



**Asia-Pacific
Economic Cooperation**

Handbook for APEC Independent Inventors

APEC Intellectual Property Rights Experts Group

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This Handbook for APEC Independent Inventors provides information to help turn an individual invention into an innovation, thus into a profitable business.

The Handbook has been conceived based on the outcomes of surveys, interviews and the analysis of the information about policies and programs on innovation and intellectual property conducted among certain APEC economies. It also contains lessons learned and best practices from specific APEC successful independent inventors' cases. The results are analyzed and presented taking into account the particular features of the economies within the intellectual property and independent inventors' field. These features, highlight common and different elements that may allow to establish guidelines for other inventors, as well as to propose public policies.

1.1 Purpose of the Handbook

This Handbook has been prepared to inform and guide APEC independent inventors about the processes, information, legal implications and resources available to them in the APEC region to increase the opportunities of leading a patented invention into the market. It is not all inclusive or intended to provide strict interpretations of a methodology; rather, it compiles all relevant information about bringing an invention to fruition that is easily referenced. The ultimate goal is to avert knowledge hoarding, and give inventors access to current and relevant information.

1.2 Chapter summaries

Chapter 1 shows the obstacles inventors normally face, and the ways to overcome them globally and in APEC economies.

Chapter 2 examines the market potential of an invention and the conditions to successfully confront competition. It includes research guidelines to study the competition when entering the market.

Chapter 3 provides the stages the inventor must consider to launch an invention into the market: technical, financial, strategic, and legal aspects involved in the invention.

Chapter 4 provides the team considerations when introducing a product to the market and the problem of financing. This includes:

- How much money the inventor requires
- If the inventor needs external funding
- Different ways to obtain the financial resources to start the business

Chapter 5 provides the different government regulations related to an invention. This includes authorizations, licenses and permissions requested before beginning the product commercialization along with the consumer protection, advertising activity regulations, and rules on taxes to be paid to the Government for the commercialization of the invention.

Chapter 6 provides arguments to choose a correct commercialization strategy.

Chapter 7 provides recommendations to prepare a business plan with stakeholder engagement, and its principal components: summary of findings, the methods to obtain loans, the business structure, marketing plan, target market and merchandising strategy, competition and pricing, and financial projections.

Chapter 8 provides the different aspects of a licensing contract with an enterprise.

Chapter 9 provides aspects of invention commercialization and definition of a marketing strategy.

Chapter 10 provides the process to protect and defend the invention in the global market.

Inventors are very creative people who observe a problem and envision a solution. Practically anyone could be an inventor because the first step on the path to inventing is to face or identify a problem or need and then propose an idea to address and solve this need. However, ideas cannot be patented. For many individuals the path to invention stops there; but it doesn't have to. Frequently, what is needed is help in collecting thoughts and a small push in the right direction. In fact, many people are surprised by what is required to be an inventor and to have an invention capable of being patented. To get a finished product into the hands of the end consumer requires product design, engineering, manufacturing, packaging, advertising, shipping, compliance with laws and regulations. To do all these things requires cash and non cash resources.

2.1 Challenges for inventors

Independent inventors face a number of different challenges and difficulties when embarking on an inventive project. Often these challenges are linked to two particular areas.

In the first place, the ability to mobilize and/or raise financial and non financial resources for the construction of the prototype that will turn the idea into a product and that will allow to validate its functioning capacity. And second, and probably the most important challenge, will be the definition of the strategy that will be taken into consideration for driving an invention to the market.

In any of these areas, having a clear business sense or acumen will be more important than all the technical skills an inventor might possess. Business sense is referred to the ability of a person to think and take the most appropriate decisions based on the environment and market available information, for the benefit of a particular project. Precisely, all inventive initiatives from independent inventors should be considered by them as business projects itself, due to the fact that time, effort and money are being invested to expect higher returns given a certain period of time.

Taking this into account, independent inventors must be able to identify and recognize their own characteristics, strengths and weaknesses as head of a business project, as well as to analyze the endowment of resources they have so as to invest in an invention. Only in this way, they will be able to estimate what competencies, skills or resources are further needed to be explored from third parties to achieve success within their products.

2.2 Checklist for success

For an invention to succeed in the market, the following four elements are necessarily required:

Creativity

Inventive success is more of a continuous process. Nearly every unworkable idea can be recycled or reused as valuable information to feed the next great idea. Innovative companies know they need an ongoing supply of creativity from independent inventors to develop new products to serve the marketplace.

"We're just as likely to find an invention in a garage as in our labs."

- A.G. Lafley, chairman of Procter & Gamble, Fortune magazine, 2004

Marketability

To take an invention to market, independent inventors refine the design and function to appeal to customers. This implies a previous process of identifying potential customers. The inventor targets buyers who constitute the market and determines its customer volume. Inventors should identify and clarify the needs of the potential customers for his products. Once an inventor identifies customers, he/she can ask them about the product. The sooner the inventor identifies the market, the more successful the product will be.

Credibility

Companies or investors will invest in a new product with legitimate sales potential. Inventors need to be credible enough to convince the company their invention will sell. An inventor gains this credibility by providing actual sales and/or doing market research.

Patentability

Companies do not license raw ideas, they license patent inventions. For companies, a patent is the guarantee they will exclusively use and manufacture the patented product to recover their investment. The patent serves as a guarantee that the company will not be sued by a third party. In another way, the patent is the certification that the corresponding Patent Office has performed a patent search and that anything identical is already in the state-of-the-art nor in the market.

3.1 Market analysis

A crucial decision for an independent inventor is to choose between:

- Developing the invention on its own and entering the market to compete, or
- Getting another to buy the rights to production and distribution.

In any of these cases, the inventor must put together a convincing package that includes:

- Market analysis
- Specific ways in which the product or service will reach customers, and
- Demonstration of the benefits of the invention for the customer

If these steps are not performed, it is more likely that the inventive adventure will be unsuccessful, whether alone or pursuing an agreement with investors.

Market analysis is key for invention. It determines the level of competition that an inventor will face, methods to deal with the competitors, who and how many customers are to be captured, and their purchasing capacity, among others. In short, the market analysis allows to conclude if it is worth developing the invention, regardless of the level of the technical discovery.

An invention may be very innovative, but it *has* to be profitable and useful for entrepreneurs (for the inventor itself if he/she chooses own production and marketing, or for a third party if a license have been granted). The invention must be better than that of the competition. Companies and investors must be convinced that an idea is a lucrative business opportunity, with an acceptable level of risk.

The response of the market to the new product can be a surprise, so the inventor should understand the possible product impact. The following example shows the impact of a new product:

Before the Band-Aid, gauze and tape were the accepted solution for bandaging scrapes and cuts.

In 1921 Earle Dickson, a cotton buyer for Johnson & Johnson, noticed that his wife, Josephine, kept cutting her fingers when she was preparing food. (...) Armed with the image of a real consumer and an everyday problem, Dickson began a series of experiments that led to the invention of the Band-Aid brand bandage.

When Dickson's boss at Johnson & Johnson saw the early prototype of the Band-Aid, he was thrilled. He decided to bring it to market, and even made Dickson vice president of Johnson & Johnson for bringing him the idea. After all, the potential audience was huge—who hasn't cut a finger? But here comes a lesson in the realities of inventing. During the initial years, Band -Aid sales were surprisingly *slow*. Dickson's vision of the users (housewives) was sound, but he met with an obstacle most inventors face: consumers are often reluctant to change their way of doing things, even when a better way is offered. Housewife consumers were not seeking a solution to a problem they felt they already had solved: they had tape and gauze in their homes. Why should they adopt a more expensive solution? And what was the incentive for a retailer to carry a new product when consumer demand hadn't been created? (...) It wasn't until Johnson & Johnson made the marketing decision to give free Band-Aids to Boy Scout troops as a publicity stunt that sales soared. These impressionable miniconsumers took the product home and asked their parents to buy them. Excited children

who had no reservations about trying something new were just the push their parents (and Johnson & Johnson) needed¹.

The take-away is that to bring a product to the market it is completely necessary to think like a consumer. Market analysis can provide this particular perspective.

3.2 Market potential

Market potential is defined as the size of the market for a specific product; the sum of all sales of companies competing in that market. It is the target market identified when developing and launching a new product. Every person, entrepreneur or company will aspire to capture a share of this market in order to generate sales in a sustainable way.

Therefore, it is important that independent inventors understand and estimate the market potential for their new products with the purpose of assessing their capacity to compete in such markets. Information about competitors and competing products will be extremely helpful in this respect.

Similarly, it would be valuable to examine market trends to forecast the product's future. For instance, the review of physical books is currently being replaced by electronic publications, statistics or papers².

Both, market potential as well as market trends will help in determining and predicting profitability of a project. If the profit per unit is low, then sales volumes must be high or, if the business will be low in sales, the profit margin per unit must be high enough.

¹ FOREMAN, Jill/GILBERT Welytok. 2015. The Independent Inventor's Handbook. Workman Publishing.

² The market growth rate can be determined with the figures of the last five years, which can be found on the Internet.

3.2.1 Research guidelines

There are three elements to be considered when studying competition in a market.

A. Identify competitors

Usually, when a new product or service is being introduced to the market, entrepreneurs will tend to think locally. However, today markets are global and products can be made available worldwide in a matter of days or months. Therefore, inventors should utilize the Internet to search and analyze world competitors with products and technologies similar to those developed.

Other places to search are specialized stores, catalogs, industry magazines, exhibitions and trade fairs. This allows to learn about new products, but also to determine what people are buying.

Without revealing the characteristics of a new product, inventors can also talk to people who work in trades or professions related to the invention. Try to understand their products and methods, and why customers use them. In particular, retirees can provide valuable information they could not divulge before when they were working.

B. Estimate the power of competitors

It is essential to collect all the information about the inventor's competitors. In particular, to determine the profitability of competitors' products or services. Try to estimate their participation percentage in the market (growing or shrinking), how often they improve or introduce new products, their marketing expenses, their geographic sales areas, means of product distribution, measures to increase customer loyalty, and their prestige/dominance in the market.

C. Possibility of winning a share of the market

If the price of a new product or service is not lower or similar to the market average, it would be difficult to enter and compete, because competitors have already a price supported by the market; unless some features can be distinguished. In either case, investing resources in marketing/advertising/publicity is key for being recognized and win a share in the market.

It is important not to underestimate competitors ability to defend their market share. They know and have previously overcome challenges difficult to imagine before entering the market. They may have gained experience, prestige and, with it, customer loyalty resulting in resistance to abandon an existing product for a new unknown product.

One could be sure that a product or service is superior to those of competitors and that it can be commercially viable. However both, the time needed to enter the market and how fixed costs are to be covered over a period of time must be considered.

For licensing an invention, the key question will be whether a company or an investor will consider it valuable enough to allow them to capture a significant part of the market in a reasonable period of time. The inventor is often enthusiastic about the invention, but such enthusiasm is not always shared with the potential licensee or with a large consumer sector, resulting in the market being small and not profitable.

Market structure is also an important element to consider. If the figure of a monopoly exists (only one producer) or an oligopoly (very few producers), the profit margins may be higher. However, it will be crucial to analyze how competitors defended its market in the past and the tactics they took. In those markets of several competing producers, it may be more difficult to enter and stay, resulting in a lower profit margin.

If the market is stagnating or shrinking, it should only be entered if one can offer such a dramatic technological change that it is capable of relaunching it.

The final areas to review are the technological, social, regulatory and legal environment. There may be changes coming that will alter the market and eliminate profitability. For example, in the case of the regulatory environment, it should be important to determine whether a product meets the requirements established by national or international legislation, since the cost of obtaining approval can be high and compromise the feasibility of developing an invention.

The case of “CANTOL”



The story of the independent inventor **Raúl Cánepa** (Peru) is the example of how many inventions are the products of the need to solve a practical and daily problem. In his house, he used to protect the main door with a bar that crossed the door horizontally and that was placed inside the house. But this meant that if one wanted to leave the house it was not possible to put the door lock into operation. For this reason, with the intention of finding a solution to this problem and not wanting to stay inside the house to prevent it from being trespassed, he devised a mechanism to secure the door but making the lock mechanisms work from outside the house, so that the lock was self-blocking.

Once he devised this new mechanism, **Raúl Cánepa** patented the product and looked for possible people who could finance his project, make a prototype of the invention and commercialize it in markets.

Raúl Cánepa knocked on many doors, family, friends, banking institutions, all with the goal of financing the production of the mold. At that time (the 70s) in Peru, there did not exist public financing programs for prototyping or commercialization of inventions and innovations. A local bank offered to finance his projects, but the problem was that the bank did not know how to assess the value of the invention.

Finally he decided to move forward with his project. In a well-known national fair, he obtained a booth to exhibit a raw prototype of his invention and received so many orders of production that he was able to estimate a high demand for his product. According to **Raúl Cánepa**, the reason for the success and acceptance in the market of his invention was because the product came to satisfy a market need. Subsequently, he has developed other related inventions, but these has not been as successful as the original. In these cases, Raúl Cánepa failed to carry out a market study and analyze what market demand or need his new products had to satisfy.

To formalize the production of his invention, **Raúl Cánepa** started his own company, and began to commercialize his invention. During many years, he had about 14 workers. Only with the entry of their sons into the family business and a much professional business and marketing vision they had, the company has grown to 450 employees. In addition, for a while, they exported their production to neighboring markets

To the extent that the security mechanisms are quickly overcome by the market, it is necessary to constantly look for new solutions to the problems that the market faces. For this reason, **Raúl Cánepa's** business is still developing and improving the security products he produces.

Even though there are several stages that must be considered when developing and launching an invention to the market, those which are key are referred to the prototype building, product design and evaluation, as well as the product manufacturing itself. The prototype aims to demonstrate the invention usefulness and functionality, while the final product should be the ultimate design and version that will be ready for its commercialization.

In these stages, independent inventors must take into account technical, financial, strategic and legal aspects in order to increase possibilities for a smooth insertion into the market.

4.1 Prototyping

The prototype is an executable representation of a product. It can be a physical object, or a model. With prototypes and associated feedback, inventors and designers can effectively explore the dichotomy of ideas versus functional requirement. With a prototype, the inventor can test how inventions work and then receive feedback from users before developing the final product.

Creating prototypes may involve using readily-available-materials, construction kits, storyboards, modeling software, or other techniques that help the inventor create a quickly low cost solution.

The creation of a prototype will depend on the type of invention that is being developed. The prototype of an equipment, another of food or one that involves software, will have a different approaches based on their own characteristics and particularities.

4.1.1 Importance of prototyping

Prototype development is extremely important, particularly for independent inventors, due to the following considerations:

- Allows to know if a certain product will work as expected.
- Helps to recognize and address technical problems from early stages of product development.
- Facilitates the implementation of specific improvements that needs to be done to the development and/or design of the product.
- Allows the inventor to assess development costs, as well as skills, timing and resource requirements for product development.
- Helps collecting suggestions and/or recommendations from potential users or third parties who have been related or have tested the prototype.

4.1.2 Kinds of prototypes

There is quite a vast literature about the different modes of prototypes that can be built by independent inventors to bring their creations into practice. From sketches or proof of concept to scale models or virtual representations. Regardless of the various types that could be imagined, prototypes can be categorized under the following items according to their final purpose:

- Exploratory: these are prototypes that clarify the objectives of a project, identify its requirements and examine alternative in designs.
- Experimental: these are prototypes used to validate the specifications of a particular invention.

- Operational: these are iterated prototypes that are progressively refined until they become the final system.

It is important to note that prototypes are also characterized by their level of fidelity. This implies the appearance on how the final product is going to be transmitted (basically, its level of detail and realism). Hence there are prototypes of low fidelity (very basic developments) as well as of high fidelity (more use of technology and greater sophistication for their development).

In addition, prototyping can be developed based on its depth level. There are two kinds in this regard. Vertical prototyping, which includes few features, but its functionalities are fully implemented. Although this prototyping tests a limited part of a project, it can be analyzed very deeply under real circumstances. On the other hand, horizontal prototyping, which includes all the characteristics of a project, but does not contain underlying functionality. Therefore, in a prototype of this style no real work could be done (horizontal prototyping is used more frequently in early stages of the development process, when working on the actual functions of the product has not yet begun).

4.1.3 Dimensions in prototyping

There are four kinds of dimensions that must be taken into account for the development of prototypes of inventions or products:

	Dimension	Questions to answer
1	Executability	Will the prototype be runnable and, if so, to what degree?
2	Maturation	Will the prototype be improved through stages? If so, will it eventually become a final product?
3	Representation	What level of fidelity will the prototype achieve?
4	Scope	Will the prototype be limited to specific areas of functionality?

4.1.4 Technical recommendations

Every inventor must determine the most suitable prototype to develop, so that it is aligned with the type and characteristics of the invention he/she has generated. A high-fidelity prototype will require a considerable amount of time for its assembly and, probably, it will result in a high cost or use of scarce valuable resources for the inventor (cash, equipment, among others). On the other hand, a low-fidelity prototype could be counterproductive to show the functionalities of a certain product. Therefore, the most successful and balanced model must be found to construct a useful version of the invention.

The following table exemplifies characteristics of three different prototypes for reference purposes, giving their objectives, types and the tools that can be used for their manufacture.

Table 1: Characteristics in prototyping

	Objective of prototype	Kind of prototype	Tools to build prototype
Software	To model the behavior of a system.	User interface prototyping: screen models. Fuctional (operational) prototyping: implements some functions, and as it is verified that they are appropriate, corrected, refined and others. Performance models: evaluate the performance of a critical application (they do not serve the requirements analysis).	High level dynamic languages. Fourth generation languages - 4GLs (BBDD programming). Assembly of components and applications.
Appliances and equipment	Reflect the pyshical characteristics and properties of the product.	Physical design of the product. Digital design of the product, scale models.	Various materials are used: wood, plastic, among others. May include product modeling through software.
Food industry	Formulation and process trials with the raw materials, ingredients and processing and conservation treatments defined.	Produced by machines (kitchen scale) or by hand (laboratorial formulas) defining in detail the exact formulation of the product, composition and nutritional value, color, texture, shape packaging and storage temperature.	Different ingredient to make a product.

Source: Own elaboration

In general terms, it can be noted that the objective of a software prototype is to observe the behavior of an information system as a whole; thus, the inventor can try some functions to evaluate the application. In the case of the mechanic or electric engineering devices, prototypes consist in a physical product that reflects the main features of the invention. On the other hand, in the food industry, prototypes are formulas and processes that will allow obtaining food or ingredients.

In any case, an inventor must evaluate whether the development of the prototype will require specialized technical support for its execution and, ultimately, determine the characteristics that are to be tested. For example, a prototype could focus on:

- The distribution model of the invention or,
- Make users aware about the product or service.

When prototyping does require technical assistance, the inventor must seek to make alliances or sign specific contracts with:

- Individual experts
- Universities
- Companies specialized in prototyping

If a prototype does not require specialized technical assistance, then the following options can be explored to reduce certain costs:

- Application of new technological options (for example, specialized software for the design and simulation of products)
- Use of 3D printers to create products.
- Approach small companies or workshops, well-known professionals or universities that may provide industrial components or pieces of existing products necessary to manufacture the prototype.

If the prototype development costs are high, the inventor can explore approach and contact with university professors, independent professionals or even governmental institutions, available in the economies, that can collaborate in the prototype development.

4.1.5 Funding prototyping

To advance in the development of a prototype, an independent inventor must perform a comprehensive mapping and investigation analysis about financing options available, both at the national level (through public and private funds or organizations), as well as internationally (for example, by applying to global or regional innovation competitions).

For instance, in the United States there is a private company called uFluidix, specialized in the commercialization of new manufacturing technology for affordable production of microfluidic devices made of silicone (PDMS). uFluidix founded The Microfluidic Circle, a community made up of companies, investors, mentors and researchers from the microfluidics industry. This organization has a fund known as The Prototyping Grant that offers individuals or legal entities from any economy, free design and manufacturing services up to US\$ 50,000 for the development of microfluidic prototypes, based on certain criteria.

In a similar way, within APEC economies (and also in non-APEC economies) there might be a number of programs or funds that can allow independent inventors to raise financial resources or technical services for prototyping development purposes.

Table 2: Example of a private prototype financing program in APEC

Institution	Type of institution	Economy	Name of Program	Description of Program	Website
The Microfluidic Circle	Community of individuals and companies that work towards fostering commercialization of microfluidics research results	United States	The Prototyping Grant	The winners of the Prototyping Grant obtain free design and manufacturing services from uFluidix for the development of their prototypes	http://circle.ufluidix.com/

Source: Own elaboration

The following table presents a set of financing programs available at APEC economies under the administration of public institutions. In general, resources offered are aimed at providing technical assistance and/or financial aid in order to contribute to the development of functional prototypes (including commercial validation) for independent inventors.

Table 3: Examples of prototype financing public programs in APEC

Economy	Name of Program	Brief Description	Institution	Website
CHILE	Start-Up Chile (SUP)	Public startup accelerator created by the Chilean Government for high-potential entrepreneurs to bootstrap their startups and use Chile as a foundation. Today, Start-Up Chile is the leading accelerator in LATAM, among the TOP 10 globally, and one of the biggest and most diverse startup communities in the world	CORFO	http://www.startupchile.org/
	CORFO	More than 30 financing programs for different stages of development	CORFO	https://www.corfo.cl/
REPUBLIC OF KOREA	Support for the Production of Prototypes	Boosts inventors' morale and helps commercialize inventions by providing government financing for manufacturing pilot products. Funds of up to 50 million Korean won or 70% of the total costs are provided	Korea Invention Patent Association - KIPA	https://www.kipa.org/english/biz/support_a.jsp
MEXICO	Sectoral Funds	Development of industrial sectors	CONACYT - National Council for Science and Technology	https://www.conacyt.gob.mx/index.php/fondos-y-apoyos/fondos-sectoriales
	Mixed Funds	Development of Mexican States	CONACYT- National Council for Science and Technology	https://www.conacyt.gob.mx/index.php/fondos-y-apoyos/fondos-mixtos
PERU	StartUp Perú	Provides seed capital for startups. Strengthens the ecosystem by providing funding for incubators, angel networks and venture capital funds. Seed Capital Competition for Innovative Ventures finances with non-refundable resources (RNR) of up to S / 50,000, projects of up to 12 months to validate and commercialize an innovative business model or one based on product, process, service or commercialization innovations, which must	Ministry of Production	http://www.startup.pe/

		have with a Minimum Viable Product (PMV)		
PHILIPPINES	Industry-Based Invention Development (IBID) Program	The Program involves technical and financial assistance for the fabrication of a commercial prototype model for initial commercialization of inventions	DOST-TAPI	http://www.tapi.dost.gov.ph/programs-and-services
	Testing and Analysis Assistance Program	Aims to assist technologists, inventors and researchers avail of the laboratories and facilities of Research and Development Institutes (RDIs), including regional offices and other government agencies, offices and instrumentalities	DOST-TAPI	http://www.tapi.dost.gov.ph/programs-and-services

Source: Own elaboration based on data provided by the APEC economies

It is important to mention that in those APEC economies that have been analyzed to prepare this Handbook, grants focused on prototyping for individuals are not very common, since these are more focused on technological startups and companies. The experience of some inventors interviewed, as well as other studies on the subject, reveal that, in many cases, the requirements for obtaining prototyping funds are complex and have very difficult administrative procedures for compliance, affecting the effectiveness for receiving support.

However, in some cases, few of these funds involve different organizations linked to industry, commerce, science and technology, intellectual property and others key areas. In this way, the participation of such institutions may allow independent inventors to receive more adequate and comprehensive technical and financial support.

4.1.6 Legal recommendations

Prior to the manufacture of a prototype, it is extremely important for inventors to obtain legal advice to allow them to safeguard their own interests. Thus, in case a prototype is built by a company, organization or a technical specialist hired by the inventor, it is recommended to sign a confidentiality agreement between the parties, in order to avoid disclosure of information regarding the invention.

4.2 Product design and re-design

Beyond that inventions seek to solve technical problems, or to address particular needs in people, industries or sectors, they must always adopt a particular design.

Design is a very important component in the development of any product or process, since it represents the external or aesthetic appearance of things (look and feel); that is to say, it constitutes

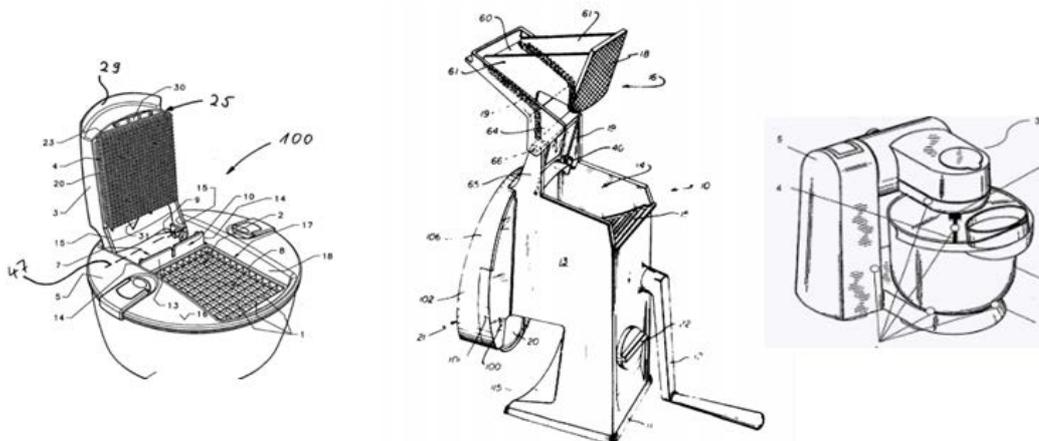
the "face" of an invention before the eyes of the consumer so, while allowing to attract the attention of possible buyers, it must also offer security, ease of use and general comfort for the user.

In the case of inventions related to mechanical or electrical engineering, for example, devices, tools, appliances, equipments or instruments in general, these should not only provide a technical solution to a technical problem (a greater efficiency, less use of energy, among others). They must also be easy to manipulate, maintain adequate measures for comfortable use (size, weight, materials), as well as an appropriate aesthetic to capture the interest of the target audience (lines, color, among others).

For instance the invention of a new machine to cut food should not only make cuts in a more advantageous way compared to similar products, but also it should have the correct size, right colors, optimal ergonomics and be user-friendly according to the identified needs of potential clients.

Patents of food slicers shown below are different options for solving a common problem: cutting food at home or restaurant. For a consumer to decide on the best product to be acquired, he/she will evaluate not only the cost of the product, but also features such as size, ease of use, design that best suits his expectations, among others.

Figure 1: Patents: food slicers



In the case of the procedures to make some type of ingredient or food, the appearance, taste, type of presentation or packaging will be extremely important elements for future commercialization within the market. In other words, the design "appeals" and it is intimately related to the consumer.

For all these reasons, companies that manufacture products rely on industrial designers to incorporate the "attractive" external aspects necessary to lure consumers.

Precisely, the development of aesthetics is what every independent inventor must consider as necessary to be included in any inventive project, in particular for the aspirations of driving a new product to the market. This usually takes place after the final prototype has been developed demonstrating the advantages and functionalities of the invention.

The case of “Portable Uni-h Water Purification”



Inventor **Rodrigo Duque** (Philippines) won the grand prize in the Regional Invention Contest and Exhibits' (RICE's) for his invention, "Portable Unihoused Water Purification and Sterilization Apparatus" in 2017. The RICE is organized by the Department of Science and Technology and drew a total of 51 competitors. In 2018 he also won the National Invention Contest and Exhibits (NICE) prize for an outstanding utility model. Duque's utility model addresses the problem of potable water during times of disaster or calamity. The portable apparatus provides an instant source of safe drinking water from a utility source, deep well, rain, spring or river water. It uses a special filtration process to remove water contaminants and sterilization using Ozone/UV Advance Oxidation process, killing all types of bacteria, viruses and oxidizing chemical contaminants.

Powered by a 12 volt DV car battery and housed in a heavy duty, water proof and shock resistant carrying case with heavy duty handles, door locks and wheels, the apparatus can be easily carried by two people to a disaster site.

Rodrigo Duque developed his invention because the Philippines constantly suffers from a series of natural catastrophes and good drinking water is one of the biggest problems.

In the opinion of Duque, the main problem independent inventors' face is financial and State funds are minimal. More commitment from the State is needed. Duque and other Filipino inventors are trying to convince the Government of improvements, for example, funds for inventors should be channeled through the Office of the President and not the Department of Science and Technology.

Duque was also awarded with a World Intellectual Property Organization (WIPO) medal, a P200,000 (approx. 4000 US\$) cash prize from the Dept. of Science and Technology and will participate in the 47th International Exhibition of Inventions in Geneva, Switzerland next April 10-14.

Although the recognitions and prizes are a great incentive for the inventors is not a guarantee that the invention can be commercialized successfully. This can happen even if the invention has a big impact on the population. If you do not have the necessary capital to produce the invention, make the prototype, mark it appropriately, or do not want to assume all these risks, it is best to find a licensee. This is what Duque is trying to do. In Geneva, he will be looking for international investors. However, finding and contacting the right licensor is not easy, requiring special skills to identify them. Duque believes that the problem of drinking water is widespread across countries, meaning that it should not be difficult to obtain investors. A good option is to seek nongovernmental organizations that deal with the water problem.

The licensor is not only concerned with the invention itself, but also its design. This varies depending on the type of invention. However, without a good design, it is often difficult to market the product successfully. This was the case of Hernán Garrido Lecca (Peru). Garrido-Lecca - like Duque - won a series of awards at the national and international level for his ice bucket (with a lid that allows to remove ice one by one). To market it he had to overcome a series of obstacles. He convinced an entrepreneur to finance the prototypes and had a large supermarket chain in Peru sell the ice bucket. However, the product did not achieve the expected success, mainly because the price of the ice bucket was higher than others. Later, with the support of the company where he worked, he contacted an American businessman, who was very enthusiastic about his product, but asked him to improve its design and to file a patent in the United States.

In this case, it is better to work with companies specialized in industrial design. Garrido-Lecca received help from consultants and thus choose the appropriate material, color and style to make his product attractive to the public. Generally, the cost of a good design is very high. Unfortunately, in Peru and in the Philippines, there are no support programs for adequate product design development. Garrido-Lecca's option was to negotiate with the licensee to assume this cost and the cost of the patent filing in exchange for future possible royalties. Currently, the ice bucket is sold worldwide by the American company Oxo Good Grips. It offers a varied line of home products.

4.2.1 Legal considerations

In contracts with industrial designers (to improve the external appearance of products), the assignment (cession) of industrial property rights of the designs to the contracting company may be included. In some laws, designers have the right to be included in the applications as creators of the designs. However, this does not give them pecuniary rights over them.

4.3 Product evaluation

Any new product or process that seeks to achieve commercialization (or even that seeks to attract the attention of potential investors or business partners), must be evaluated or analyzed in detail at some point to determine their particular properties, limitations, advantages and technical disadvantages, as well as their possible behavior and perceptions within the market.

In this sense, independent inventors must be able to understand and handle this type of knowledge and information about their inventions, especially once they have an advanced version of the product's prototype, so as to provide feedback on their development and increase their commercial success opportunities.

4.3.1 What to evaluate?

Although each invention corresponds to a different case that merits a particular evaluation, in general terms analysis to be performed by independent inventors in their new products or processes should include the following matters:

- Design of the invention
- External and internal characteristics of the product (physical, chemical, and others)
- External variables that influence the quality of the product
- Advantages and disadvantages of the product
- Best form and/or conditions to develop the product
- Customer perception or satisfaction of the product
- Quality standard of the product

The kind of product evaluations will depend on the technological area of an invention, as well as on its technical characteristics. For example, in the case of software products, there are different kinds of tests which can be performed:

- Standard tests
- More specialized tests that add reliability and long-term stability to the product, better performance and efficiency
- Functional tests, based on the use of the software, with the aim of detecting possible inconsistencies
- Tests that determine the limits of the application and its weaknesses.

The food industry, on the other hand, applies different tests related to products, which may involve factors or elements to be considered such as the environment, exposure temperature, quality engineering techniques applied to product design, value analysis, analysis of failure effects mode, among others. An example such a test in this area will be the one related to the assessment of the useful product life.

4.3.2 How to evaluate?

Depending on the type of invention that has been developed, the following tools can be very helpful to evaluate a specific product: simulation models, tests and customer evaluations (among others).

Figure 2: Tools for product evaluation



Source: Own elaboration

For example, simulation softwares constitute a technique that allows to predict the functioning of new products. In this way, it can get to simulate parts and assemblies, as well as to offer several types of analysis in this regard.

In addition to this, it will also be important to evaluate the perception of the product by the user by implementing the following:

- Usability tests: allow measuring the user-product interaction under controlled conditions. According to the ISO standard of usability and ergonomics (ISO 9241-11), there are three main aspects of usability: effectiveness, efficiency and user satisfaction.
- Questionnaires: facilitate obtaining information on customer satisfaction (it is the perception of clients who receive products and services in exchange for the price they pay).

4.3.3 Legal recommendations

During the evaluation stage, certain rules that govern the scope of each country related to environmental, manufacturing and consumer protection issues must be taken into consideration for product development purposes. Those most frequent are:

- Technical standards
- Quality standards
- Good manufacturing practices
- Environmental regulations
- Permissions for commercialization
- Regulations related to consumers
- Environmental standards

In some types of products, compliance with these standards is mandatory. Therefore, an inventor must be concerned to know as soon as possible if the invention in which he/she is working on needs to meet or satisfy legal obligations.

4.4 Product development

When the previous stages have attained positive results with respect to the objectives set for the development of a product (invention), the last phase of the process will be its final manufacture.

It is important to point out that the aforementioned phases are not necessarily performed in a linear way, ending with the initial distribution of the product. On the contrary, they should be executed iteratively (the phases provide feedback to previous and subsequent stages, and the development cycle can be reinitiated), thus seeking to improve the whole process and the quality of the final product. The number iterations required will depend on the needs of changes of the initial product launched, either by technical improvements identified or by changes in the perceptions of the end users.

4.4.1 Funding product manufacturing

Few APEC economies have implemented funds that allow independent inventors to access resources for product manufacturing. In most cases these are related or included in those programs aimed at developing different stages of inventions (prototyping, design, among others), or are targeted in start-ups or companies which are involved in this particular stage.

Table 4: Examples of product manufacturing public programs in APEC

Economy	Name of Program	Brief Description	Institution	Website
CHILE	Start-Up Chile (SUP)	Public startup accelerator created by the Chilean Government for high-potential entrepreneurs to bootstrap their startups and use Chile as a foundation. Today, Start-Up Chile is the leading accelerator in LATAM, among the TOP 10 globally, and one of the biggest and most diverse startup communities in the world	CORFO	http://www.startupchile.org/
	CORFO	More than 30 financing programs for different stages of development	CORFO	https://www.corfo.cl/
HONG KONG, CHINA	Incubation Program	It is spitted into three key areas – Incu-App, Incu-Tech, and Incu-Bio. Each is custom-made for start-ups in the fields of web and mobile technology, technology and biotechnology	HKSTP	https://www.hkstp.org/en

	First@Science Park Programme	Partner companies are invited to showcase their technology or products to the HKSTP community in exhibitions, or their innovative tech can be seamlessly integrated and tested on Science Park's grounds	HKSTP	https://www.hkstp.org/en
REPUBLIC OF KOREA	Support for the Production of Prototypes	Boosts inventors' morale and helps commercialize inventions by providing government financing for manufacturing pilot products. Funds of up to 50 million Korean won or 70% of the total costs are provided	Korea Invention Patent Association - KIPA	https://www.kipa.org/english/biz/support_a.jsp
MEXICO	Sectoral Funds	Development of industrial sectors	CONACYT	https://www.conacyt.gob.mx/index.php/fondos-y-apoyos/fondos-sectoriales
	Mixed Funds	Development of Mexican States	CONACYT	https://www.conacyt.gob.mx/index.php/fondos-y-apoyos/fondos-mixtos
PERU	StartUp Perú	Provides seed capital for startups. Strengthens the ecosystem by providing funding for incubators, angel networks and venture capital funds. Seed Capital Competition for Innovative Ventures finances with non-refundable resources (RNR) of up to S / 50,000, projects of up to 12 months to validate and commercialize an innovative business model or one based on product, process, service or commercialization innovations, which must have with a Minimum Viable Product (PMV)	Ministry of Production	http://www.start-up.pe/
	National Innovation Program for Competitiveness and Productivity - INNOVATE PERU	The program co-funds innovation and entrepreneurship projects to increase business productivity, through national competitions integrated in three axes: entrepreneurs, enterprises and ecosystem institutions. Innovate Peru provides grants for technological missions and internships for businesses	Ministry of Production	https://innovateperu.gob.pe/

	FONDECYT	Provides grants for inventors / researchers / IPIs for R&D projects	CONCYTEC	http://www.cienciaactiva.gob.pe/
PHILIPPINES	Industry-Based Invention Development (IBID) Program	The Program involves technical and financial assistance for the fabrication of a commercial prototype model for initial commercialization of inventions	DOST-TAPI	http://www.tapi.dost.gov.ph/programs-and-services
	Invention-Based Enterprise Development (IBED) Program	The Invention-Based Enterprise Development (IBED) Program shall support an Inventor in developing the invention into a business enterprise by making it available to the consumers	DOST-TAPI	http://www.tapi.dost.gov.ph/programs-and-services
	DOST Academe Technology-Based Enterprise Development (DATBED)	Provides assistance through funding, training initiatives, and access to facilities and the latest technologies to students, young professionals, and out-of-school youths planning to put up technology-based enterprises	DOST-TAPI	http://www.tapi.dost.gov.ph/programs-and-services
	Testing and Analysis Assistance Program	Aims to assist technologists, inventors and researchers avail of the laboratories and facilities of Research and Development Institutes (RDIs), including regional offices and other government agencies, offices and instrumentalities	DOST-TAPI	http://www.tapi.dost.gov.ph/programs-and-services

Source: Own elaboration based on data provided by the APEC economies

4.4.2 Legal considerations

The legal aspects throughout the design, evaluation and manufacturing of an invention are extremely important to be considered by independent inventors as part of their key milestones. Hence, it is suggested to establish contracts with the companies or organizations that are involved in these stages. A written contract can provide:

- More certainty and minimize business risks by making the agreement clear from the beginning
- Proof of what was the agreed between parties
- Help to prevent misunderstandings
- Establish how a dispute over payments or agreements will be resolved
- Set out how the contract may be varied

For prototype development and product escalation by third parties, a contract shall include clauses of confidentiality, so that product information is not disclosed, even if it is protected by patents and if the contract has ended. Also, if the product manufacturer is another company, the contract may include clauses indicating the prohibition of manufacturing and product commercialization for others. Although a patent grants exclusive rights to exclude third parties from exploiting the invention for an estimated 20 years (depending on the country industrial property law) it is important to include these clauses, to avoid any conflict.

Table 5: Legal considerations during product development

Legal aspects	
Prototype	Contract with confidential clauses
Scaling Products	Contract with confidential clauses
Production	Contract with non commercialization clauses
Commercialization	Contract with non commercialization clauses

Source: Own elaboration

The case of éviter



After her son contracted a virus for eating sushi, **Gabriela León**, and her brother decided to found, in Mexico, the company 'Gresmex'. This company developed a unique nano-bio-molecule that eliminates viruses, bacteria and fungi, mainly present in hospitals and production areas.

The nano scale redefines possible levels of manipulation of matter against previously known methods. Controlling their behavior, properties and chemical composition allows for different technical applications that would otherwise be unimaginable.

Studies in biophysics have determined that cell walls of microorganisms have different magnetic charges than those of animal and plant cells. Thanks to this invention, the active ingredient of the developed products selects only the pathogens and neutralizes them completely. Its effectiveness is much better than common disinfectants.

One of the main disadvantages of common disinfectants and antiseptics is that they harm the user in varying degrees, are toxic and even carcinogenic. So, the main goal for **Gabriela León** was safety.

Her research was developed with the cooperation of a series of academic and research institutions as well as laboratories and hospitals. With the support of the Mexican Institute of Industrial Property (IMPI) she patented her invention in Mexico and through the Patent Cooperation Treaty (PCT) in 148 countries. Additionally, patent protection has been directly requested in 12 countries. It is the first Mexican patent with a projection to many countries.

However, surprisingly her invention did not receive the expected welcome in Mexico. First, from the competition, because their market share will be jeopardized, and also from the Mexican health authorities. The argument is that it is more economical for the State that a patient dies than to be healed. The health sector also receives support from pharmaceutical companies, so many doctors were not open to apply for the molecule.

A big problem that the León brothers fight in their country is corruption and lack of credibility in national inventors. The León brothers never wanted to lose total control of the exploitation of their invention. This meant that it was difficult to find an adequate partner who shared their vision. When launching the product to the market they decided to finance it themselves. They received some support from the Government. This resulted in companies like Amazon deciding to distribute their disinfectants and antiseptics. Through their website (www.eviter.com) they advertise their products and sell them directly. Finally, the participation of **Gabriela León** in a series of national and international forums (women's forums, entrepreneurship, innovation, among others) has allowed her to develop a network and establish business relationships with third parties.

Nowadays, when **Gabriela León** looks back on the whole process, she would have sought professional support to aid in the development of the invention. Because of lack of adequate advice it took more than one year to decide on the kind of protection to give their invention. This and the lack of sufficient financial resources made the marketing and commercialization of their products take a long time. But the future prospects are good. In addition to the aforementioned distribution channels, they are negotiating with an American and a Central American partner to produce and distribute their products in foreign markets.

5. Building a team and seeking funding

During the development of an inventive project, and under the assumption that an independent inventor has not managed to establish a licensing or sale agreement for the corresponding patent, it will be necessary for him/her to build a work team in-place in order to introduce the product into the market and make a profit with its commercialization. As the European Patent Office (EPO) states: “*many inventions need external funding or support, because the cost of developing a new product or technology often exceeds the resources of an individual or a small business*”³.

Individual inventors usually need a group of qualified professionals to exploit not only his/her invention, but also to generate a business around the patented product. It is very likely that the sole inventor will not perform this task by itself, therefore requiring a team of people with complementary abilities (unless he/she has proven skills in various areas such as entrepreneurship, management, interpersonal relationships, among others, something that is not normally observed).

The effort to build a team will demonstrate potential investors or strategic partners that there is not just a simple inventor (or a holder of intellectual property rights) behind a project, but rather a business person, who makes the right decisions on how to obtain the best external talent to help move an idea forward, towards the market. The best method to exploit the IP rights is to build the right development team.

The figure below shows a general process from the idea to commercialization.

Figure 3: Idea to commercialization process



Source: Department of Medicine Research Administration – “The Research Process: Commercialization”. Durham: Duke University School of Medicine. Consult: November 05th, 2018.

<<https://medicine.duke.edu/research/research-administration/research-process/commercialization>>

³ EUROPEAN PATENT OFFICE – “Inventor’s handbook”. Munich: EPO, 2008. Consult: November 06th, 2018.

<<https://www.epo.org/learning-events/materials/inventors-handbook/support.html>>

At the very early stages, there is no doubt that the most common situation to be presented for an independent inventor would be to work alone or in isolation. However, the breaking point will generally correspond to the financial needs that will arise to continue with the development of prototyping until reaching the last stage of commercialization. This is where a paradox occurs. On the one hand, the inventor will need the help of other professionals to develop the product to complete a business, given that he does not have the resources or extensive knowledge to carry out the venture on his own. And on the other hand, he/she will have to recognize his own weaknesses, and transfer information and technical knowledge of his/her own to third parties to create collaborators that push the business in the same direction. Therefore, the key to building a good team will be to take the time to analyze and select the most appropriate and strategic people for the type of goals that are being proposed.

As the EPO said: *“in many cases, one or two other people may be enough to form a credible team. But any team must include business skills”*⁴. It is not enough to have technology skills. It is a complex process requiring many skills to bring an invention to market; with one being strong business capabilities and skills.

5.1 Different ways to build a team

There are several ways to build a work team. Below are the most common:

- The inventor seeks to find suitable people to form a team among family members and friends. Knowing these people beforehand is an advantage because the inventor is aware of the personal and professional skills and abilities of each of them. In the short term, working with relatives or friends may be more affordable from a financial point of view. However, interacting with them could be counterproductive, because closeness might play against responsibility.
- The inventor brings together a team of specialists according to the project needs. To implement this alternative, a thorough evaluation and selection procedure must be followed to identify the potential and added value of unknown candidates for the project that is underway.
- The inventor recruits the team through networks of other inventors or organizations, or directly searching at universities for professionals interested in working on the project. In this case, the selection will be guided by the references that are made about the professionals.
- The inventor hires a specialized firm that can administer or provide advise in the process of innovation management. Part of the payment for the firm could be conditioned by the levels of success that are obtained in the different stages of the project, from the development of the product to commercialization itself.

Whatever the method is used to build or generate a work team, the inventor must have a well-defined project with great commercial potential and detailed objectives for the commercialization stage. The purpose is to motivate and attract the best people as possible to join the project and convince investors or partners to be interested in it.

Again, it will be very important, from a legal perspective, for interested parties to sign a confidentiality (non-disclosure) agreement before accessing any project information. The protection of information is key to ensure the development of an invention having minimized the risks of problems or inconvenience along the way. There is an exception with lawyers because -in most

⁴ EUROPEAN PATENT OFFICE – “Inventor’s handbook”. Munich: EPO, 2008. Consult: November 06th, 2018.
< <https://www.epo.org/learning-events/materials/inventors-handbook/support/team.html> >

countries- their professional ethical code of conduct requires them to maintain client confidentiality.

5.2 Sources of help

Professional skills and experience are not enough to proceed with commercialization. In the majority of cases, the availability of financial resources for inventors is a central problem. Actually, one of the first expenses that must be covered linked to the possible marketing phase of a patented product is the payment for the renewal fee required to keep a patent in force and that is practically required in all intellectual property regulations. The following table provides an example of the impact of the lack of financing on an independent inventor in this respect. This is a real case of an invention that is now known as "fidget spinner".

How to lose a patent due the lack of money...

"Catherine Hettinger created the palm-sized toy two decades ago as a way of keeping her seven-year-old daughter Sara entertained.

The 62-year-old, from Winter Park, Florida, held the spinner's patent for eight years but had to surrender it in 2005 because she was unable to pay the \$400 (£310) renewal charge.

The inventor, whose daughter is now 30, told the Guardian: 'I just didn't have the money. It's very simple'.

Twenty years after she first brainstormed the idea for a soothing toy, the propeller-shaped gadgets -which come in a variety of colours- are taking over playgrounds across the world".

Source:

MULLIN, Gemma – "Fidget spinner inventor reveals she hasn't made a single penny off the global craze – because she couldn't afford the £300 patent". In: Sun Dairy – UK News. London: The Sun, May 5th, 2017.
< <https://www.thesun.co.uk/news/3485768/fidget-spinner-inventor-patent/> >

This example emphasizes the importance of teamwork, an element that may allow to understand better processes related to the development of inventions, the effects of each stage towards commercialization, among others. Also, it reflects the need to map and obtain financing before continuing with a business project. The fidget spinner, which does not have intellectual property protection due to non-payment of the renewal fee, has been a successful business for retailers around the world. However, its creator, Mrs. Hettinger will not receive any royalties in this respect. To avoid such bad experience, independent inventors must understand the process of intellectual property and proceed with great care in forming a team and securing financing.

5.2.1 Raising funds

One of the main concerns that appears throughout efforts performed to achieve commercialization of an invention is access to capital (money). Thus, one must invest, for example, in the design and implementation of a business plan, in the marketing strategy, in the authorizations to manufacture a product, among many other items that could demand large sums of money. Even the fees and costs for obtaining a patent, which normally is incurred before commercialization begins, can be considered too high (or prohibitive) by independent inventors in many economies. Therefore, the inventor must look for different sources of funding to exploit a patented invention.

As Odasso, Toschi and Munari say: “patents are important in enabling young, innovative firms to attract venture capital investments, and they are also being more frequently used as assets for more traditional financial markets via bank loans and securities markets”⁵. In this sense, the most important part in starting a business will be the holding of intellectual property rights. These rights, by itself, are a great incentive to receive financing to start the business, specially from private investors.

The common situation for the inventor is to have a minimum amount of money left after having invested in the patent registration procedure. Since the projected business plan will frequently exceed the patrimonial capacity of the average inventor, he/she and his/her team will have to look for programs, public funds, private investors or other sources of resources to successfully carry out the business.

Therefore, funding is a critical step to move towards commercialization. The inventor and his/her team must understand how much money is required and if it is mandatory that the funding comes from external sources. It is clear that each specific case is something different, but these two elements should always be taken into consideration in order to properly plan the next steps.

5.2.2 The amount needed

Each technological project developed from a patent will have its own needs and projections with respect to the amount of funding needed to carry out the business plan and to successfully complete such project. It would be very complex to estimate a referential amount for all cases. For example, the production of a pharmaceutical product will be different from the manufacture of a new device for the aeronautical industry. In these cases, the amount of money and the details of the business plan will vary according to the target market, the probability of commercialization, the estimated price and the necessary costs for the product manufacturing.

However, a rule of thumb is that the inventor and his/her team must have enough money to cover the regular production costs and the administrative expenses of the project. For example, if the inventor executes the business plan, he can expect a benefit of at least 30%. This will allow the inventor to generate its own contingency fund and perhaps plan the business expansion or completion of preliminary stages still pending in the development of the initial business plan.

As the European Patent Office - EPO recommends: “it may be helpful to seek a range of professional advice to identify all the costs involved in developing a new product or technology. If you have never done it before, it can be easy to miss or underestimate important cost headings”⁶.

5.2.3 External funding

An independent inventor will mostly require leveraging external financing for his invention project. Not only does this increase the possibility of managing larger sums of resources (since

⁵ MUNARI, Federico; ODASSO, Cristina and TOSCHI, Laura – “IP-Backed finance”. In: VV.AA. - “The Economic Valuation of Patents. Methods and Applications”, Cheltenham: Edward Elgar, 2011, p. 3. Consult: November 11th, 2018.
< https://www.researchgate.net/publication/44707408_IP-backed_finance >

⁶ EUROPEAN PATENT OFFICE – “Inventor’s handbook”. Munich: EPO, 2008. Consult: November 11th, 2018.
< <https://www.epo.org/learning-events/materials/inventors-handbook/support/help.html> >

his/her own funds may be very limited), but it can also expand the relationships and publicity of the business by having been able to obtain resources from external sources.

In addition, different types of commercial relationships can be generated through fund agreements that, in many cases, would help mitigate the risks assumed by the inventor for the commercialization phase (for example, if an investor decides to assume a role in the project's management).

Between the decision on whether the inventor should try to raise funds or not without the need for compromising with third parties, this may be one of the least frequent options to take because the investors most interested in a business proposal will try to obtain a participation in the strategic decision-making process of the project, considering it a potential success.

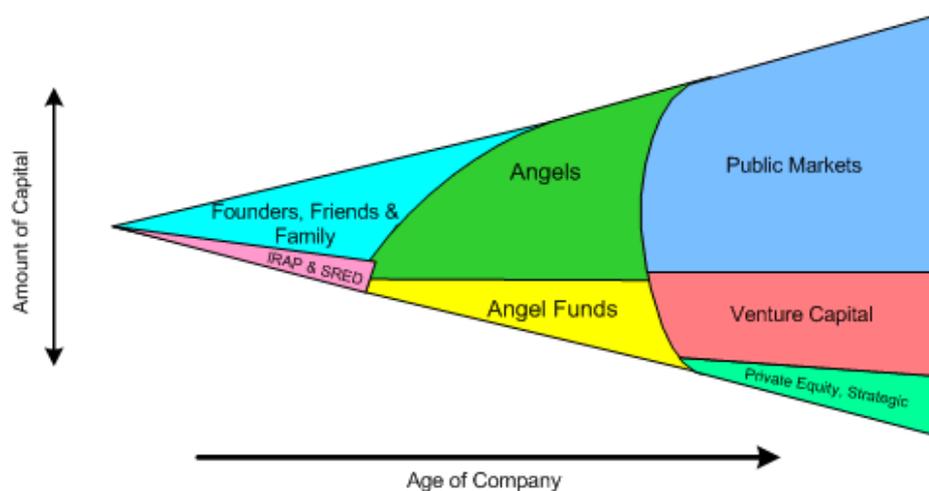
5.3 Sources of funding

So what are the possible financing options available to independent inventors and what are their advantages and disadvantages?

An inventor should consider that each business opportunity is different from another and that a funding source is not a rigid rule in each case. In the end, the circumstances and the specific characteristics of each invention must be evaluated to determine which is the most suitable financing strategy for the development and success of the business.

Two other points to consider in order to obtain financing will be the amount of capital required and the age of the start-up or company in operation, if any. The following figure shows the impact of this relationship:

Figure 4: Sources of funding according to age and capital needs of a startup



Source: PETERS, Basil – “Startup Funding - Sources and Sequence”. In: Angel Blog. W/P: Strategic Exits Corporation. Consult: November 11th, 2018. < http://www.angelblog.net/Startup_Funding_Sources_of_Financing.html >

From the previous figure, it appears that the most important source of funding when a project is just beginning is the money coming from the founders (the inventor itself), family and friends, and government grants and subsidies; (for example, the Scientific Research and Experimental Development Program – SRED and the Industrial Research Assistance Program – IRAP in the case of Canada).

Angel investors or venture capital sources are more prevalent when the project grows in age and capital. However, it is possible also to have business opportunities in which private investors or potential business partners work as an initial source of funding. Everything will depend on the ability of the inventor to sell (persuade) the project, as well as the commercial potential perspectives of it.

It is important for an independent inventor to be aware that at some point it will be more beneficial to establish a small company for the purpose of taking forward his creative project, given the greater opportunities and resources offered to this type of actors in the different APEC economies. This does not necessarily imply that the inventor will directly manufacture and market the invention, but that his/her company will be responsible for implementing and managing the business objectives set for the project (looking for strategic partners, investors, licensing, among others).

5.3.1 Family and friends

An initial and possibly a quick form of funding for a particular project that must be explored by every inventor is through family and friends. It is most likely that they will not request too many documents or presentations in detail to take the decision to invest; whereas a professional investor will probably require more evidence.

However, this method of funding has some disadvantages. For example, involving friends and family in business could become problematic due to the personal relationships between them and the inventor, and the risk of mixing professional with personal relations. In addition, probably not enough money will be obtained to cover the investments requirements for the different stages of the project.

The following table shows an excellent example of this kind of funding from the movie "Joy" (2015).

Friend and Family as investors for exploiting a patent

“Joy’s countless setbacks would be difficult to stomach, if not for the comic relief that her family affords.

Her father, though full of good intentions, is oblivious. Together, along with her mother (who falls hopelessly in love with their Haitian plumber), they make archetypal dysfunctional parents. Joy’s ex-husband isn’t the brightest bulb, but he’s sweetly committed to Joy and her venture, and offers sage wisdom at the times that she needs it most.

Joy lets her own romantic life fall by the wayside, which is a common trope in the entrepreneurial experience. Still, she isn’t alone: Whether intentionally or not, her family members help her to achieve small (and ultimately, very big) measures of success”.

Source:

HENRY, Zoe – “What Entrepreneurs Can Learn From the New Movie 'Joy'”. In: INC – The INC life. New York: Mansueto Ventures LLC, December 24th, 2015.

< <https://www.inc.com/zoe-henry/joy-film-review-jennifer-lawrence.html> >

In this movie, Joy –the inventor– is always supported by her family with funding to commercialize its “miracle mop”. However, the film shows the kind of problems when family and friends are investors –or even partners– in business. There are a few particular situations in the film: there is a scene when Joy’s sister –who did not want to get involved at first in the project– negotiates with a distributor of the parts to make the invention. She took decisions without including her sister, resulting in a big loss for the project. But Joy’s father –another investor– tries to convince her to keep her sister in charge of these decisions because of family. On the other hand, there is a scene of Joy’s crisis when there are legal trouble and it shows how Joy’s stepmother – another investor– persuades her to surrender and declare bankruptcy to leave the business and abandon the project. These are two good examples of how personal relations mix with professional ones in the development of a business when the inventors counts on friends and family funding.

Since friends and family are not private companies specializing in providing funding, the capital contributed may not be at large. If the investment required is not substantial, friends and family can be a good alternative. However, if the inventor needs a amount of capital, he/she must seek other sources and use friends and family investment as a guarantee for the private company to grant a loan, always knowing and analyzing the risks involved in endorsing this operation.

It is likely that involving friends and family in a developing business will generate personal pressures and even confrontations. Accepting this kind of help can cause a great deal of stress because the investors are not unknown people, but someone from the inventor’s environment. If there are failures it may not only involve legal problems and debts, but personal clashes.

The inventor must consider that if someone contributes funding, they may also want some of the business. This may seem attractive initially, but if the business becomes successful, it may be difficult to “get rid” of these investors.

5.3.2 Private investors

Private investors are another source of funding for the business project. In this case, the inventor deals with authentic “angels” who invest in the business because the plan is attractive for them. They see an opportunity for the successful commercialization of products and for recovering, over a period of time, a greater amount of money to which they initially invested.

As the EPO points out: “*these are private individuals with money to invest in small businesses. Most look for three things: effective management, a good product and a worthwhile market. They may be willing to take a large risk, but in return will want a large reward. A convincing business plan will be essential, and the angel may insist on taking a close personal interest in the business*”⁷.

⁷ EUROPEAN PATENT OFFICE – “Inventor’s handbook”. Munich: EPO, 2008. Consult: November 11th, 2018.

< <https://www.epo.org/learning-events/materials/inventors-handbook/support/funding.html> >

For this type of investors, their main interest is the final compensation for their contribution in the development of the business. They do not need to participate in the business as a team member since they trust that the product has potential, and that will be reflected in its commercial success. Instead, their interest is purely economic and not in getting involved with the day-to-day business of the inventor and its team.

Table 6: Key indicators analyzed by potential investors

1. Value of the project or business
2. Current and / or projected income
3. Amount of investment required and destination
4. Share/participation in the business
5. Utilities / return
6. Target market
7. Marketing strategy
8. Advantages of the product against competition
9. Intellectual property
10. Growth strategy

Source: Own elaboration

5.3.3 Potential business partners

Unlike private investors, potential business partners will seek to get involved in the business development and execution of the project's business plan. They can manage one or more of the production processes, the commercial operations or provide specialized services necessary for the implementation of the business plan.

For a potential business partner relationship, the EPO warns that “(...) *if the relationship is unequal, the risks to you may be high. It will be vital to base any partnership on a legal agreement that defines the relationship, its objectives, the sharing of rewards, and what happens in a range of changed circumstances. Always be careful not to give away more control of the invention or the business than the partnership is worth*”⁸.

The following table provides an example of what could happen if an inventor does not have an explicit and clear legal agreement with a potential business partner, from the movie “*Flash of Genius*” (2008).

⁸ EUROPEAN PATENT OFFICE – “Inventor’s handbook”. Munich: EPO, 2008. Consult: November 11th, 2018.
< <https://www.epo.org/learning-events/materials/inventors-handbook/support/funding.html> >

When Ford took advantage of an offer from an inventor with bad faith

“A former engineering professor who says he invented the intermittent windshield wiper now used by most major car and truck manufacturers has won a bellwether patent-infringement case against the Ford Motor Company.

A jury in Detroit ruled that Robert W. Kearns, who has waged a lonely 12-year legal battle against the automobile industry, was entitled to seek royalties on Ford's sales of the device, which allows a driver to adjust the intervals at which the wiper sweeps the windshield.

(...) the jury sided almost entirely with the 62-year-old inventor, who installed a set of his wipers on a 1962 Ford and took it to the auto maker. Mr. Kearns argued that because Ford engineers frequently asked him to discuss the design, he thought the company would buy the system. But it never did.

Mr. Kearns says he invented his device in the early 1960's. Until that time, intermittent windshield wipers were generally powered by vacuum pumps. Mr. Kearns designed an electronic device that was more practical and convenient, and obtained a series of related patents from 1967 to 1974.

Mr. Kearns argued that he showed the device, mounted on a Ford Galaxy, to Ford officials in 1963. He also tried to commercialize the invention through a company called the Tann Corporation, but again was unsuccessful. Meanwhile, American car makers began introducing devices similar to his invention around 1969.

The suit against Ford was filed in 1978, and those against other manufacturers have mostly come since then”.

Source:

ANDREWS, Edmund – “Ford Loses Patent Suit On Wipers”. In: The New York Times – Archives. New York: The New York Times Company, January 31th, 1990. Consult: November 11th, 2018.

< <https://www.nytimes.com/1990/01/31/business/ford-loses-patent-suit-on-wipers.html> >

The film describes the tedious process followed by an inventor against the big automobile companies for the theft of the intermittent windshield wiper. This was a novel invention for the time developed in his garage with his children. While searching for business partners, (because Kearns wanted to produce this product for or with Ford), the automotive company took advantage of the sample of the invention left by the inventor. Ford performed tests and began to produce the mechanism. They reverse engineered it from the sample left with good faith by the inventor.

With potential business partners, the relationships will be more intimate. The interactions will be sometimes good and bad with the profits and losses shared.

The case of the “Truck Bed”



After that, he prepared and submitted a detailed provisional patent application later that year. He then prepared and submitted a lengthy non-provisional utility patent application to the USPTO in 2015 that included detailed specification of the invention's various embodiments, formatted perspective drawings, 20 claims, and an abstract. **George Burkhardt** (USA), a former mechanical engineer, became aware of the difficulty involved in entering and exiting a truck bed when he purchased a used but relatively new pickup truck in 2014. People have to enter truck beds all the time because the sidewalls are too high to reach into the bed to retrieve equipment. To make matters worse, new pickup beds are even higher off the ground.

When he searched the market online, he found aftermarket steps that are permanently attached to bed structures. These products were typically sold in truck accessory stores, which the average truck owner is not familiar with. They are expensive when configured to attach to existing bolt patterns. Options more reasonable in price required installation holes to be drilled into the truck.

Therefore, he decided to create a simple, inexpensive grab handle that could be quickly attached and removed from any truck bed when needed. In addition to making it easier to get in and out of truck beds, the handle could also be used to aid in the pushing and pulling of equipment in and out of the bed.

He designed a simple grab handle that could be quickly connected to the tailgate latch pin and tailgate hinge. Then he fabricated a steel prototype and kept altering it until he was certain that it would fit all mid-size and full-size pickup trucks on both sides of the bed. While working toward the final prototype, he conducted a thorough patent search and determined that the handle he was developing was unique and non-obvious and therefore, patentable. To market his invention, **George Burkhardt** created a one-page sell sheet and a video demonstrating the benefits of his handle. He made both on his own.

To approach companies, he used [LinkedIn](#) to identify upper management at potential licensees.

He discovered a company that was seriously orientated around social media and e-commerce marketing and that it also had products in stores. Using LinkedIn, he found the president of the company and cold-called him to say that he had a patent-pending truck accessory product that fit an unmet need in the truck. After this company checked out his marketing materials and requested a prototype, they began discussing a licensing agreement.

George Burkhardt licensed his invention for the automotive industry -- the HitchMate Grab Handle -- to Heining Holdings. The handle is made in America, has been on the market for two months, and is available online at retailers including Home Depot, Target, Walmart, Sears, Kmart, Amazon, Tractor Supply, Newegg, Jet, several auto accessory stores.

5.3.4 Government grants and subsidies

Another source of funding are government grants and subsidies. These public funds support private initiatives during specific times and for specific industries. It is a government obligation to support the development in science and other applied areas. The result is that some public entities provide grants or subsidies to help small business and private initiatives begin their business projects.

This funding mechanism is not designed to cover the entire amount required by the inventor and team. There are a few disadvantages of this type of funding. The inventor is required to comply with certain bureaucratic requirements since it is money from a public source. Also, the specific terms and considerations that govern the granting of these funds must be taken into consideration.

In any case, this source of funding is complementary to any of the other sources and helps to achieve the funding goal.

5.3.5 Support from universities

Universities are a source of funding for the development of innovative projects or businesses that exploit the products of a patent, in particular linked to their community of interest (faculty members, researchers, students). The inventor and his/her team must be aware of the priority of the universities for such purposes. The university that grants funds for projects would likely require some benefit in terms of academics and, in other cases, a financial ROI.

Universities can also help with specific aspects of a business plan. This could be a much cheaper option. Likewise, universities can provide market studies, product design, testing, among others services. The inventor must be legally clear on the specific terms and conditions of support of the University.

5.3.6 Competitions and publicity

Another source of funding for some inventors could be contests and competitions organized by international (and sometimes local) institutions in specific areas, industries or topics.

In that sense, for an individual inventor and his/her team it will be very important to read the conditions of access to these contests. The inventor must verify that organizers limit what will be made public when submitting an application of an inventive project. This will ensure that sensitive information that can later be played against the inventor is not revealed.

The inventor must weigh the benefits of winning the competition and the risks of exposing the idea to the international community. If it is made public too early, an unscrupulous person could alter the invention and exploit it. This can put the patent at risk, which would result in a long legal dispute.

On the other hand, the inventor can also look for companies to generate advertising or sponsorship to publicize and promote the business, and in this way diversify or expand its sources of funding. With this alternative, the inventor must be very clear about how advertising will affect the information available to the public. That is, what will be the image projected by advertising.

Having the intellectual property rights of an invention is only the first step to developing a great business. When the inventor has a team in-place and funding to start, he/she must work with the particular government regulations of the economy or economies where the business will operate. It is better to be proactive and develop preventative mapping of the regulations than be the target of sanctions or legal problems with the government. This could easily result in larger attorney fees and costs for the inventor.

Due to the large number of sectors where the product of a patent could be implemented, it is practically impossible to make a complete process of compliance regarding the corresponding regulations. However, the regulatory aspects can be classified in a general way, but be aware that there could be specific issues of the regulations to consider.

6.1 Licenses, authorizations or permissions

One of the regulatory aspects that must be considered by inventors are authorizations, licenses and permits. These must be requested before beginning the commercialization of a certain product.

In many cases, the administrative procedures in the different government entities delay the product offering because of the lack of efficiency in the application procedures to complete all the required documentation.

On the other hand, government procedures may result in the denial of granting the documents. It may lead to rethinking the whole business idea and in more extreme cases the impossibility to achieve the business plan.

Here are two tips on these regulations:

- The inventor and team should hire legal advice to obtain the necessary authorizations, permits and licenses. This is because the procedures to obtain these documents are very technical. Outsourcing this service through lawyers can be the best way to solve any problem.
- Perform these procedures before completing the final business plan. This can be a preventative measure, since the duration of these procedures does not depend on who requests them, but the government.

6.2 Consumer protection law

Consumer protection regulations are another area that should be explored around patented products' businesses. This is because the market will always have the consumer as one of the classic and permanent stakeholders.

In case of strict regulations regarding consumer protection, the inventor and his/her team must take the necessary measures to avoid violating these mandates for the correct commercialization of products.

The inventor must maintain a contingency fund to mitigate the consequences of the infringement of consumer protection regulations and to evaluate the possibility of adopting a corporate governance policy on consumer protection to keep the consumer satisfied.

Regulation in the labeling and packaging of products is equally important. In certain industries, there are specific quality standards that require rule compliance to bring the product to distributors

for consumers. In addition, many requirements must be strictly complied with because they involve the protection of the interests of consumers.

6.3 Advertising regulations

One of the most important regulations linked to the commercialization of products is referred to advertising and the ways in which advertising campaigns can be done. It is a highly recommended practice for marketing managers (and independent inventors as well) to consult with those responsible for regulation in a particular economy to mitigate any consequence of advertising that contravenes any mandatory rule.

Even within the regulation of advertising, there are general and specific rules for each industry. For example, regulations stating that it is forbidden to issue advertising that could deceive, confuse or take advantage of the reputation of other competitors or companies with a high presence in the market. Additionally, the specific regulations of certain industries with special provisions on advertising for that market should be considered.

On the other hand, among the existing standards are rules that limit the public objective of advertising and those that may impose some obligations on advertisers. In addition, these rules may provide obligations for a specific advertising message in each advertisement or communication method used for advertising.

Finally, there may even be specific provisions when promotions and offers are launched.

6.4 Tax regulation

Every inventor should be aware of tax rules and taxes that must be paid to the government for the commercialization of a product. In some cases, certain industries are subject to special taxes that can be applied in the exploitation of the patent through the product commercialization stage. In other cases, there may even be tax deductions linked to the activities of invention and innovation.

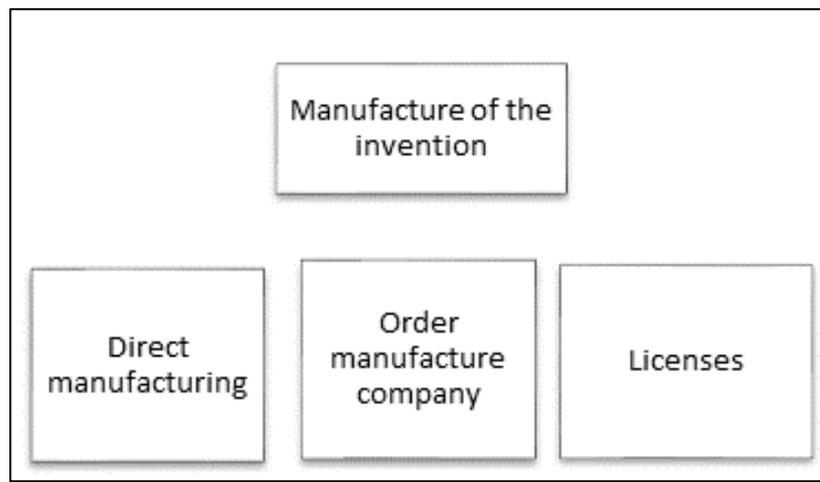
Being aware of this information is extremely important because taxes paid are often transferred to the final price of the product for the consumer.

7.1 Alternatives for product development

At any given moment, independent inventors must make the decision on how they will manufacture a product linked to their patented invention. In doing so, it will be necessary to conduct an evaluation on the advantages and disadvantages of each of the modalities involved, and combine them with an analysis of the conditions, capacities and resources they might have to face this process.

A product or invention can be developed under three different ways:

Figure 5: Alternatives for manufacturing an invention



Source: Own elaboration

Each of these alternatives may have advantages and disadvantages, depending on the type of product that has been developed, the potential or commercial appeal, the conditions or capabilities of the inventor, among others.

Table 7: Alternatives for manufacturing an invention

Modality	What is?	When to decide?	Main advantages	Main disadvantages
(1) Direct manufacturing	The inventor establish its own company to produce the invention	<ul style="list-style-type: none"> - When the inventor can afford establishing a manufacturing business. - When production does not require complex procedures that may not be handled by the inventor alone. 	The inventor doesn't need to locate suppliers or companies interested in producing his/her invention.	Requires the necessary skills and time to manage a productive company.

(2) Indirect manufacturing	The inventor hires (and pays) a third company to produce the invention	<ul style="list-style-type: none"> - When the inventor does not possess the capabilities or resources or the desire to manufacture the product on its own. - When the inventor wants to maintain presence and monitor the productive process of the business 	The inventor doesn't need to invest in equipment, supplies and other resources to manufacture the product.	Problems may arise with the supplying company (for example, failure to fulfill a production contract on time).
(3) Licensing	The inventor authorizes a third company to produce (and to commercialize) the invention	<ul style="list-style-type: none"> - When the inventor does not possess the capabilities or resources or the will to manufacture the product on its own. - When the inventor has a high-market potential product that may be of interested to third parties. 	The inventor will not have to worry about the production process nor the business. He/she will usually receive royalties based on sales made by the licensee.	Searching for a licensee is not an easy task. It requires resources, contacts and a good business plan. In addition, agreement must be reached on the terms of trade, something not necessarily easy to negotiate.

Source: Own elaboration

When considering the manufacture of a product, inventors must evaluate the requirements and conditions related to the production process, among which the following elements have to be taken into account:

- Materials and supplies to be used
- Types of materials and supplies (details of each of them)
- Origin of materials and supplies (domestic or imported)
- Associated costs of materials and supplies
- Machinery and equipment required
- Specialized services: supply chain

Based on these manufacturing requirements of each product, the inventor should develop a customized production strategy, depending on whether the manufacturing process will be performed directly or indirectly (through third parties). This will depend on:

- Alliances with suppliers of raw materials.
- Partnerships with service providers.
- Contact with companies that can manufacture the product.
- Agreements reached with supplier companies

7.2 Financial considerations

Some APEC economies have developed programs to support independent inventors through the provision of technical assistance and access to funds for their utilization throughout the entire

implementation process of the invention. These programs have already been addressed in chapter 4 of this Handbook, given their relationship with prototyping and product manufacturing matters.

Therefore, an inventor must conduct an exhaustive search of the initiatives and programs that are available for him/her at the local, national, regional and international levels to support the manufacturing stage of the invention.

7.3 Legal recommendations

When the inventor hires a company for manufacturing a patented product, he/she must seek legal advice to establish an adequate contract between the parties. The contract should include:

- Confidentiality clauses to avoid disclosure of invention information.
- Clauses to prohibit the manufacture of the product to third parties, without the consent of the inventor.

In case the patent has been granted, the inventor may bring legal action if the company manufactures and commercializes the product without the corresponding authorization. If the inventor has not patented the product, the invention can be copied, manufactured and marketed without the need to obtain a consent.

On the other hand, it is important to note that a good license agreement will depend on several factors such as:

- The type of product
- Market expectations
- The interests of the licensor and the licensee, among others.

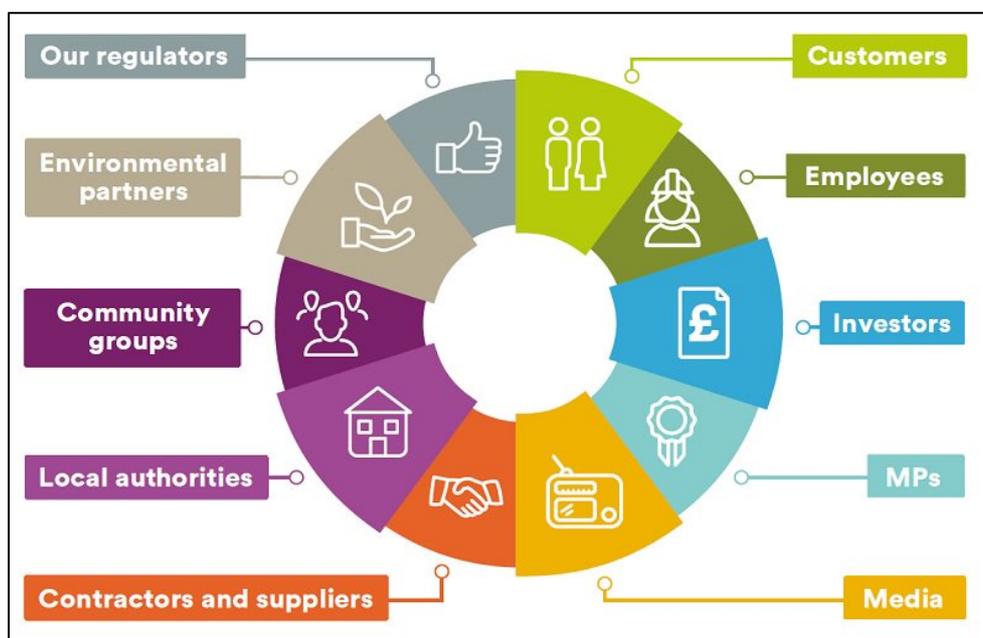
The licensing process may occur in several stages, depending on the type of license, the conditions required and the type of product manufactured.

Building a business plan will be extremely important once the inventor has a clear idea of the relationship he will have with his/her (potential) partners and is ready to access different funding sources. Although every adventure of invention should have a business plan properly built, this will make more sense when the inventor seeks to establish a new company for the production and marketing of the product or form joint ventures for similar purposes.

8.1 Stakeholders

The development of a business plan requires that as many interested parties be considered as possible. These interested parties, also known as the stakeholders, constitute the group of entities and agents that maintain different types of relationships with the inventor and his/her team. They can be customers, distributors, suppliers, employees, friend companies that collaborate with the inventor, local authorities, the community itself, among many others.

Figure 6: Key stakeholders



Source: UNITED UTILITIES – “Stakeholder engagement”. In: United Utilities Group PLC – Stakeholders. Warrington: United Utilities Group PLC, 2018. Consult: November 9th, 2018.
< <https://www.unitedutilities.com/corporate/responsibility/stakeholders/stakeholder-engagement/> >

Stakeholders need to be managed, and managed differently, while taking into account their power and interest they have in the business. As Muhammad and Mustafa say:

“Treating all stakeholders equally is a recipe for project failure. On the ground reality necessitates that each stakeholder has to be treated differently depending on the circumstances. Some need to be cajoled, a few have to be reminded politely and others require executive intervention to get them engaged. Likewise, there will be times when the most powerful stakeholders have the full attention of the project team, while other stakeholders are completely ignored. Occasionally, there

*will be situations where a small minority of stakeholders are either publicly reprimanded or praised to ensure the success of the project*⁹.

From the previous example, it can be said that an inventor must try to keep all stakeholders satisfied; even those with power in the operation but with low interests in the business. Likewise, the inventor and his team must keep the stakeholders informed about those who have few power but are very interested in the business. Additionally, the inventor must monitor the interested parties with low power and low interest in the business; and in the same way, the inventor must closely manage the interested parties with both, a lot of power and interest in the business.

With all these stakeholders, one of them could be a very good partner or even a potential competitor if the inventor does not maintain the appropriate relationships.

Figure 7: Types of stakeholders



Source: MUHAMMAD, Omar and MUSTAFA, Abid – “Managing Stakeholders: Going Beyond Conventional Wisdom”. In: Project Smart – Articles. United Kingdom: Project Smart, October 23th, 2013. Consult: November 9th, 2018.

< <https://www.projectsmart.co.uk/managing-stakeholders-going-beyond-conventional-wisdom.php> >

8.2 Components of a Business Plan

What are the specific sections that are needed to build a business plan? Regardless of the type of product or process being developed by an independent inventor, the minimum content areas that must be considered and developed through this plan are presented below:

⁹ MUHAMMAD, Omar and MUSTAFA, Abid – “Managing Stakeholders: Going Beyond Conventional Wisdom”. In: Project Smart – Articles. United Kingdom: Project Smart, October 23th, 2013. Consult: November 9th, 2018.

< <https://www.projectsmart.co.uk/managing-stakeholders-going-beyond-conventional-wisdom.php> >

Figure 8: Parts of a business plan



Source: WOLFE, Rhian – “What are the key elements of any business plan?”. In: QUORA – Business Plans. Sacramento: Quora Inc., November 23th, 2017. Consult: November 9th, 2018.

< <https://www.quora.com/What-are-the-key-elements-of-any-business-plan> >

According to EPO:

“A business plan is also the equivalent of an operations manual. It should be updated regularly, and always regarded as a work in progress. In the case of a fast-moving project, a business plan even a few weeks old may be useless!”¹⁰.

Regardless of the traditional content of any business plan, which can be accessed through a quick research through the Internet, the following lines provide some points that should be critical for the case of independent inventors.

¹⁰ EUROPEAN PATENT OFFICE – “Inventor’s handbook”. Munich: EPO, 2008. Consult: November 11th, 2018.
< <https://www.epo.org/learning-events/materials/inventors-handbook/business.html> >

8.2.1 Executive summary

The executive summary is the first section of a business plan and is generally considered the most important because it is often the first area to be read by banks, venture capitalists, or angel investors.

The executive summary is not an introduction. It explains the project plan as a whole at a high level. It is often the last section of a Business Plan to be completed. The inventor and its team must have a clear understanding of the complete project to develop a high-level explanation that meets the needs of all stakeholders.

The executive summary usually contains:

- A description of the business
- The history of the project
- Current achievements
- Benefits for the clients
- Attractiveness of the project as a business
- Brief description of the product
- Presentation of
- Brief financial summary
- Project's plan for 2-3 years, highlighting key deliverables

8.2.2 Business structure

How the business will be structured is an important obligation of the inventor. Legal experts are required to develop the legal constitution of the company, according to each economy's legislation. The lawyers determine the appropriate business structure according to the specific needs and risks that the company will assume, taking into account any partners.

The inventor should define this structure prior to the business plan development. However, it can be deferred if the decisions of who will be the partners and investors or technicians is not finalized.

Another important aspect of the business plan is human resources. The team will need to manage the relationships between various collaborators and the benefits obtained from the start-up to marketing the product. It is not enough to gather the best team. You should create an environment where all team members work in a collaborative manner with a single purpose: the success of the project.

8.2.3 Target market

Who will purchase the product? This is called the target market: the group of people who want or need this product. This group will be the one that most likely will consume or acquire the product. The inventor must know his/her target market. This ensures that marketing efforts will be rewarded.

To determine the target market, the inventor must identify the specific characteristics of a group of people or companies based on the type of product that will be delivered to them. These characteristics are called a "profile", helping the inventor to classify customers. For example, occupation, age, gender, income level, purchasing habits, marital status, family situation,

geographic location, ethnic group, affiliations or political inclinations are all potential characteristics of the target market.

Ultimately, this information will allow the development of a marketing strategy to be implemented by the inventor and his team for the correct exposure of the product in the market.

8.2.4 Marketing plan

The marketing plan is the method to obtain the maximum exposure of a product that will seek to persuade the target market to purchase the product and become loyal. It is essential to have one or more trademarks (brands) and a trade name to operate in the market. This identity helps the marketing department focus its plans on the target market.

What are the marketing channels of the product? What are the best routes to sell a product to consumers and what is the impact on the consumer? These questions must be answered through the preparation of the marketing plan. The goal is to evaluate these channels continuously to maximize the exposure of the product with its benefits for the client.

8.2.5 Business financing

Despite having raised funds previously, many commercial or business initiatives require a greater allocation of resources for their operations. As a result, it is important for a business plan to determine the financial needs of a project, as well as the current sources of funding and those required for the business. For instance, a source might be bank loans, which will generate the inventor or company a credit history and access to cash available for operations.

Therefore, a business plan must specify:

- The methods and / or sources to obtain resources
- Their purpose
- The potential creditworthiness of the business

The inventor must take special care with the amount of financial information that will be disclosed. The business plan should provide this information only in a concise and attractive manner for stakeholders.

8.2.6 Competition and pricing

Business operations are another relevant point to discuss and contain in the business plan. The operations projected by the inventor and his team through the company that will be constituted for commercializing an invention must be specified in this document. In this way, both investors and other interested parties can observe a specific "roadmap" to follow in order to continue with the project.

The business plan must also include an analysis of current and future competitors for the product. The purpose is to enter the market with few complications and, if possible, in a disruptive manner so that the market gets used to new competitors.

On the other hand, a question will arise: What price will the inventor charge for the new product? This is a critical decision that can affect the company for years. Pricing must take into account operating expenses (administrative, financial, among others), production costs (raw materials,

direct labor, supervision, services, among others), taxes paid by the consumer and projected earnings for each product sold in a given time horizon.

It is important to note that vendors and suppliers will also be important interested parties for the business plan. Therefore, the inventor must anticipate professional and business profiles required for the distribution, production, manufacture and marketing of the invention. Once the inventor and his/her team have a required profile, they can embark on the development of strategic alliances and sign contracts with important collaborators in the different stages of the business. It is not necessary to show in the business plan all the operations that will be carried out. It will be enough to draw a potential action line for the company in view of the available data.

8.2.7 Financial projections

Financial forecast is an important tool in the planning of all business, since they reduce the uncertainty of future information for decision making, both by owners and investors. This type of forecast usually shows data concerning sales, expenses, investment, profits, returns, among others related to the commercial and entrepreneurial results of the business, normally over a period of 3 to 5 years.

Although, financial forecasts can be performed by every person (including inventors) with medium knowledge in the matter, advice may also be useful when executed by financial specialists in order to establish more realistic and solid estimations that can serve as backup to attract the attention and greater interest of investors and other interested parties. However, financial information that is disclosed should not expose the inventor to any undue hardship at the time of analysis, interpretation and communication.

8.3 Disclosure in a business plan

A business plan is a strategic document and, to a certain extent, confidential, with information about a business project (in this case the development of an invention that seeks to be commercialized). Therefore, inventors must restrict access to such document only to key people in the environment (potential strategic partners, investors, financiers, among others) even when there is a patent that protects the respective product.

Stakeholders and investors will appreciate the exclusivity of a new business idea. Therefore, it could be a risk or an unattractive proposal if they realize that their potential competitors have reviewed this planning with its central ideas.

A good business practice would be to prepare and have on hand a non-disclosure agreement before meeting with investors or collaborators interested in the business. It is better to deal with prevention than to take unnecessary risks. Even if there are investors who refuse to sign the agreement, others may value the diligence of keeping the information private.

Due to their activity and characteristics, companies are always looking for new product ideas that can be successful for commercialization. Their ideal invention would be one that can give them great benefits or profit in exchange for no risk. Although this is very unlikely, they are usually on the lookout for ideas with minimal costs and risks. Before risking resources on an invention, every serious company will look for answers to the following key questions¹¹:

Table 8: Questions of interest for companies

<p>THE PRODUCT</p> <ul style="list-style-type: none">❖ Does it fit in with the longer-term business plans of the company?❖ How much more development does it need?❖ Can it be manufactured cost effectively? <p>THE MARKET</p> <ul style="list-style-type: none">❖ How many units can we sell?❖ How much market advantage will it give us?❖ How much will it cost us to enter the market? <p>INTELLECTUAL PROPERTY</p> <ul style="list-style-type: none">❖ How valuable is the IP?❖ How strong is the IP? <p>THE COST</p> <ul style="list-style-type: none">❖ How will the whole project be financed?❖ Will the cost pose a significant risk to the business? <p>RISKS</p> <ul style="list-style-type: none">❖ How soon will the product go into profit?❖ How long will that profit last?❖ What if we say no to the invention but a competitor says yes?

Source: Own elaboration

9.1 Licensing agreement

Licensing is a way to profit from an invention while minimizing personal risk and commitment for an independent inventor. For a specific company, licensing will also be a very interesting way to benefit from a novel product in which a company has not invested resources for its initial development.

As a patent holder, the inventor has the exclusive rights to profit from the technology covered by the patent and to prevent others from exploiting it¹². The inventor owns the exclusive rights to

¹¹ EUROPEAN PATENT OFFICE, Inventor's handbook, <https://www.epo.org/learning-events/materials/inventors-handbook/dealing-with-companies/agreement.html>.

¹² In other words, if inventor does not have a patent right, it will not be possible to celebrate a license agreement.

manufacture, use, sell, offer for sale, distribute, advertise, import and export of his patented invention. The owner of the patent shall have the right to decide who may – or may not – use the protected invention during the term of the patent.

In a licensing agreement the licensor (i.e., patent holder = independent inventor) will “rent out“ the patent rights in exchange for a royalty (or a fee). The inventor allows a third party (the licensee) to use, produce, and sell the invention. In return, the inventor will normally get a royalty paid regularly on sales. However, the inventor still maintains the patent rights. These contract typically specify termination dates and procedures.

Another type of an agreement is the assignment agreement. This is closely related to a license, with a few important differences. An assignment is an agreement where the inventor transfers his patent rights permanently to a third party, rather than for a set period, like in the license agreement.

The following table presents some basic differences between licensing and assignment agreements:

Table 9: Differences between licesing and assignment agreements

Concept	Licensing agreement	Assignment agreement
Object of the agreement	Licensor (independent inventor) permits licensee to exploit the patent temporarily. In exchange licensee has to pay a royalty.	Assignor (independent inventor) transfers his patent rights permanently. Asignee will have full ownership of the patent.
Rights that independent inventor maintains	Licensor will retain an interest in the patent.	Assignor will “lose” all patent rights.
Type of agreement	Exclusive, non-exclusive or sole license	Assignor loses all patent rights.
Extension of the agreement	In the whole country or part of it (or in specific countries or territories where the invention has been patented).	For the whole national territory, where the patent has been granted.
Duration of the agreement	For a certain period.	For the rest of the patent duration.
Formalities of the agreement	No need to fulfill any formalities, but highly recommended.	In most countries, need to be in a written form.

Source: Own elaboration

An inventor looking for licensing his/her invention, should find a "licensee" who wishes to develop the patented product. Handing off production and commercialization responsibilities to a third party will allow the inventor to do what he does best: create and invent. Many people make their living as inventors. They are constantly registering patents on their products and granting licenses to companies eager to acquire new ideas¹³.

A licensing agreement must strike a balance between protecting the rights of the licensor (the independent inventor) and those of the licensee company. However, the "perfect" agreement does not exist. Most of them arise from a compromise process in which both parties will find mutually acceptable ways of getting what they want.

¹³ FOREMAN, L./WELYTOK, H., The Independent Inventors’s Handbook, p. 151.

Most licensing negotiations take some time (several months) to materialize. Hence it is important to show flexibility to reach mutually accepted agreements. Before starting to negotiate, the inventor must know the type of agreement he wants to offer and be able to justify it. The tactic of some inventors - simply saying "it is not enough for me" to every offer made to them - probably will bring the negotiations to an early end without agreement.

Negotiations can also be psychologically complex. If human chemistry is wrong, there may not be an acceptable agreement. Therefore, it is necessary for the inventor to understand what he can do to maintain control of the negotiation. Ultimately, one way to maintain such control is to withdraw from the negotiations if no advantage or receptivity is found in continuing it. In many cases, no agreement could be better than a bad agreement.

9.2 Hiring attorneys

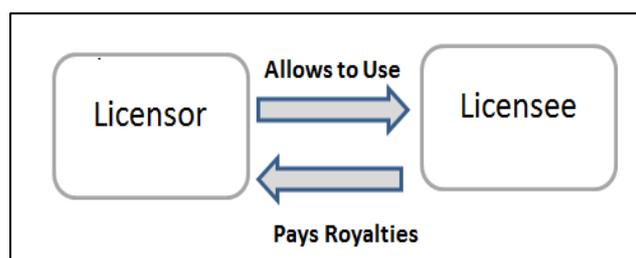
It is not recommended for an independent inventor to negotiate a licensing agreement on his own, unless he has extensive experience in commercial negotiations or has a proven knowledge and handling of legal issues. It is better to hire and get advice from an attorney or an expert in licensing.

However, there will be inventors who will still decide to proceed on their own. Undoubtedly, this can be dangerous, or even reckless, but sometimes there will have no alternative given the financial constraints they face. In some APEC economies, there might be institutions that provide advice or support in terms of licensing at affordable prices (such as some Technology and Innovation Support Centers - TISC¹⁴). Therefore, it is very important to analyze domestic support services around this area.

Whether an inventor chooses to represent himself or decides to work with an attorney or a licensing professional, as has already been indicated above, he/she should have a clear and defined strategy for the type of agreement he is seeking.

9.3 Royalties

In exchange for the right to produce and commercialize the patented product, the licensee will pay the licensor (independent inventor) a share of the revenue (money collected from the sales of the product). This payment is called a royalty.



Source: Own elaboration

¹⁴ The TISC are platforms promoted worldwide by the World Intellectual Property Organization (WIPO), formed in different public or private institutions in order to provide services related to intellectual property, some of which may include the support related to licensing or technological commercialization in any of its forms. A few APEC economies have launched these centers such as Chile, Peru, Philippines, Viet Nam, Malaysia and the Russian Federation, or very similar platforms as in the case of Mexico with its Patent Centers (CePats). For more information visit: <https://www.wipo.int/tisc/en/>.

The typical royalties range from 2% to 5% of revenues. It varies depending on the product, the margins, as well as the industry of the patent. Most consumer products fall in the 2% to 3% range; but there are off course, some exceptions.

Assuming an inventor has developed a new fire detection device. He/she decides to license to a manufacturer. The product sells in stores for \$10.00 and was sold to the retailer by the manufacturer (licensee) for \$5.00. The royalty for the inventor is a negotiated 3%. That is, 3% of \$5.00 per unit, or \$15 cents per unit. This could be considered that it does not represent a lot of money for each unit sold; however, in aggregate terms it becomes significant: the higher the volume of sales, the greater the profits for the inventor. What these percentages of royalties finally take into account when defined, is the low risk the inventor is assuming against the amount of time and resources the manufacturer will be investing for commercializing the inventor's patented product.

If the inventor decides to directly manufacture the product itself, it could generate ten times the amount of income it receives through licensing. Assuming that the inventor manufactures the fire detection device for \$ 2.50 and sells it to the same retailer for \$ 5.00, the inventor would earn a gross profit of \$ 2.50 for each unit sold. Undoubtedly, a greater benefit for the inventor, but also a significantly greater risk, since he/she must invest in manufacturing, inventory and all costs associated with selling and supporting its product (which will not necessarily guarantee the business' success).

9.4 Licensing issues

A license is an agreement between two parties who sign a document to establish a business relationship. Licensing can be an ideal partnership of creativity and capital in which both parties benefit from the development and sale of a single product. The license agreement will not allow the inventor to impose all of his claims or ideas on the licensee, nor will he be in a weak position with respect to the contract. On the contrary, it is an agreement in which both parties will obtain benefits with almost equal charges.

Licensing contracts should not be considered as a general template or format to be completed in a simple manner only with certain numbers. On the contrary, these have a series of crucial legal clauses for the understanding of the agreement that responds to a particular context of negotiations. In that sense, as has been mentioned previously, the best option for an inventor will be to obtain advice and support from an attorney specialized in this type of contracts. However, to become familiar with licensing documents, an inventor can review different contracts concluded in past agreements.

There are some places to find models of licensing agreements. The really useful licensing and contract books that attorneys use are very expensive, sometimes costing as much as \$1,000¹⁵.

There are other places to find these models of agreements for less money. The best would be to start at a law library, although some law schools do not let the general public use their facilities. In these it is recommended to by reviewing an encyclopedia with the forms or terms used in patent licensing. If the library has a good intellectual property section there might be several smaller

¹⁵ QUEEN, G., Drafting a Licensee Agreement, a Patent Perspective, available at: <http://www.ipwatchdog.com/2016/04/30/drafting-licensing-agreement/id=68723/>

encyclopedias dedicated to patent licensing. There are also books on licensing agreements. However, these books will not have the number of samples that a forms encyclopedia has.

If in a certain economy, law libraries are not available, the Internet will be the best option. Some universities have good sample agreements online. These agreements, however, may not be correct for every situation. Frequently, universities are licensing early stage technologies, sometimes before a patent is obtained and often before a patent has been issued. There are also Websites specialized on legal issues that provide information, tips and models or templates around licensing. It is advisable to review as many examples as the inventor can collect.

Table 10: Places to find some models of license agreements

Licensing books	Many models of agreements (+)	Expensive (-)
Law libraries	Encyclopedia of forms (+)	General public has not always access (-)
Internet	Low cost (+)	Samples of agreements not suitable for every situation (-)

Source: Own elaboration

Even though each licensing agreement is different from each other, the most important clauses that are usually contained in this kind of documents are listed and described below.

9.4.1 Object of the license (patent, trademarks, etc.)

It is important to include in the agreement all the intellectual property rights that are on offer. For example, if in addition to a patent, there is registered trademark to identify the patented product, then it must also be described the brand that is also going to be licensed as well.

9.4.2 Type of license

Determines the kind of license agreement the inventor would be granting. There are three types:

- **Exclusive license:** The inventor will not grant any other license of the invention, and will not exploit the technology by itself.
- **Sole license:** The inventor will not grant any other license of the invention, but may exploit said rights by himself.
- **Non-exclusive license.** The inventor grants certain rights to the licensee, but can also grant licenses to third parties or exploit the technology itself.

In general terms, the more rights the inventor gives the licensee, the higher might be his/her royalties. If the inventor wants to license his/her patent to a large retailer or manufacturer, he/she may not have much room to negotiate. Almost certainly these will dictate most (or all) terms.

Table 11: Characteristics between types of licences

Type of license	Independent inventor can still exploit his patent	Other companies can exploit the patent
Exclusive license	No	No
Sole license	No	Yes
Non-exclusive license	Yes	No

Source: Own elaboration

9.4.3 Geographical extension of the license (countries to be covered)

Licenses can be provided for part or all of a national territory. It is also possible that it will take effect in more than one territory where the patent has been granted.

Patent licenses cannot be granted for countries where the inventor does not have protection for a certain invention

9.4.4 Markets covered

The inventor may be able to negotiate separate licences with separate companies for different markets.

9.4.5 Content of the patent rights

When drafting the license agreement, it will be important to clarify the exact nature of the patent rights that will be licensed: the right to manufacture, use, sell, offer to sell and / or import the licensed product. If any of these rights will not be granted, it should be clarified.

9.4.6 Right to sub-license

If an inventor grants the licensee the right to a sub-license, the licensee may grant permission (sub-licensed) to others to use the inventor's patent / invention. It is important to be careful with the sub-licenses depending on the type of licensing agreement that has been reached. For example, in the scenario of a non-exclusive license with sub-license right, this will imply that both the inventor and the licensee will be able to provide licenses to third parties. If an inventor agrees to a Single License and expects only he/she and the licensee to operate in the market, then he/she should not want sub-licensees sharing the market, even if gets paid.

9.4.7 Royalties

The basic agreed royalty rate.

9.4.8 Guarantee of payment

The inventor needs some guarantee of payment to prevent the company acquiring a licence and then being either slow to work it or doing nothing at all with it.

9.4.9 Right of termination

The licence can be terminated if the licensee fails to meet agreed minimum royalty levels, or fails to perform some other agreed upon obligations.

9.4.10 Confidentiality clause

This requires the licensee to safeguard all disclosure.

9.4.11 Duration

How long would the inventor want the license to last? Usually a term between 1 to 5 years should be evaluated, depending on the type of product or sector of the patent, with the option of renewal. This allows the inventor the option to remove a poorly-performing licensee.

9.4.12 Ownership of improvements

If the company develops the inventor's technology over time, who owns the intellectual property for any improvements? It is important to discuss and agree about this issue.

9.4.13 Patent infringement

Fighting legal challenges in case patent infringement is detected in the market, can be expensive and stressful. It may be worthwhile to accept a lower royalty in return for transferring this risk to the licensee.

9.5 Alternative to licensing

Without any doubt, licensing is probably the most desired scenario for independent inventors to seek benefits from the investment they have made in the development of an invention. Under normal circumstances, licensing will offer a safe, but low return (royalties) for a given period of time (the remaining period of the patent).

However, there may be cases in which an inventor seeks to obtain greater profit from the invention and has certain strengths that would allow him to be involved in some stages of the development and/or commercialization process of this invention. In these cases, thinking of a strategic alliance (or even joint ventures) with companies (or other third parties) related to the product that has been built will be a very viable alternative.

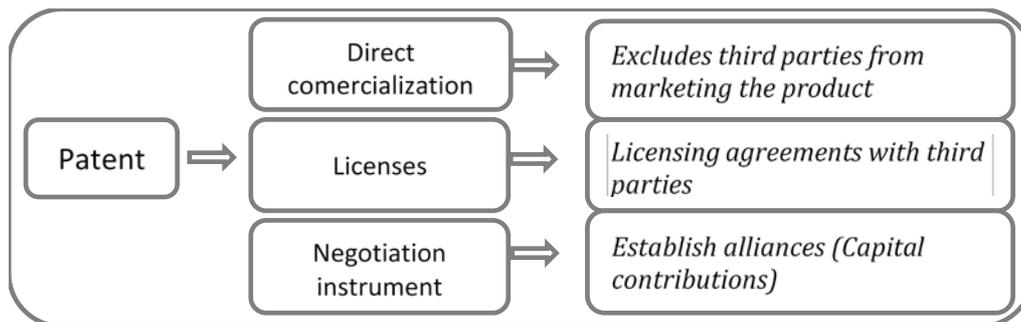
Strategic alliances are agreements established by two parties (inventor - company, inventor - specialist, company - company, among others), through which they decide to share common objectives and knowledge, as well as perform certain types of roles in the management of an invention project. For example, one party deals with production and the other with marketing.

Under this type of agreements there will be no transfer of intellectual property rights, but there will be a distribution of the profits from sales, as a result of which both parties of the alliance are working together. Unlike licensing, in this type of partnerships, the parties share the risk of the business, sometimes in similar magnitudes (at greater risk on the part of the inventor, greater expected profits). In the case of joint ventures, these are a form of strategic alliances that are formed between two companies, through which both become partners, including capital contributions.

Usually, independent inventors possess technical capabilities to develop a product and to monitor its manufacturing process. However, they lack of the necessary skills related to the commercialization phase. Hence, inventors should look for allies or strategic partners to fulfill this function or role within the context of any business.

Patents are crucial for commercializing inventions. They guarantee that products are protected and that they exclude third parties from their benefit. Patents, moreover, are commercial negotiation instruments used with third parties to establish alliances (even with capital contribution). In addition, with a patent, an inventor can establish license agreements and obtain royalties. The following table summarizes the importance of the patent in the commercialization process:

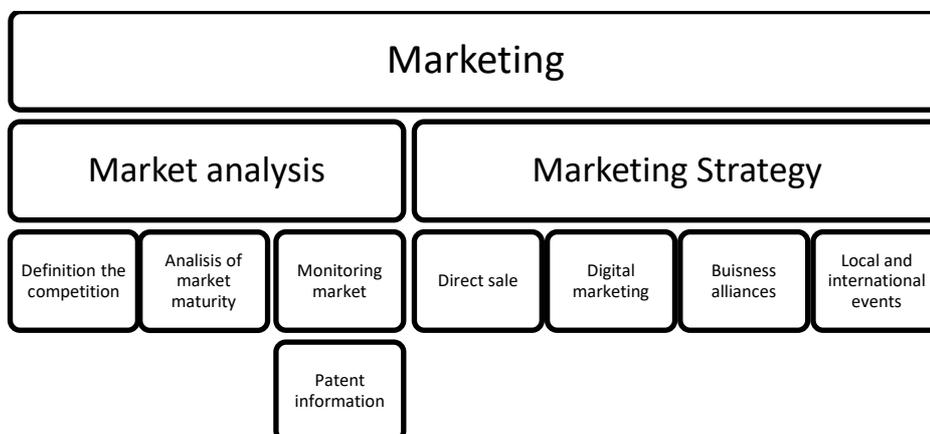
Figure 9: Importance of patents within the commercialization process



Source: Own elaboration

According to studies conducted and interviews carried out with APEC independent inventors, one of the most complex stages of driving an invention into the market is referred to its commercialization. As previously mentioned, independent inventors are very creative people with a special talent to devise solutions to specific problems or needs. But generally their knowledge and experience on how to sell or market a product are quite limited. Therefore, inventors must seek the advice of experts to work on matters related to the marketing of the invention, either establishing partnerships with already known people (family, friends), hiring specialists in the subject or approaching institutions such as universities, government entities and companies, among others.

Figure 10: Marketing components



Source: Own elaboration

An adequate use of marketing in the context of an innovative business or project will take into consideration two different but interrelated areas of marketing for greater commercial impact: market analysis and the subsequent preparation of a marketing strategy.

10.1 Market analysis

Prior to drafting a marketing strategy, an independent inventor must obtain as much as detailed information as possible from the market in which he/she will be operating (e.g., who are the competitors and what are the characteristics of the clients or users).

10.1.1 Market characteristics

Every inventor must analyze the particular characteristics associated with the market of the developed patented product. In order to do so, it will be necessary to perform the following actions:

- Identify similar products in the local and international market.
- Review information on commercial and industrial associations on the subject of the invention.
- Analyze information about similar products on the internet.
- Identify similar products in social networks.
- Review patent databases and patent documents of similar products.
- Assess customer needs and possible reactions to new products and analysis of the competitive environment and the needs of other key stakeholders.

10.1.2 Market maturity

An inventor must determine the maturity of the product in relation to the market. This will allow to understand if the market is emerging (rapid growth) or mature (when it is not growing or is not being innovative), and the innovative level of the product with respect to the market.

10.1.3 Information monitoring

The inventor must evaluate and understand the behavior of a product in the market and verify its costs, prices and trends. One way to analyze these trends is through patent analysis reviewing free and open access patent databases, such as:

- USPTO (United States Patent and Trademark Office)
- ESPACENET (Database from Europe)
- LATIPAST (Database from Latin America)
- PATENT SCOPE (Database from the World Intellectual Property Organization - WIPO)
- Patent databases of the local Intellectual or Industrial Property Office

Within these databases, it is possible to carry out searches by the international patent classification (IPC), the names of companies that manufacture and/or sell similar products worldwide or the description of a particular product, among others; later patent information can be analyzed by identifying the applicants (individuals, companies or other organizations) of patents identified and determining in which economies these patents were requested or registered.

This type of analysis allows the inventor to understand patents of similar technologies, the different techniques used in similar inventions, who are their inventors and in which economies

these technologies were developed. It also allows to understand the global trends or patterns in the development of these type of products.

This information will help to determine the strength of the product that has been developed by an inventor, its competitors in the market, the potential clients and, therefore, to achieve a better performance in the negotiations.

Table 12: Benefits of information monitoring

- ❖ Identify patents similar to those of an inventor
- ❖ Identify who has developed products similar to those of an inventor.
- ❖ Identify characteristics of products similar to those of an inventor.
- ❖ Identify differences in inventions similar to those of an inventor
- ❖ Understand to what extent the product of an inventor can solve a problem effectively compared to other inventions with similar purposes
- ❖ Identify in which countries are patented products being developed.
- ❖ Analyze global trends related to a particular type of product.
- ❖ Evaluate how products similar to those of an inventor reach the market.
- ❖ Find out what are the margin requirements of the distribution channel (distributors, wholesalers, retailers).
- ❖ Estimate the gross profit margin for a type of product (the price of the product when it is sold to the distributor / wholesaler / retailer minus its cost of supplying the product).

Source: Own elaboration

10.2 Marketing strategy

In strict terms, a marketing strategy is a type of strategy by which a particular business expects to achieve the marketing objectives that has been set. It includes the selection of the target market to be reached, the definition of the level of positioning that it is desire to achieve in the minds of target customers, the choice of the combination or mix of marketing concepts (product, place, price and promotion) with which it is intended to satisfy the needs of the target market, and the assessment of the levels of marketing expenses. Based on this, independent inventors generally lack of skills and knowledge to market their products. Therefore, they should complement their technical strengths by seeking alliances, funds and/or access to assistance to develop a marketing strategy.

Traditionally, marketing strategies most used by independent inventors are the following:

- Direct sales suppliers or clients
- Digital marketing
- Business alliances
- International events

10.2.1 Direct sales suppliers or clients

Direct sales can be made to customers through the Internet, stores or establishments, or through third parties: sellers or companies that will market the product.

10.2.2 Digital marketing

The digital market has increased considerably in recent years with a trend towards an increasingly interactive market. Thus, today, one of the main forms of sale, in addition to electronic commerce from the Internet, is marketing and selling through social networks. Companies use them to:

- Present the products and services that make up an offer
- Generate and share knowledge, to consolidate the image of the brand.
- Participate in professional networks with companies from the same sector or business contacts
- Search for professional talent through social networks

Some of the stages for marketing through social networks are the following:

Stage 1: Create a profile:

An inventor should create a profile in Facebook, Instagram, LinkedIn and other similars. He must use the same name on each of them so that it is easier for clients to find him/her and its products.

Stage 2: Add content permanently

The inventor creates content about the background of the invention, history, benefits of invention and other key aspects for customers.

Stage 3: Engage customers

The inventor finds and engage customers in different ways. Explore tools to use on the different networks. The contact with the client through the active or interactive market is through:

Table 13: Active and interactive marketing

Active marketing:	Interactive marketing
E-mails with information and links	E-mails with News & Calls to action
Electronic newsletters aimed at short attention spans, links	Electronic newsletters with calls to action
Website focused of customer	Website: with customer service, survey etc.
Search Engine Optimization.	Affiliate Marketing
Podcasts & Webinars	Social network: Instagram, Facebook, linkedin etc.
Blogging, Forum participation	
Search Marketing Management	
Videos	
Search Engine Marketing.	

Source: Own elaboration

10.2.3 Business alliances

To establish alliances, the inventor conducts a market study to determine which companies would be the most appropriate, with an analysis of the product`s strengths and weaknesses.

- What can be offered to third parties to establish alliances
- What are the benefits of the product and the impact on the market

- Each stakeholder establishes plans and expectations
- Identify prospective allies, taking into account the likelihood of a return on investing

The most effective alliance strategies operate on long-term goals

10.2.4 Assistance international events

Another marketing channel used by inventors is attendance at international innovation events, inventors' exhibitions, commercial exhibitions, entrepreneurs' meetings, workshops, among others. This type of event allows the inventor to expose his invention, to attract customers, suppliers and / or establish alliances with companies for marketing.

10.3 APEC commercialization/marketing support programs

Some APEC economies have implemented programs to provide independent inventors (without excluding companies or research centers) tools that provide opportunities for businesses networking (strategic alliances or licensing), leveraging of resources, as well as technological commercialization. It is highly recommended that inventors be able to analyze and identify funds or instruments available in their respective economies for such purposes.

Table 14: Examples of public programs aimed at boosting technology commercialization in APEC

Economy	Name of Program	Brief Description	Institution	Website
CHILE	INAPI Conecta	Public and free meeting space that seeks to promote and accelerate technology transfer and marketing of new technologies in Chile. In particular, it aims to link patent holders (whether the patent was granted or still a pending application) with third parties who may be interested in exploiting those technologies, commercially or industrially. The platform holds information on 80 national technologies, in areas of biotechnology, electronics, pharmaceuticals, mechanics and chemistry.	INAPI	http://www.inapiconecta.cl/
	"Move your innovation to industry" Program	The main purpose is the provision of knowledge and tools to facilitate starting and developing a licensing negotiation and consequently transferring an invention to market increasing the chances of succeeding. Noteworthy amid the topics	INAPI	https://www.inapi.cl/

		addressed are: identifying potential buyers or licensee partners, non-disclosure and confidentiality strategies, negotiation and valuation of intangible assets, among others. Additionally, talks by Chilean innovators who had carried out technology transfer activities are included		
HONG KONG, CHINA	Elevator Pitch Competition	Elevator Pitch Competition, "EPiC" in short, is a fun-filled international start-up event organized by Hong Kong Science and Technology Parks Corporation. 100 start-ups will be selected to pitch their ideas in a 60-second elevator ride at the International Commerce Centre	HKSTP	https://events.hkstp.org/events/2018/EPiC/index.html
REPUBLIC OF KOREA	Seoul International Invention Fair	The purpose is to hold a wholly integrated invention fair providing inventors from all over the world with comprehensive information on the commercialization of inventions, patent information, and technology transfer. Inventors have the opportunity to showcase their invention, receive an evaluation, and compete for an award given to outstanding inventions.	KIPA	http://www.kipa.org/siif_en/index.jsp
	Korea Invention Patent Exhibition	Korean inventions are pre evaluated and outstanding inventions are awarded and displayed. The purpose is to expand the invention atmosphere and promote commercialization of patented technologies	KIPA	http://www.kinpe.x.org/
	IP Market	Creating added value by maximizing the utilization and commercialization of excellent patent technology of individuals and small businesses	KIPA	https://www.ipmarket.or.kr/usr/iu00/iu0001_v0.ipm
PERU	Peruvian Patent Marketplace (PPM)	Will consist in the development of a Website that will contain Peruvian Patented Technology for online international exhibition and possible transaction	INDECOPI	To be launched soon
PHILIPPINES	IP Depot	Online platform wherein inventors can promote their protected technologies for free	IPOPHL	https://ipophil.wixsite.com/ip-depot-2017
CHINESE TAIPEI	Taiwan Technology Marketplace (TWTM)	Online platform for sellers and buyers to post their supply and demand.	Industrial Technology Research Institute (ITRI)	https://www.twtm.com.tw/Web/index.aspx

Source: Own elaboration

11. Protecting and defending the invention

A patent granted in an APEC economy, (for example, Thailand), may prevent others from manufacturing, selling or using the invention only in that economy, but it has no influence or validity anywhere elsewhere. Therefore, if an inventor plans to sell or license his invention abroad, he/she must consider its protection in those economies that will be his target markets. Otherwise, anyone can legally make, use or sell the invention freely overseas.

11.1 National application in individual countries

An inventor can obtain protection in each APEC economy by applying for the patent individually in the national office of each of these economies. This will be recommendable only if the inventor wants protection in a few countries (two or three), for which he/she should seek advice in relation to the procedures of the respective national office where he/she wants the patent.

The inventor can claim priority from existing patent application if he/she apply abroad within 12 months of the original application (appealing to the Paris Convention). The later application will be treated as if it had been requested on the same date as the original application. This will have an impact on the patent granting procedure.

11.2 European patent protection

To protect a patent in more than 30 countries in Europe, the inventor can apply using the European Patent Convention (EPC)¹⁶. The application will be processed as a single application; but once granted it becomes separate patents in the countries that have been designated.

11.3 International patent protection

If the inventor is a resident or national of one member economy of the Patent Cooperation Treaty (PCT), he/she can protect the invention in many international countries appealing to this Treaty.

The inventor may file an international application to one national office of the member economies of the PCT. A PCT application is initially processed as a single application. The inventor will then receive an international search report and written opinion. The application is published around 18 months from the earliest priority date.

After publication the inventor can file a request for an international preliminary examination. The examination is optional, but it will provide detailed information about the patentability of the invention.

This should help the inventor decide whether to pursue the patent granting procedure in each of the contracting economies in which he/she wants protection. Later, it will be needed to enter the 'national phase' in the economies where the inventor hopes to secure protection before the expiry of a deadline.

Using the PCT system (as opposed to the Paris Convention) has the following advantages:

- The inventor gets a single international search report, which can reduce the administrative burden and costs.

¹⁶ See www.epo.org.

- In the early stages, the inventor processes a single international application instead of multiple applications individually in multiple patent offices.
- The inventor does not have to designate the economies in which the protection is needed until about 30 months from the date of the original application.

12. Concluding remarks

In order to drive a new product into the market, every independent inventor must recognize that the business and managerial capacity is much more important than the technical ability (which led the inventor to develop the new product). In doing so, the inventor must hire people with business skills or conform strategic alliances with people or companies that may provide added value and complement the skills that he/she already has.

After carrying out a responsible market and environment analysis, the inventor must define a roadmap with the steps to follow. For example, the actions needed to prototype, design, market and commercialize the developed technology. Then he/she must determine the cost of executing those actions and how and who will be doing them. Based on this, it will be important to estimate the monetary expenses (along with possible income) for the next three to five years related to the investment required for the development of the invention.

If the inventor chooses to act on his/her own (open a new company), look for strategic allies or grant a license to a third party, it must consider the magnitude of the advantages and disadvantages of each option to successfully face the competition, as well as the real possibilities that these scenarios occur (given the monetary and non-monetary resources/constraints of the inventor).

It is important for the inventor to understand that starting his own business presents the risk of not being prepared to carry out proper business management. This includes, among other aspects, the following:

- Obtaining and managing financial resources.
- Hiring and managing employees
- Deciding the optimal location for the production plant and offices
- Managing production and sales
- Managing inventory
- Conducting accounting and finance of the company

Directing a business involves making quick decisions, sometimes with scarce time to think more in depth due to the continuous change generated by business growth, the appearance of new techniques, changes in taxes, the eventual appearance of new competitors, among others. However, being the personal business venture more risky, it can also turn to be more profitable and a source of personal satisfaction.

On the other side, the option of licensing will provide the inventor the advantage of not investing in the business and, rather, to have time and resources devoted to making new discoveries. The licensee will use his entrepreneurial capacity and experience to assign resources to the development and commercialization of the invention, considering that it has a better knowledge of the market that will allow to take the invention directly to distributors or to the final customer.

However, getting a licensee is not something simple; it requires time, contacts, persuasion skills, persistence, many meetings with different companies and the know-how to set up and transmit a good business. The risk of showing others an invention for fear of theft is probably exaggerated and should not be an argument against the licensing option. Most of the companies have products in progress at any given time and are busy finishing and launching those products to the market.

In many cases in which inventors believe that their invention was stolen, it can be a coincidence, since people who do not know each other can come up with solutions similar to specific needs. In addition, by the time of licensing negotiations, the inventor should already have a patent pending or granted, which reinforces its ability to defend against a possible infringement. In fact, having a patent or a utility model granted (even in progress), can increase the negotiating power of the inventor to grant his license.