ideas continue to evolve and pivot. At IE, we are eager to learn about your ideas and research questions as early as you wish to share them. In the early stages of work on a new idea, we can help you understand what factors may be important going forward in terms of developing commercial potential, if that is important to you. We can also provide proof of concept funds and help you identify other funding sources.

B. Innovation Brief

We use an innovation brief to collect information from you about a mature idea. A mature idea is typically something that you, or we together with you, strongly believe has commercialization potential and will require protection in order to capture its value. At this stage, we work together with you to identify potential markets, to locate industry players active in related areas and to understand from potential end users whether the innovation has market traction. We want to clearly understand what your needs are in terms of speaking or writing publicly about your innovation. This stage could happen quickly, in a matter of weeks, or could evolve over months.



C. Innovation Report

An Innovation/Invention Report (IR) is requested from you, or prepared in cooperation with you. Up until this point, we have been working together with you to mature and develop your idea; an IR is the outcome of that work. The IR is an important and beneficial one, for a number of reasons, foremost among them being that the report format presses us to articulate the need your innovation serves, how you are approaching meeting the need, the benefits your innovation offers, and competitors or alternatives. These are principles that speak to the heart of whether the innovation is commercially valuable and also to the business case and value proposition around the innovation. Another reason this step is of importance pertains to faculty and other paid staff of the University. Terms of employment at the University require that inventions be reported to REI using an Invention/Innovation report. These same agreements also bind REI, as the representative of the

University, to evaluate the reported innovation and determine whether the University wishes to pursue commercialization. We are required to provide you with this decision within 90 days of receiving a signed IR. What happens next? See the FAQs in the next section for an overview of concepts such as patenting, licensing, inventorship and ownership.

D. Protection Strategy

In addition to market value research, the key activity REI performs during the evaluation of an Invention Report is assessing the appropriate protection strategy. This means looking at whether an innovation is patentable at all and whether patenting is the best way to protect the idea, or whether there is another more appropriate strategy such as maintaining secrecy around part of an idea. Alternatively, publishing the innovation can be a valid strategy in some cases.

E. Value Path

After the evaluation work on the Invention Report, we will be prepared to choose whether the best path to value for an idea or innovation is patenting and licensing, a start-up vehicle, or even a social enterprise. In many cases some or all of these paths may be activated concurrently.

REI is recognized locally and globally as an agent of change that kickstarts, develops, commercializes, and realizes innovative thinking that will have a major impact on society, the economy, and the environment. REI is seen as an enabling engine that transforms raw ideas into powerful real-world solutions.

IV. FAQs

A. What is the difference between an innovation and an invention?

An innovation can be any discovery, research result or novel knowledge-based process or product. An invention is a specific kind of innovation that is patentable. Not all innovations meet the patentability test, but these can still be of value, and can even be protected using other intellectual property protection strategies. See “What is patentable?” below to learn more about patentability. So, not all innovations are inventions, but all inventions are innovations.

B. What are intellectual property rights?

Intellectual property (IP) rights are the commercial rights to ideas, inventions and creations of the mind. This refers to intangible creations. For example, the intellectual property is not the portrait, but the right to reproduce the image. It is not the pill you swallow, but the formula for creating it. It is not the shoes you wear, but the brand name and logo attached to them.

Intellectual property rights provide you the right to prevent others from using the property; and the right to protect the integrity of the property. Just like other forms of property, intellectual property rights can be bought and sold. The most common types of IP encountered at the UofS are copyright, trademark, plant breeders’ rights and patents. Read more below about each of these. Other types of IP include industrial design rights and rights to geographic indications.

C. What is copyright?

Copyright is a limited-time legal right granted to the creator or creators of an original work for the exclusive rights to its use and distribution. Copyright protects original artistic, dramatic, musical and literary creations from being copied, broadcast or performed without permission. Copyright attaches upon creation, but it can be protected further with registration. Copyright also includes moral rights, such as giving an artist the right to object to her statue being incorporated into a holiday display, for example. There are limited exceptions to copyright, where fair dealing is applied to review the work, report on it, or to use it for scholarship and teaching.

The University of Saskatchewan respects the right of faculty members to own copyright in their publications and other works created in the course of their duties. The exception is for those works created at the request or direction of the University, such as administrative or publicity material. Copyright for such materials created by an employee in the regular course of their duties remains with the University as the employer.

D. What is a trademark?

Trademarks are symbols, words, logos or shapes that differentiate a product or service from its competitors. Running shoe companies are differentiated by their names (Adidas, Nike) as well as by their logos (the three stripes, the “swoosh”). The shape of Coca-Cola bottles helps consumers visually identify their products. There are also official, geographic or certification marks that help identify products as having certain qualities. Trademarks protect consumers from mistakenly purchasing the wrong products, and they protect businesses from having competitors take advantage of their advertising and good will.

E. What are plant breeders’ rights?

Plant breeders’ rights are also known as plant variety rights. These are rights granted to the breeder of a new variety of plant that provide exclusive control over any material used to propagate the plant (including seed, cuttings, divisions, tissue culture) and harvested materials (cut flowers, fruit, foliage). The breeder can choose to be the exclusive marketer of the variety, or to license the variety to others. In order to be protectable under plant breeders’ rights, the variety must be:

- New – it has not been commercialized more than one year in the country of protection.
- Distinct – it differs from all other known varieties by one or more important characteristic (e.g. height, color, etc.)
- Uniform – plant characteristics must be consistent from plant to plant within the variety.
- Stable – characteristics are genetically fixed, meaning they remain the same generation to generation.

F. What is a patent?

A patent is a tool to protect the intellectual property rights of an invention. The patent grants its owner the exclusive right to exploiting a discovery or an innovation. As a market tool, a patent can prevent third parties from marketing a patented idea for at least 20 years. Patents or patent applications can also be important in generating interest from possible industry collaborators or funding partners as we work to advance the development of your innovation.

G. What is patentable?

Patent laws typically require that, for an invention to be patentable, it must be:

- Patentable subject matter - scientific theories, mathematical methods, plant and animal species and inventions which are illegal or immoral, are all excluded from patent protection.
- Novel – at least some aspect of it must be new; if it was known to the public before an application is filed, it does not meet this test and cannot be patented. Improvements to existing patented inventions can sometimes be patented, however.
- Non-obvious or have an inventive step – asks whether the invention is an adequate distance beyond or above the “state of the art”. An invention could be determined obvious if someone “skilled in the art” – an expert in the area – would consider it an obvious step beyond what is already known.
- Practicable – to be patentable, the invention must, within reason, be able to be practiced. This doctrine prevents the patenting of fantastic or hypothetical devices. In Canada, patents are only granted for physical embodiments of an idea, or a process that results in something that is tangible or can be sold. In the US, an invention must provide some identifiable benefit and be capable of use. In the EU, patent law requires that an invention must have “industrial applicability”.

H. What is the cost of a patent and who pays for it?



The cost of a patent depends largely on where, geographically, we want to protect an innovation. Early protection can cost \$5000 or less, but is able only to protect your idea for 12 to 18 months so that you can develop it further before making more costly decisions. In order to go through all of the steps required to patent an invention in multiple countries, the process can take a number of years and cost hundreds of thousands of dollars. A patent strategy is needed before applying for a patent – Research Excellence and Innovation’s experts provide assistance with this. For innovations accepted by the University for commercialization after we evaluate an Innovation Report, the University pays patent costs. If the patent rights are licensed to a company, paying ongoing patent fees is often the responsibility of the licensee.

I. Who is legally an inventor?

Although we speak generally of innovations as encompassing many kinds of intellectual property, when considering patenting, inventorship is a legal concept dictated under international patent law.

An inventor is someone who contributes to the conception of at least one of the inventive claims of the patent. When two or more individuals collaborate on the conception of the invention, they are joint

inventors. To be a joint inventor, a person must be in some way responsible for at least a portion of the claimed invention, even by reducing it to practice or perhaps through problem solving that allows the invention to work or improves it. In contrast, an individual whose efforts are directed to the verification or testing, rather than to the conception of the invention, is not an inventor. Incorrectly naming inventors can cause a granted patent to be invalidated, so it is critically important to understand inventorship and represent it accurately when applying for a patent. We will help with this at the Innovation Report stage.

It is also worth noting how inventorship differs from concepts of ownership and authorship. Ownership of a patent can be dictated by contract. This can be accomplished by way of an employment agreement, as is the case with staff at the UofS, or through an assignment agreement. Ownership can also be agreed upon in advance of an invention being made, as is often the case when research is funded by an industry partner. Inventorship however is a legal conclusion that cannot be determined in advance or modified by legal agreements. Academic authorship is also distinct from inventorship in that authorship is commonly attributed to any persons who contributed to the work, for example in designing or performing experiments or in writing the manuscript. Not all authors listed on an academic publication necessarily meet the requirements for inventorship.

J. Who owns inventions created at the U of S?

The University of Saskatchewan and the University of Saskatchewan Faculty Association (USFA) have agreed that the University should have the first right to own and commercialize any invention created by faculty members on campus in the course of their employment. This applies generally to all paid employees creating IP in the course of their duties and using University resources. IP generated by undergraduate students is often an exception – this typically belongs to the creator.

Whether “institution-owned” or “inventor-owned” intellectual property systems are more beneficial is an open question. Some benefits of an institution-owned policy like that at the UofS are:

- Where Research Excellence and Innovation determines we wish to work on commercialization of an innovation, we undertake business development activities like market research and intellectual property protection strategy assessment. We work to develop industry contacts, and to locate potential licensees and funding sources. If required, we carry out patenting activities. We work with you on a start-up strategy if this is the best way forward, and help execute it. All of these services are free of charge to the innovator, and you may be as involved as you wish in the process.
- Members of our Research Excellence and Innovation unit are experienced in negotiating research agreements, contracts and licensing agreements. These are skills that individual innovators may not have, or would have to contract someone to provide. With no cost or personal risk to the innovator, if and when an innovation is successfully commercialized, innovator(s) receive 50% of any revenues (after commercialization costs are covered).
- When Research Excellence and Innovation evaluates your innovation for commercial or impact potential, we may conclude that the University does not wish to commercialize it. In such a case, we will assign the rights back to the innovator in full, resulting in an “inventor-owned” situation, where you are free to commercialize your product or service in whatever way you see fit.



K. Institution-owned vs inventor-owned IP

There are many institutions around the world and in Canada with inventor-owned IP policies. The most notable in Canada is the University of Waterloo, which is recognized as anchoring Canada's largest density of start-up and entrepreneurial ventures. This is most frequently attributed to the University of Waterloo's IP policy. The most oft-cited benefit of this type of policy is that it incentivizes IP creators to drive commercialization forward themselves.

In inventor-owned models, University commercialization offices are available to aid in commercialization on the condition that the IP is assigned to the University, and a share in profits is satisfactorily negotiated. This incentivizes the University commercialization unit to provide high quality service, because inventors are not bound to work with them by policy, only by choice, so the unit is subject to market forces and customer satisfaction measures. Inventor-owned policies are touted as useful recruitment and retention tools for entrepreneurial faculty and researchers.

Some of the challenges in an inventor-owned model are that IP created and owned by inventors who are not entrepreneurial may languish, and that licensing is often difficult because potential licensees must negotiate with individual inventors and are not guaranteed the inventor has experience in these types of transactions.

Many studies have been conducted comparing and contrasting the two models, and it remains difficult to find one that concludes one system is materially better than the other. Depending on the measure of success considered one or the other may fare better with respect to out-licensing, revenue back to the institution, economic benefit to the region, sheer numbers of start-ups, or numbers of successful start-ups. What becomes clear is that value can be generated for all parties under both systems, and the most critical factor is always the human factor – that the people working within the system use policy to drive value creation on a case by case basis, using the tools available in a creative and entrepreneurial manner that is informed by business-thinking.

L. What is a license?

A license is an agreement between the owner of the intellectual property (not necessarily the creator, as those rights may have been transferred or assigned to someone else), and somebody who wishes to use the intellectual property in some manner. For example, a license does not describe what happens when you buy a book, but a license is what happens when the author agrees to sell the movie rights to the story.

A license agreement will typically set out precise parameters of what can and cannot be done with the intellectual property. For example, a license agreement for a patent might set out the field of use (animal health but not human health); the geographic location (North America but not Europe); whether the licensee has exclusive use of the invention, or whether others are also allowed to use it (exclusive or non-exclusive and whether the license can be sublicensed); and how much the owner of the intellectual property is getting paid for allowing the other party to use the patented invention. A license is different from an assignment. An assignment is like a sale or transfer of the intellectual property; a license is like a rental – the licensee gets to use the property under certain conditions, but after the agreement terminates, ownership of the intellectual property reverts to the licensor.

M. Confidentiality and Material Transfer Agreements – What should I do if asked for one?

These are often referred to as “CDAs” (confidential disclosure) and “MTAs” (material transfer) agreements. Some organizations use the term “NDA” (non-disclosure agreement) instead of CDA. A confidentiality agreement is a legal contract between two or more parties that outlines information they wish to share with one another, but not with anyone else. This can be important to protect your intellectual property, and can also ensure that when you discuss it with the other party, it will not be considered a public disclosure. Material transfer agreements govern the transfer of tangible research materials between organizations. It is important to have an MTA in place when receiving or providing research materials to prevent disagreements or legal issues around the intended use. It is important that you contact us if these or other types of legal agreements are requested from you, because we can aid in negotiations, and we also take care of routing agreements for signature by the appropriate people who are authorized to sign on behalf of the University.

Please note that you can put yourself at risk by personally signing a legal agreement if you are not authorized to do so, and this can in fact invalidate the agreement.

N. What if I've already published or presented my innovation?

The largest risk to the protection of innovations is the hasty publication of research results. If we lose the ability to protect IP, it can prevent valuable solutions from ever reaching the people that need them. Please consult Research Excellence and Innovation for more information if you have already published or presented your innovation. Consultations confidential, and can assist us in together understanding possible paths forward to value for your innovation.



O. What is a conflict of interest, and how can it be avoided?

The University’s Conflict of Interest Policy can be found here:

<http://policies.usask.ca/policies/operations-and-general-administration/conflict-of-interest.php>.

The Policy sets out that each employee of the University has an obligation to ensure that they are not advancing their own personal interests in a manner contrary or detrimental to the best interests of the University. Conduct detrimental to the best interests of the University could include things like working on activities that compete with the University’s interests, activities that may damage the University’s reputation, or that could negatively affect your ability to carry out your duties.

The Policy expects that University members will conduct themselves with “the highest ethical standards in a manner which will bear the closest scrutiny.” One of the first steps is the requirement to seek guidance when a conflict or potential conflict arises.

As a University member, there are three responsibilities: to avoid conflicts of interest, to avoid the appearance of a conflict of interest, and to disclose potential and actual conflicts of interest. If you believe you may be involved in a conflict, consult your dean or department/unit head. It might also be helpful to keep our office informed of the status and your plan to avoid conflict.

V. Our doors are open

We endeavor to be available and present on campus in your departments and at events, and are always interested in learning about your work and ideas. Now that you have more knowledge about Research Excellence and Innovation and the services we offer, please feel free to come and meet with us.



Below, we have listed a number of questions that we would like you to reflect on to assist you in preparing for an introductory meeting. These are the type of questions we will be keen to discuss with you.

- Please describe your innovation in terms a layperson would understand.
- At what stage of development is your innovation? For example, is it a theoretical concept, is it under research or development, is there a prototype available?
- Who will use or benefit from your innovation? Describe who the potential client or user is.
- What need or problem does your innovation solve?
- How would your innovation meet needs in ways better than existing solutions?

VI. Toolbox

Below are some tools that you may find useful; you can always visit our website for more information like this, and information on our programs, events and services.

Idea creation and development tools:

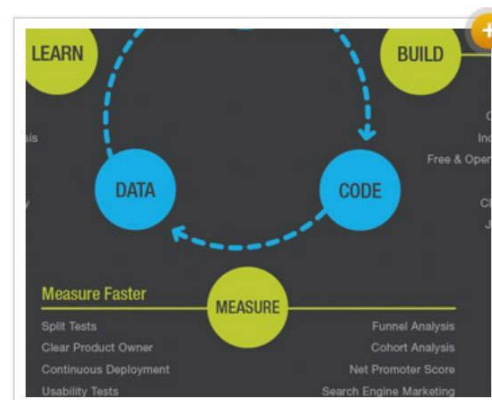
- “User-centered” or “human-centered” design is a set of paradigms that encourage looking at a problem or solution from the end-user’s perspective and which teach the use of agile or lean thinking principles of fast-cycle prototyping, user testing and iteration paired with empathetic thinking centered on the needs and desires of the end-user.



- Stanford University’s d.school is considered a leader in programming for learning Design Thinking, a popular form of user-centered design.
<https://dschool.stanford.edu/>
- Interaction Design Foundation captures the Design Thinking process well, and explains when and why it can be useful.
<https://www.interaction-design.org/literature/article/what-is-design-thinking-and-why-is-it-so-popular>

Product development tools:

- The Lean Startup methodology employs the philosophy that entrepreneurs are everywhere. An “MVP” – minimum viable product – must be developed based on a strong problem statement, and then the method encourages establishing a “build-measure-learn” iterative approach to product development.
<http://theleanstartup.com/principles>

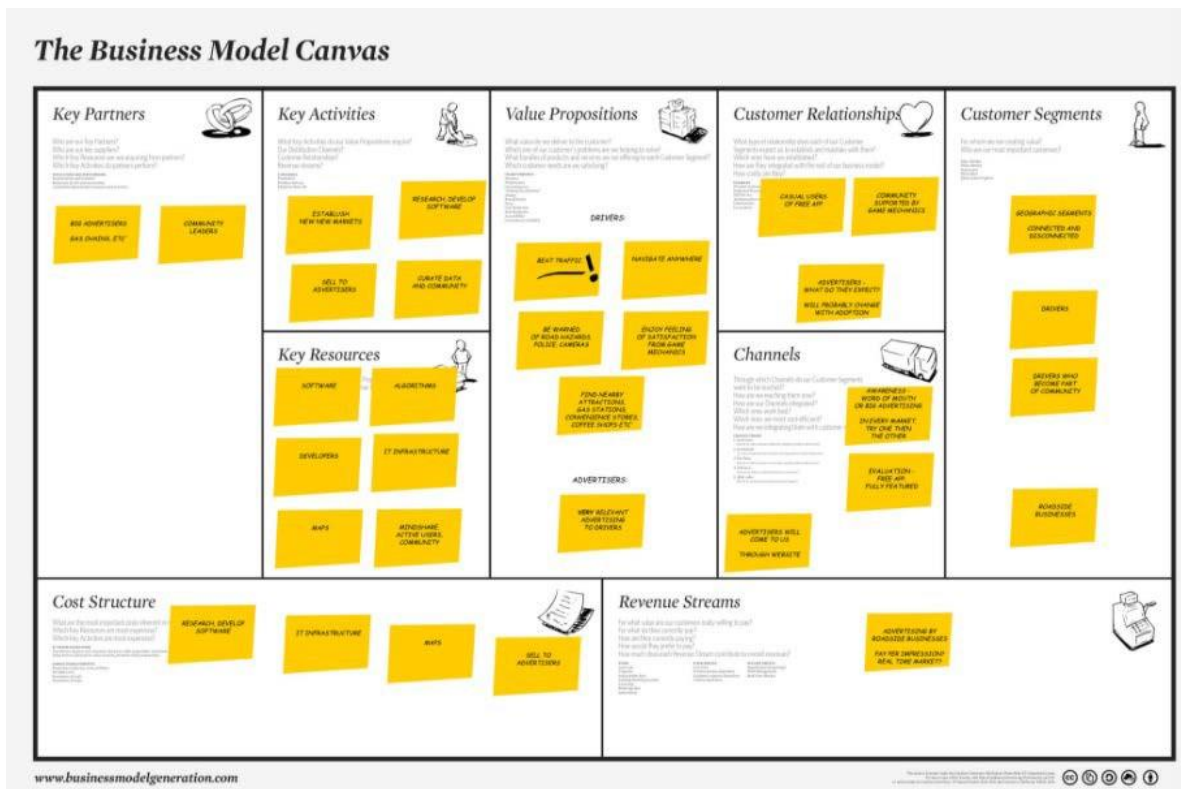


From theleanstartup.com

CONTINUOUS INNOVATION

Business planning tools:

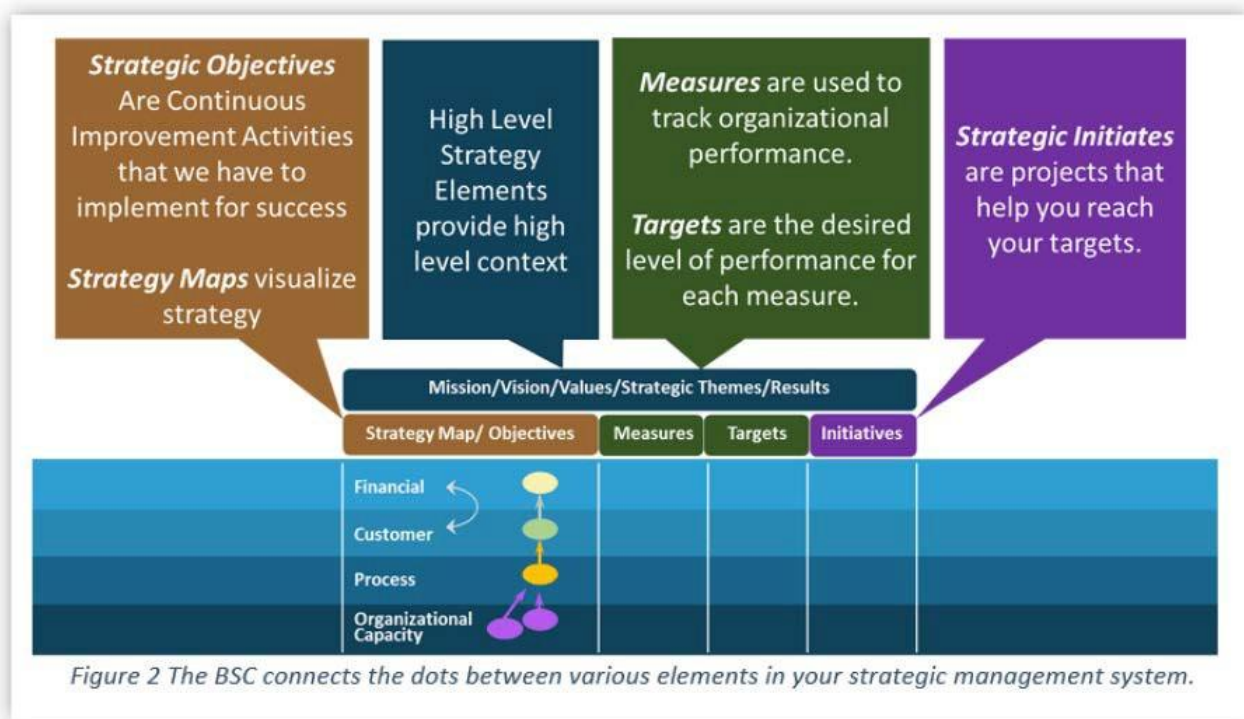
- The Business Model Canvas has been referred to as the “20 minute business plan”, but this is more likely to refer to the time it takes someone from outside the business to read and understand it. It is a deceptively simple tool that prompts business thinking and demands absolutely concise content creation, meaning that a great deal of background work has to go into it. <http://diytoolkit.org/tools/business-model-canvas/>



- Another method of structuring new business ideas, also from Stanford (the Stanford Research Institute) is called the NABC approach, where the acronym stands for “needs, approach, benefit, competition”. This is another useful way to probe and summarize your business idea and employ business thinking practices important especially for complex or research-based businesses. It demands the use of plain language, and requires business research (market analysis, competitive analysis) to complete. <https://nielschrist.wordpress.com/2012/07/13/the-nabc-method-standford-research-institute-sri/>

Strategic planning tools:

- The Balanced Scorecard is a business strategy planning system that is designed to introduce measures of strategic success other than a financial bottom line. It classically uses four perspectives to guide goal setting, measures of success and task planning.
<http://www.balancedscorecard.org/BSC-Basics/About-the-Balanced-Scorecard>



From balancedscorecard.org

Further reading:

More information on legal topics covered in this guide can be found online:

The Canadian Intellectual Property Office

<http://www.ic.gc.ca/eic/site/cipointernet-internetopic.nsf/eng/Home>

The United States Patent and Trademark Office

<https://www.uspto.gov/>

Contact Us

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