

# Development of a Business Model adapted to a R&D organization: INEGI Case Study

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## Abstract

Additive manufacturing (AM) is being used for the past 30 years. However, it is only now that its full potential is being explored by companies. Until recently, AM was mainly used to produce prototypes of products in early development stages. Yet, the increasing demand for customised solutions created an opportunity for companies when using AM technologies: customised products and solutions at a much lower price than the ones produced by conventional methods. The purpose of the present paper is to analyse the attractiveness of a potential new service that takes advantage of AM technologies. By the end of this research, it was possible to conclude that this is indeed a good market to explore and that the best suitable option of a business model for the new service would be one of complementarities. The advantages pointed out by potential clients relied on productive systems, and since there is a team specialized on this matter within the business unit where this new service will be inserted, it would be of value for both of them to combine their knowledge.

**Keywords:** *Additive Manufacturing, Services, Internal Analysis, External Analysis, Business Model, Business Plan.*

## 1. Introduction

For the past 30 years, Additive Manufacturing (AM) has been developed in order to represent a viable alternative to mass production. However, this type of production has been mostly used in the development of prototypes on the early stages of product development. This is due mostly to the reduced time needed to create a functional model when using these techniques, which enable companies to identify errors on the early stages of development leading to cost savings.

Nonetheless, given the evolution of consumers' preferences, the demand for customized products has increased. According to a study performed by Deloitte in 2015, more than 50% of individual consumers search for customized products and services and are willing to wait and pay more for them (Deloitte, 2015).

With this in mind, it is possible to see the potential of AM in the fulfilment of this demand. The common machines used in manufacturing need to produce a large amount of products to achieve scale economies and to cover the investment. By using AM the costs per part produced can be reduced and it becomes much cheaper to produce unique products according to customers' specifications and needs. Unlike to the conventional production techniques, with AM it is relatively easy to produce different types of products in a single machine.

Not only individual customers but also companies want to have unique solutions for the problems they face. In a world that is becoming more and more industrialized, AM appears as a way to respond to specific problems that companies face with their operations. Since not all companies have the economic power to have their own business unit of research and development, or to invest in equipment and training on these areas, this is also an opportunity for other companies and organizations that do have this know-how on AM and the required machines to try and explore this emerging market of providing services related with AM technologies.

Being a national reference on engineering research and product development, the Institute of Mechanical Engineering and Industrial Management (INEGI) wants to start offering the aforementioned services. This will be offered within by the Product and Systems Development (PSD) business unit that has the necessary experience to endure this challenge. Since producing parts by using AM technologies require special design methods, INEGI also aims to be a specialist on this matter- product design for AM. This happens due to the method of production in AM, i.e. using AM machines, the part is produced by adding a layer of material on top of another layer. This is exactly the opposite of the traditional processes, which subtracts material from a solid block of raw material to build the wanted part. Being the two methods so different from each other

when it comes to their productive methods, it is important for INEGI to acquire the necessary knowledge to be able to design parts that can be produced by AM machines. Not only is the design of the model important for them, but also to acquire knowledge on the new and emerging techniques of Additive Manufacturing such as the production of models in Metal.

### 1.1. Additive Manufacturing (AM)

Additive Manufacturing (AM) is becoming more and more relevant due to the importance given by companies to value creation and increased competitiveness. This manufacturing process differs from the traditional ones because, instead of removing material from an initial block of raw material, the products are built by adding material layer by layer (Bikas, et al., 2016).

With AM, companies are able to produce more complex parts than when using SM and with an accentuated decrease in wastes. Although it is difficult to take advantages of scale economies with AM, giving that these platforms are not capable of support mass production (Baumers, et al., 2016), these processes represent an advantage especially when it comes to customized products. A good example of this is the personalized service offered by Mini, where customers are able to design some parts of the car that will then be produced by using AM. Replacement parts for older car models is also a good application example of the utility of AM technologies in modern companies such as Mercedes-Benz, which started to produce spare parts for car models that are no longer being produced. Another significant advantage of manufacturing parts with AM is the decrease in the weight of the products, which in some industries, like the aeronautical industry, is very important and difficult to obtain with traditional methods (formnext, 2018).

## 2. Problem Definition and Objectives

This research was ordered by INEGI so they could know how to make a more efficient use of their capabilities and resources, such as their experience, know-how and customer relationships. After studying technological and market trends, the company became interested in developing a business plan for the use of AM technologies. The potential use of this type of technologies is very high (EY, 2016), so INEGI believes that they have the capability to introduce a new service, by taking advantage of the experience that the PSD business unit already has on this subject, and, with it, add value to their clients. Combining the resources of the business unit with the emerging demand for customized solutions, it is possible to say that INEGI will be able to fulfil the demand and explore new emerging markets.

The main goals for this research were:

- Build a Business Plan for the new services by exploiting the different fields that need to be taken into account for this – Activity Network, Value Proposition and Cost Structure.
- Understand what Business Model was more suitable for the service taking into account the company's internal dynamics
- Search for potential market gaps for INEGI to explore.

### 2.1. Business Model

A business model (BM) can be defined as a tool that describes the way a company should act to enhance value creation and its delivery to the customer, as well as to capture and retain its employees (Teexe, 2010). This is possible because on these models it is shown how the different departments of a company are inter-linked and how one's activities influence the rest of the sectors (Zott & Amit, 2010). Most managing directors find BM a crucial tool to ensure and increase a company's competitive advantage, finding it crucial for a successful financial performance. As a result, from a study performed by IBM in 2009, companies with a well-defined BM tend to present better financial results when compared to other companies (Wirtz, et al., 2016).

Before starting to design a BM, it is important to have a well-structured company strategy since BM will be based on this strategy to define how the company will create value to clients. Besides that, BM will also present an intelligible way of implementing the aforementioned strategy (Dahan, et al., 2010). So, business strategy and BM differ one from the other as business strategy is related to medium and long-term decisions while BM is a guide on how to reach the defined objectives within the formulated strategy.

To be effective, a BM must be composed of three different modules that will include sub-models that are considered crucial for a company's success (Wirtz, et al., 2016):

- Strategic components;
- Customer and market components;
- Value creation components.

### 2.2. Business Plan

While BM deals with more conceptual elements, often being called a statement, a business plan (BP) deals with more concrete aspects (Morris, et al., 2005). A BP can be understood as a "*comprehensive, written description of the business of an enterprise*" (United Nations, 2002). It describes both past and present of the company and, therefore, should be updated regularly. The most important use of BP is to inform the interested entities within the company of the current state of the business, as well as its

objectives, strategy and financial performance (Delmar & Shane, 2003).

BP are an important tool when for companies that need financial investment or other resources to start a given a project or service, or to continue growing. As planning allows companies to test various scenarios with a minimal cost, they can present viability studies of their businesses before applying to any type of funding or loan (Rogoff, 2003). As so, and giving that investors and capital firms receive several BP every day, the most important part of a BP is the *Executive summary*. On average, each BP goes through a quick overview of roughly five minutes on which the decision maker will briefly analyse the attractiveness of the BP (Schilit, 1987). So it is important that a BP has a well written *Executive summary* so it can be able to catch the attention of the one that is giving its first evaluation.

Schilit (1987), also gives some guidance for the ones we are trying to build an extraordinary BP. Despite the *Executive summary*, there are some aspects that should be taken into account while writing a BP:

- Keep it short and simple
- Identify the market and draw a plan for the future
- Be realistic
- Show the investors how they will their money back

It is common to all the authors mentioned above that a BP is a crucial toll for companies to be successful and to obtain investment. Within that structure a few aspects are mandatory to be clarified:

- Business' value proposition;
- How to attract and retain customers;
- The differences between what is done now and the company wants to offer;
- How much each product/service will cost?
- What will be the financing source?

If a BP is able to cover all these five points, than it can be considered a good BP that will bring advantage for the company that wrote it (Rogoff, 2003).

### 3. Methodology

The methodology used in this dissertation for data collection consists in a case study analysis. This type of research allows us to have a better understanding of the reality of the company and industries that will be studied since it will give us a very detailed description of how they work and what they do (Flick, 2014). This method consists of the following steps: 1) Interview guide; 2) Data collection/ Interview conduction; 3) Data processing; 4) Conclusions.

To gather information for a case study analysis one can use either qualitative or quantitative data, so it is not necessary to be restricted to one type of data which enables to have a wider information source (Yin, 1981). Since the purpose of this research is to find potential applications for AM technologies, the interviews will be based on qualitative data rather than on quantitative. Another advantage of this method is that it enables to relate theory with the obtained data in a simpler way since it forces us to gather information by performing field investigation (Saunders, et al., 2009).

The necessary information was obtained through in-depth semi-structured interviews. This type of interviews is composed of open questions that will lead to more spontaneous answers and enable more detailed information (Flick, 2014). This is possible because the interviewees will possess a high level of knowledge on the subject of study. Two different sets of guides were prepared, one for the internal interviews and other for the external ones. The companies to be interviewed were chosen together with INEGI's representatives during their interviews, and its selection had its field of activity as the main criteria.

#### 3.1. Conduction of Interviews

To be sure that the relevant information for the case study is gathered while using interviews as a source of information, it is necessary to go through three different steps (Flick, 2014):

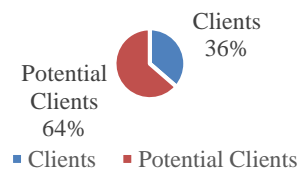


Figure 1 Percentage of clients and potential clients interviewed

- **Data recording:** the internal interviews were made within the INEGI's facilities. The external interviews, since they were made during an event, it was not possible to record the conversations due to the background noise. Therefore, several notes were taken and some aspects were repeated by the person that was being interviewed to be sure that everything was noted down.
- **Data editing:** For the internal interviews, to assure that all the relevant information provided by the interviewed was analysed, a transcription of the conversations was made. Besides this, it is known that part of the information is passed through the way things are said rather than the exact words that are used (Flick, 2014). So the

interviews were listened carefully more than once, in addition to their transcription. For the external ones, the collected info was then separated into categories to facilitate the analysis process.

- **Data analysis:** The collected information was matched to the questions of the interview guide and was then arranged into the different categories that were being analysed (Saunders, et al., 2009). Regarding external interviews, since it was not possible to recreate the full conversations, the collected data was separated into different topics. The answers to the questions were firstly separated into general topics. Secondly, they were separated in order to have filtered groups of answers, or subtopics of the ones were they were initially matched. Finally, it was possible to have a structured source of information, divided by topics and subtopics that were matched to the questions presented on the external interviews guide. With this, it became feasible to analyse the answers without the fear of losing crucial input, something that was most likely to happen if this algorithm was not followed (Flick, 2014).

#### 4. Results

The internal interviews content, giving its nature, was organized into continuous text in order to have a clear understanding of what are the PSD business unit ideas for this project. And since the business unit is part of a bigger organisation, INEGI, it was important to understand what can and cannot be changed within its strategy.

Although INEGI already has a few clients of interest for this subject, one of the objectives when launching a new service is to attract new clients. So the interviews were performed to both clients and potential clients, with emphasis on potential clients.

##### 4.1. Internal Interviews

Concerning the internal interviews, the number of people interviewed was not a key aspect, rather the quality of the information. So, during the time period given to collect data, three interviews were made within INEGI's personnel.

**Table 1 Internal interviews sample selection**

Name	Position	Business Unit
João Paulo Pereira	Head of Business Unit	Product and System Development
Luís Oliveira	Researcher	Product and System Development

Catarina Cardão	Business Development Manager	Innovation and Technology Transfer
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Table 1 describes the interviewees, their business units, and their position. For this set of meetings, two members of the PSD business unit and one of the cluster business unit of Innovation and Technology Transfer were chosen. The selection criteria was based on the knowledge of the current offer of the business unit and what was intended to offer. Also, it was important to talk to people who understood the cost structure of the projects and how the communication between the company and clients took place.

These interviews allowed to have a better understanding of how the new service could be integrated in the already existing activities of the company. Also, it helped to understand how communication between the company and the clients is made. Finally, it was possible to have a cost structure for this new service and to see the financial sources of the company.

- **Activity Network:** The new service will be integrated in the PSD business unit. This unit is specialized in Complex Productive Systems and most of the know-how could be transferred from one service to the other.
- **Value Creation and Communication:** With the service, INEGI wants to offer unique productive solutions for its clients by taking advantage of the potential of AM technologies. A new unit is being created (Business Development Unit) that will be in charge of all the commercial activities related to the entire company – which includes the new service. These activities can either be commercial communication, marketing or even sales.
- **Cost Structure:** From the interviews it was possible to conclude that INEGI has a 50/50 investment origin, i.e. they have almost the same amount of private investment as they do of public investment. This is an indicator of clients' trust on INEGI's work. Also, a formula for calculating a project's final price (FP) was also presented. This formula relates the costs of producing a part with AM (A), the percentage of indirect costs and unit margins (B), and the percentage of related overhead costs (C). After that, and if we are dealing with an external project, a commercial discount (cd) is also applied.

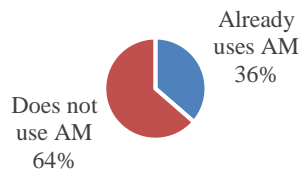
$$FP = A * B * C * (1 - cd)$$

##### 4.2. External Interviews

The selection of the companies to be interviewed was made during the internal interviews. Most of the targeted companies have as their main activity

*Manufacturing of Productive Systems*. However, since these interviews were conducted during a technological fair, it was possible to approach companies that work on *Research and Development* and *Machining*. All of the 11 interviewed companies are located in the centre-northern region of Portugal.

The first thing to know when conducting these interviews, was if the company that was being interviewed was already using AM technologies on their facilities. As shown in Figure 2, the great majority of the companies does not use this type of technology.



**Figure 2 Percentage of the use of AM technologies within the interviewed companies**

#### 4.2.1. Companies that use AM

For this set of companies, the purpose of the interview was to know where they use this technology and what their major setbacks are.

Regarding its uses, the following answers were obtained:

- Three use AM for their final products;
- Three use AM for product validation/prototyping, allowing them to decrease the time of the product development cycle;
- One use AM for helping the production process. This can be made by producing elements that are able to stabilize the product during its manufacturing process, hence reducing manufacturing errors.
- One company is on the early stages of using AM, i.e. it is still gaining know-how on the subject but intends to use it on their productive system.

The main advantages pointed out by these companies can be gathered into three different categories:

- **Production flexibility** – this technology allows the production of several parts by using just one machine;
- **Time saving** – mainly in when used in prototyping, AM can reduce the time needed between an idea and a proof of concept.
- **Cost saving** – this is a technology that is very suitable for small series production, since the price per piece tends to be the same. For this companies that offer different solutions for each customer can

represent a decrease in manufacturing costs.

However, the companies also shared some concerns and agreed on the disadvantages of AM usage:

- The need for post processing operations, depending on the used material;
- For mass production this is not a suitable technology since it would take too long to produce a great amount of parts when comparing to traditional methods;
- The biggest setback these companies identified is the reluctance to change of their clients. Traditionally, the northern region of Portugal is not very keen to new technologies and may become sceptic when AM solutions are presented to them.

#### 4.2.2. Companies that do not use AM

The first thing to know when approaching this companies was their level of knowledge on the subject. Figure 3 shows this distribution.



**Figure 3 Percentage of companies that knew or not AM**

From the companies that knew this technology, it was necessary to know why they were not using it:

- These are small companies that do not have enough financial and human resources, as so, starting to use AM on their facilities would represent a great initial investment;
- Also, the level of maturity of AM technology is also a reason for companies not to invest on AM;
- Also, some companies do not see any advantage for their business.

After that, in order to continue with the interviews, it was necessary to explain this technology to the companies that did not have any type of knowledge on it. Once this was made, it was possible to gather some strong points that these companies mentioned:

- Three of the see an advantage when it comes to decreasing safety stock levels. This can be because some parts that were made on another location, can start being produced on their facilities. This can be applied to critical parts or to replacement parts;
- Two of the mentioned the advantage on helping their productive systems;

- Two of them see advantage on producing small parts that belong in the final product but differ from product to product;
- Four of them did not see any advantage.

It also interesting to analyse the attitude of the different interviewed company. By distributing the companies into one of the three categories – *Receptive*, *Repulsive*, *Neutral* – it was also possible to see if this companies are prone the change or not. This analysis is shown in Figure 4.

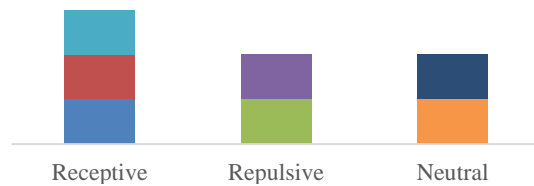


Figure 4 Analysis of companies' behavior during the interviews

Contrary to what was expected, only a small part of the companies showed an attitude that could be considered *Repulsive*. This means that most companies are eager to learn and participate in projects that use AM technologies.

## 5. Discussion

The proposed Business Model is based on the Activity System Perspective (Zott & Amit, 2010) since this was the one that considered the creation of a new activity within an existent company and not from an entrepreneur's point of a view.

According to Christoph Zott and Raphael Amit's research on BM design (2010), we could consider four different types of models:

- **Novelty** – where a new activity, linkage of activities, and/or ways of governance of the existing activities is created in the organisation.
- **Lock-in** – here the customer becomes dependent of an organisation for a given product or service. The client, in the scenario, cannot search for a different supplier without substantial switching cost.
- **Complementarities** – the complementarities BM makes sense when the bundling of activities enhances them both, i.e. it brings more benefit to the company to have the two activities working closely together.
- **Efficiency** – this last design of BM aims to reduce transaction costs hence reaching a greater financial efficiency.

Taking into account the nature of INEGI and the main goal of the proposal in study, it is possible to say that a business model focused on complementarities is the best solution. The PSD

business unit is specialized in productive systems, so they already have a deep knowledge on this subject. If we look into the advantages pointed out by the companies who do not use AM, it is possible to see that they fall into this subject. As so, it would be beneficial for both parts to work together. The new AM based service could benefit from the knowledge of the team who works with complex system production, and this last one could start offering more advanced and unique solutions while working alongside the AM specialized team.

### 5.1. Activity Network

The AM service that is being studied can benefit from the knowledge they have regarding conception of complex product and systems. Since the main goal of this new service is to provide advanced and unique solutions for productive industries, it may be beneficial for the two sections to work together. By working closely, the new AM service could benefit from the large amount of existing clients that this area already has and use it to gain visibility among them.

The other two fields of knowledge, sustainability and automation, may also be of value to this new service. Since one of the pointed advantages of AM is that it is more eco-friendly than the traditional methods, it would be interesting to have some cooperation between these two areas. The automation and movement control may also be useful since the identified applications includes handling parts and robot parts, since this would be parts that would not be static and would require some motion. This would imply some design adjustments that would not be necessary if the part did not needs to perform any type of movement during the process.

For the new service to be successful, there needs to be an investment on human resources capable of handling AM technologies and develop solutions based on it. This can be achieved by either hiring new employees with the necessary skills, or train the existing ones on this subject.

### 5.2. Value Creation and Communication

The value proposition of the new service is to create innovative solutions that take advantage of AM technology in order to improve the competitiveness of INEGI's clients. To do so, it is imperative to continue developing the knowledge on this subject. Besides the acquisition of new employees with know-how on AM and/or the training of the existing workforce, another way of deepening the knowledge regarding AM is to approach companies that already use it. This type of partnership would be beneficial for both parties since by sharing knowledge they could increase rapidly their skills on the topic. Also, by combining efforts they would collect more success

stories, something that is important when it comes to attract new clients to this service.

The organization of events and participation on technological fairs are very important to promote the new service. By exposing it in an attractive way, it will be possible to gain the attention of new clients and new investors. Also, it is important to continue to develop the Business Development unit, since this will be one of the key links that will connect new customers and the company. It is convenient that the ones that belong to the Business and Development unit have also some knowledge on this subject so they are capable of informing clients that are not aware of this subject and, by doing so, trying to understand if AM would be a suitable option for them.

### 5.3. Cost Structure

Regarding the inflow of income, it was possible to see that the income comes from both public and private investments in a roughly equal way. This is important because it shows that private investors have trust on INEGI's work and, giving that, could be more willing to invest on new projects and ideas.

With the interviews it was also possible to inquire the openness from other companies to participate in projects that would help INEGI gain experience on AM. Despite the reluctance shown from a few companies, there were quite few companies that are interested in being a partner of INEGI on this subject. Once INEGI starts having more projects, it will be able to show more proofs of this technology advantages and could explore more industries where it could be useful to use AM. If they are able to do that, an increase in private investments should be expected.

Although the presented cost is still a draft, there are not much aspects that could be altered since they are INEGI's standards for project pricing. This fixed parameters are:

- Overheads
- Indirect Costs
- Unit Margin.

The percentage for each of these three parameters is setup and is equal for every INEGI's project. Together they represent 70% of the project's price before applying the commercial discount to it.

However, the cost structure must be dynamic and revised from time to time in order to take full economic advantage of the projects.

## 6. Conclusions

### 6.1. Main Conclusions

The increased demand for customized products aligned with the strength of services in economy, made room for new types of services that companies

can provide to their customers. In a society that searches for unique products and solutions, AM technologies appear as a suitable and economically viable options for companies to enlarge their offers.

In contrast with traditional production techniques, AM facilitates the creation of products with more complex structure at a relatively low price of manufacturing. So it is expected that more and more companies start to look at these technologies as something to invest on. Also, the great variety of materials that AM machines are capable of handling turns them into an important resource for every type of industry, from the aeronautical industry to the fashion industry.

However, AM requires a large investment, both financial and in human resources, that most companies are not able to do. So, organizations focused on Research & Development that already are in possession of AM machines and have the necessary know-how to handle them, like the one studied in this project (INEGI), can have here an opportunity to expand their offer of services.

In order to find market gaps for INEGI to explore, the proposed method on this research consisted in a case study analysis. This implied carrying out interviews to experts and possible customers to see if this is an attractive business or not. After the collection and analysis of the data obtained with the interviews, a proposal of a business model was made so that the company can have a better understanding on how to approach the identified market gaps. The proposed model stands on the fact that this is a service that is being developed within an existing business unit that has already a business model of its own. As so, the suitable option would be one of complementarity. By doing so, it is possible to exploit the existing knowledge and clients of the unit and use it to start offering AM based solutions. To enhance this choice comes the fact that the PSD business unit is specialized in offering advanced production solutions, whose competences can be easily adapted to this new business.

At the end, it is possible to conclude that this is an attractive business for INEGI to explore. However it has some aspects that need to be improved – mainly the commercial communication and the attraction and retention of talented people. Nevertheless, these two aspects are in being improved, which indicates that soon they will not be an impediment for the success of the service. It is also important to exploit the opportunity of establishing partnerships with the companies that already are using AM in their facilities to enhance their knowledge on the subject. Since there is still a bit of scepticism from potential clients, these partnerships would play an important role in convince them of the potential of the usage of AM technologies.



## 6.2. Future Work

As future work, some of the limitations found should be explored and corrected. The main limitation is associated with the time frame given to complete it. As so, this required a decrease in the number of interviews made, as well as restricting them to a single type of industry to have a relevant sample. This could be rectified by enlarging the number of companies to be interviewed and their industry. It could be interesting to analyse the receptivity of this technology in other industries rather than the one that was mainly studied - manufacturing of productive systems. Since INEGI works closely with both the automotive and the aerospace industry, and being these two sectors, where we can see more enthusiasm regarding the use of AM, it should be interesting to speak with some companies that work on these two areas. These could work out well for both parties since INEGI could gain new partners or get the chance to participate in new and innovative projects, and companies would be able to expose their needs, expectations and doubts regarding AM.

Another aspect that should be improved would be the interview environment. To collect the information needed for this research, the interviews were conducted during one of the biggest industry events – EMAF. Although it allowed to carry all the necessary interviews in a short period of time and to explore other industries than the one initially targeted, it was not possible to record the interviews, despite the openness and patience of most the interviewees. Also, by not performing the interviews neither in INEGI's facilities nor in the interviewed companies' facilities it was impossible to have a close look on their productive process or to show them what is being developed by INEGI. If this was made, maybe more advantages could have been pointed out and that could have facilitated the process of convincing clients to participate in projects that include AM. By not having these conversations in a more formal space also made it impossible to expose the technology with anything more than words and enthusiasm, which may not be enough for companies to start showing interest in the subject. If the interviews were complemented with a presentation of some success cases, it is possible that the conversations could have evolved much more than what they did.

On this paper, only a brief guide of a business model was exposed. Despite the three main focus points of a business model being approached, again due to the limited amount of time, it was not possible to describe a full business model where all the aspects were more deeply exploited. From the subjects included in a Business Model, the ones that require more attention would be the ones related to the cost structure – revenue, procurement and financial models – since it is the part that is less developed at this stage. However, it is important to remember that

business models are dynamic and must be revised from time to time so they can adapt to the real time stage of the business.

As exposed in this work, communication and publicity will take an important role in the success of this service. This involves exposing the work that is being developed to potential clients and to approach them with partnerships proposals in a more attractive way. This can be done in a more personal way, by contacting directly the companies that INEGI has an interest in working with, or in a more dynamic way such as organizing events that are focused on the use of AM for industry. These two options have advantages and disadvantages that need to be taken into account. For example, by going directly to the client it is possible to see how they perform their work and make suggestions of how AM could improve their performance. This approach would be slower than organizing events, nevertheless it would allow for a more personal treatment that could be advantageous when companies are reluctant to change. By organizing events, the presentations must be more general and the content exposed in an attractive way. However, this would allow reaching a greater number of customers at the same time and showing them what INEGI is able to offer them – this can include tours, showing recent parts made with AM, and so on. For both scenarios it is important to deepen the knowledge on what it is already being done with AM, to search for success stories that can convince the more traditional companies that AM represents a good option. This would also be good for INEGI since it would also be able to be more aware of the possibilities of AM and to come up with better and more attractive solutions for their clients.

INEGI has all the tools it needs to turn this new service into a success and to become a leader in AM solutions in the country. If they are able to hire skilled personal or give the opportunity to existing employees to explore their abilities in AM, their only set back will be to convince their customers that AM can be a very powerful tool for them. If communication is well done, this obstacle can be easily overcome.

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