

Business Model: a prerequisite for success in the network economy

1. Elena Tavlaki

2. Euripides Loukis

University of Aegean, Greece

etavlaki@aegean.gr

eloukis@aegean.gr

Abstract

The contemporary network economy is built on powerful fixed and mobile network infrastructures. These infrastructures provide the solid ground for the continuous and rapid introduction of innovative both telecommunication services and business application services. One of the most critical preconditions for the success of these services is to be based on sound business models. Especially today, in the dawn of the networked economy, the concept of business model is not a theoretical tool but a prerequisite for success. Business model is one of the most common factors encountered for, when Internet firms succeed in business. Furthermore, the rapid introduction of innovative applications necessitates the rational design of their business model. However, despite the extensive use, and sometimes misuse, of the business model concept, there is not extensive the scientific research that has been conducted in this area. Moreover, there is still some ambiguity concerning the exact meaning of this concept, which results in a diversity of definitions and a confusion in terminology. In the present paper, initially we present a literature review on the theoretical foundations of business model presenting its definitions- and its components. . Then we focus on the research that has been conducted so far concerning methodologies for designing new business models, we identify its shortcomings and we propose a new framework for 'digital' business model design, by implementing it in a real - life business case.

1 Introduction

The contemporary network economy is built on powerful fixed and mobile network infrastructures. These infrastructures provide the solid ground for the continuous introduction of innovative both telecommunication services and business application services. Nevertheless, the exploitation and the profitability of these network infrastructures depend heavily on the commercial success of the services running on them. The innovative services and applications changed the ecosystem of the economy and created new market space. A critical precondition for the success of these services is to be based on sound business models, as business model is one of the most common factors encountered for, when Internet

firms succeed in business; for example, eBay, Amazon, Dell are examples, that much of their success is based on their innovative and successful business models. A study of 453 successful websites (Chen, 2002), which were considered as the best by the leading magazines, concludes that their good business models were the most critical factors of their success. A survey-study (Linder et al., 2001), conducted by the Institute of Strategic Change of Accenture in 2000, concludes that “developing a sound business model matters for making money. As the business environment changes business models wear out, and firms must alter them in order to remain viable. The better the managers know their business model, the more better they can manage patterns of change.” It is evident that business model is a concept so fundamental to business performance that clarity is compulsory and no misunderstanding is tolerable. A good business model remains essential to every successful organization, product or service; it incorporates the underlying economic logic that explains how value is delivered to customers at an appropriate cost (Magretta, 2002) and how revenues are generated. Furthermore, when a business model changes the economics of an industry and is difficult to replicate, it can by itself create a strong competitive advantage. On the contrary, many failures of e-ventures are the result of the lack of a sound business model or a flawed business model (Vickers, 2000).

However, the research of business model, design is not conducted in a systematic way. Despite the significance of the business model concept, only limited research has been conducted in this area. It consists mainly of descriptions of emerging business models, which are based on the Internet and the information and communication technologies (ICT) in general; also it includes abstractions in order to clarify definitions and components of this concept, and produce business model classification schemes. In the present paper, initially in section 2 we present a review of the definitions and the theoretical foundations of the business model concept and we elaborate on its discrete components. Then, in section 3 we focus on the research that has been conducted so far concerning methodologies for designing new business models; we identify shortcomings and areas where further research is required, and we propose a new framework for business model design. Then, in section 4 we validate our proposed methodology in a real business case. Finally, the conclusions are presented.

2 Theoretical background

The business model concept unifies important enterprise decision variables from the areas of economics, operations and strategy. It constitutes a useful unifying unit of analysis that can facilitate theory development concerning entrepreneurship. However, although the roots of business model theory are discernible in the above areas, the same does not hold for the definition of a “business model”, as there exist many diverse definitions of the term. At the most fundamental level the business model is limited to the economic model, namely how revenues and profits are generated. Business model is a statement of how a firm will make money and sustain its profit stream over time” (Stewart and Zao, 2000). Other approaches include value proposition and value generation architecture as well. The business model is the organization’s core logic for creating value. (Linder and Cantrell, 2000) “. “Business model describes the logic of a business system for creating value that lies behind the actual processes, according to Petrovic (Petrovic et al, 2001). In 2002, Magretta (Magretta, 2002) defines business

models as stories-stories that explain how the enterprises work; business models describe, as a system, how the pieces of a business fit together, but they don't factor in one critical dimension of performance: competition. She argues that business model is not the same as a strategy, even though many people use the term interchangeably today.

Another approach common in existing literature is the definition of the business model concept by specifying its primary elements and their interrelations. A characteristic well-known definition is that a (Timmers, 1998)business model stands for the architecture for the product, service and information flows, including a description of the various business actors and their roles, the potential benefits for these actors and the sources of revenues. According to Timmers's definition the business model includes competition and stakeholders. In the same line, other researchers (Weill and Vitale, 2001) define a business model as a description of the roles and relationships among a firm's consumers, customers, allies and suppliers that identifies major flows of product, information and money and the major benefits to participants. Furthermore, business innovation models, named business webs (b-webs) are inventing new value propositions, transforming the rules of competition and mobilizing people and resources to unprecedented levels of performance..... A b-web is a distinct system of suppliers, distributors, commerce services providers, and customers that they use the Internet for their primary business communications and transactions (Tapscott et al, 2000) ”.

However, all these diverse definitions converge towards the approach that the business model is related to a number of managerial concepts; it captures key components of a business plan, but a business plan deals with a number of additional start-up and operational issues that transcend the model; it is not a strategy but includes a number of strategy elements; similarly, it is not an activity set, although activity sets support each element of a model. In conclusion, a business model can be defined as a blueprint, or a story, of how an interrelated set of enterprise variables, in the areas of strategy, operations architecture and economics are addressed and fit as a working system. In this sense business model represents the framework for conceptualizing a value-based innovative idea.

The main theoretical foundations of the business model concept come from the area of business strategy, being associated with the value chain concept (Porter, 1985), the extended notions of value systems, strategic positioning (Porter, 1996) and resource-based theory (Barney et al., 2001). Moreover, as the business model concept also incorporates the fit of the firm within a wider value creation network, its theoretical foundations come also from the areas of strategic network theory (Jarillo, 1995), cooperative strategies (Dyer et al., 1998) and transaction cost economics (Williamson, 1981).

The latest literature emphasizes the importance of defining the components of a business model. A pioneer in business model, Horowitz (Horowitz, 1996) argues that the main components of a business model are price, product, distribution, organizational characteristics and technology. According to Staehler (Staehler, 2001), a business model consists of three major components: the value proposition, the value architecture and the revenue model. Alt and Zimmerman

(Alt et al., 2001) increase the number of components to six: Mission, Structure, Processes, Revenues, Technology, Legal Issues. Afuah and Tucci (Afuah et al., 2001) adopt a wider approach of business model by defining eight components of a business model, namely: Customer, Value, Scope, Pricing, Revenue Source, Connected Activities, Implementation, Capabilities, Sustainability. An interesting argument (Chesbrough et al, 2000) is that the business model mediates between the technical and economic domains and specify business model components through their definition of the six principal functions that a business model has to address:

- Articulate the value proposition, that is, the value created for users by the offering based on the technology;
- Identify the market segment, that is, the users to whom the technology is useful and for what purpose;
- Define the structure of the value chain within the firm required to create and distribute the offering
- Estimate the cost structure and profit potential of producing the offering, given the value proposition and value chain structure chosen;
- Describe the position of a firm within the value network linking suppliers and customers, including identification of potential complementors and competitors;
- Formulate the competitive strategy by which the innovating firm will gain and hold advantage over rivals.

Taking into account the various approaches concerning the definition and components of business model that exist in the current literature we finally selected to use in this paper and in our relevant research the following basic business model components, as they are generic, include all others and are the most critical factors taken into consideration for the success of the Business Model:

- The value proposition to the customer
- The sources of revenues and the cost structure
- The value production architecture (value chain and actors)

The above components selection is interrelated with the business model definition mentioned in the previous section.

3 Methodology of Business Model design

Despite the popular myth of the “unique” business model, that surprises the market, is completely different from existing ones and results in a stream of profits,, the design of successful business model it does not happen accidentally, but on the contrary it is - a result of a systematic work. However, there is not extensive the research that has been conducted so far concerning methodologies for designing new business models. This limited research in designing business models is further explained in the following paragraphs.

The first approach (Morris M. et al, 2005), proposes an integrated framework for characterizing and describing business models, which is based on six significant decision components (questions):

- Component 1 (factors related to the offering): How do we create value?
- Component 2 (market factors): Who do we create value for?

- Component 3 (internal capability factors): What is our source of competence?
- Component 4 (competitive strategy factors): How do we competitively position ourselves?
- Component 5 (economic factors): How we make money?
- Component 6 (personal/investor factors): What are our time, scope and size ambitions?

Each of the above six components is further analyzed into sub-components (sub-questions), in this way assisting and structuring the observation, description and design of business models.

A very interesting work is the IDEA framework (named after the initials of its four basic modules) (Shubar A. et al, 2004), which supports the development of new business models driven by new and radical technologies. The fundamental hypothesis is that the existing business models of an industry are built and optimized on specific industry assumptions; new technologies change these industry assumptions and necessitate the re-design and re-optimization of business models. The IDEA framework consists of four basic modules. The first one identifies the new design possibilities for the existing business models which result from the new technology. The second module concerns the re-design of the existing business models using the new design possibilities identified in the previous module. In the third module the potential business models are evaluated, in order to identify the ones that have a potential to succeed in the market. Finally, in the fourth module, the new business models are aggregated in a value chain. From the above it is concluded that the IDEA framework supports the development of business models not from the beginning, but by evolving existing business models, which might reduce innovative thinking.

In this direction, in order to support innovative design of business models, we have developed a new generic framework for the design of ‘digital’ business models, without having to be based on existing previous ones. Its objective is to design the value proposition, the production architecture (value chain), the actors and the economic model of the business model. Our design framework consists of six stages, as shown in figure 1. Typically, several iterations of these six stages will be required; each iteration provides a better understanding and a more detailed design. Also, the understanding achieved in one stage might necessitate returning and repeating a previous stage(s).

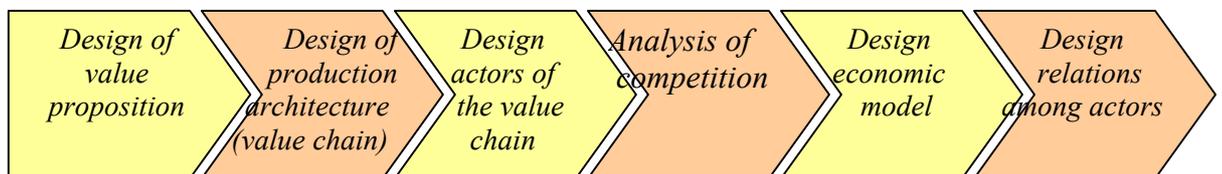


Figure 1: Generic framework for business model design

The six stages of our methodology are described in the following paragraphs:

1. Design of the value proposition:

In this stage the value proposition is designed; the basic elements of the product/service that will be offered to each customer segment addressed are

defined, based on the “Buyer Utility Map” framework (Table 1), (Chan Kim et al.,2000) and the “Value Chain Model” (Walters et al, 2000).

	<i>Purchase</i>	<i>Delivery</i>	<i>Use</i>	<i>Supplements</i>	<i>Maintenance</i>	<i>Disposal</i>
<i>Customer productivity</i>						
<i>Simplicity</i>						
<i>Convenience</i>						
<i>Risk</i>						
<i>Fun and image</i>						
<i>Environmental friendliness</i>						

Table 1: Buyer Utility Map

The Buyer Utility Map is used as an integral part of the definition of Value proposition, trying to fill in as many cells as possible in order the value proposition to be concrete and complete. For each of these cells, an analysis is conducted to find out if the value proposition is in compliance with the customer value criteria, specifically according to Walters; security, performance, aesthetics, convenience, economy and reputation.

2. Design of production architecture:

In this stage the production architecture (value chain) is designed, consisting of all the activities that have to be performed in order to deliver the value defined in the first stage. In this stage, research is in progress concerning the design, of not only value chains but value creating networks as well. For this purpose we use the combination of physical, Porter’s “Value Chain Analysis”(Porter, 1996), and virtual value chain (Fitzsimmons et al., 1998) (Figure 2). For this purpose we use the the “Value Chain Model” of Walters (Walters et al, 2000) and the “Strategic Value Creation Networks Framework of Jarillo (Jarillo, 1995).

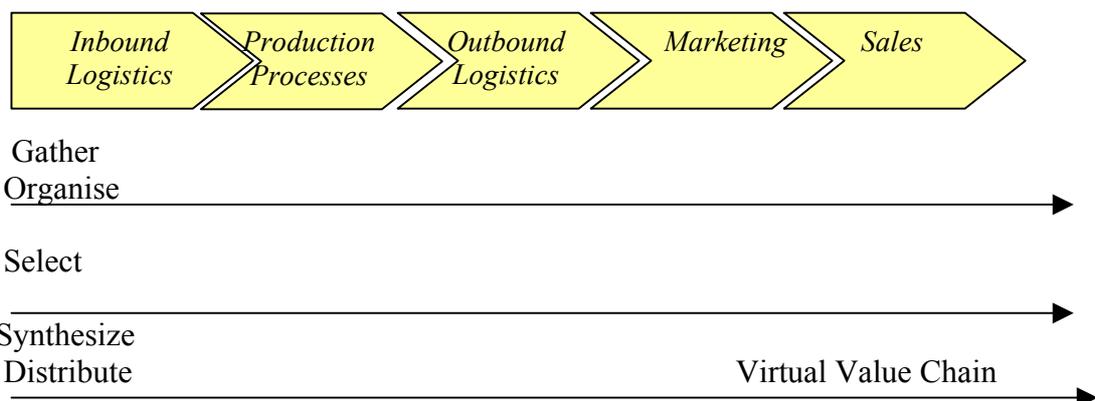


Figure 2: Physical and virtual value chain

3. Design actors of the value chain:

In this third stage, for each of the value production activities defined in the previous stage, the most appropriate actor, possessing the required resources and capabilities is selected, based on the “Resource-Based Theory” (Barney et al., 2001) and the framework of Talluri (Talluri et al., 1999).

4. Analysis of competition:

In this stage, for each of the layers of the production -architecture designed in the second stage, an analysis of the competitive positioning of the potential players is performed (figure 3), based on Porter’s “Five Forces Framework” (Porter, 1996); from this analysis players with extremely high level of power might be identified, which could possibly necessitate the redesign of the value production architecture by returning to stage 2. We remark that in our methodology the widest value proposition is designed in stage 1, based on the capabilities offered by ICT and then the competition is analysed not only for the final value proposition (service/product) but also for all layers of the value production chain.

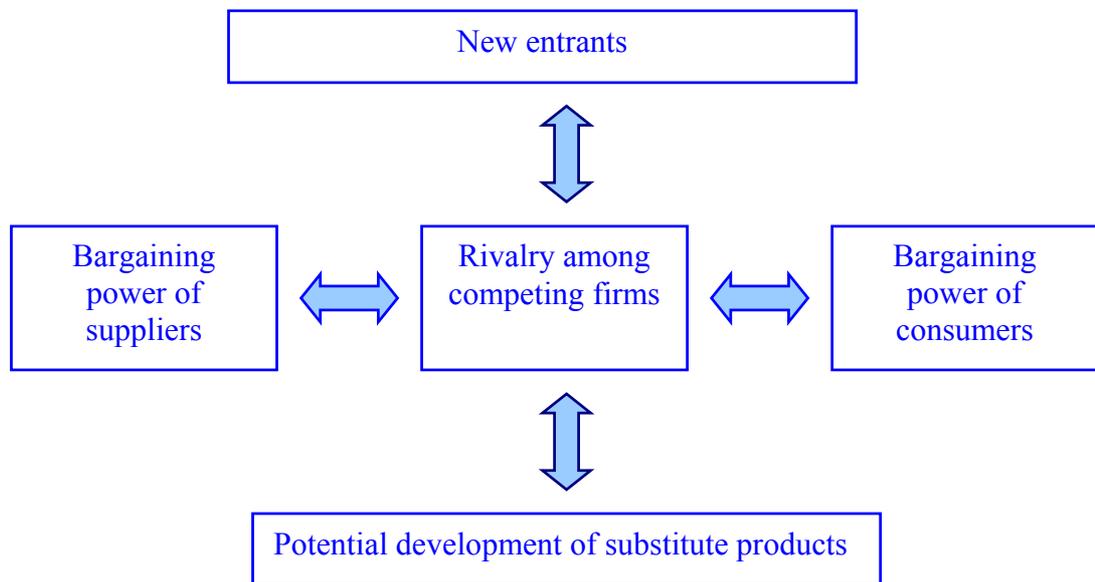


Figure 3: Porter’s five forces

5. Design economic model:

In this stage, the economic model is designed, taking into account the “Price Corridor Model” (Chan Kim et al, 2000) and the different pricing models. In order to find the right price for the new product/service /application, it is necessary to identify the price corridor of the mass; the price bandwidth that captures the largest groups of customers. Additionally, the definition of the pricing model(s) for the specific service is of great importance; e.g Flat-rate, commission-based, advertising-based, mark-up based, production-based, subscription-based, fee-for-service based models (Lumpkin et al., 2004) or direct selling, leasing, time-share, equity payment (Kim, 2000) etc.

6. Design relations among actors:

Finally, the relations among the value chain actors are designed by using the e^3 -value methodology and its extensions (Gordjin, 2002). This model provides a more detailed approach for the contractual obligations, the value objects exchanged among actors, the control mechanisms and the possible violations. to

4 Case Study – DIAS case

The telecommunications industry is undergoing a radical transformation, creating emerging opportunities and new challenges in a new market space, as distance learning.

In 2004 an e-learning project, called DIAS, still running, launched an innovative business model in e-learning satellite industry. The methodology presented in the previous section 3 was applied for the basic design of the business model for the DIAS service, while the detailed design is still in progress. This service is to deliver a unified solution for professional education to primary multigrade¹ school teachers by developing an advanced learning environment. It includes the development of a training scheme specifically designed for multigrade primary school teachers. This encourages the teachers to overcome the difficulties caused by the fact that they have to use methods and implementing curricula in multigrade schools designed for mono-grade schools.

Research Project DIAS, has three axes:

- **Advanced Technology.** Satellite communication is a prerequisite for DIAS project in combination with the usage of Digital Video Broadcast platform for multicast application. Additionally, the project aims to integrate the pre-existing means of communication, specifically ISDN lines that already exist in typical school infrastructure. State-of-the-art educational methods. Teaching Methods for multigrade schools. On-the-job distant learning for professionals, using all forms of educational material. The participating teachers will be trained in designing and implementing preexisting and successful applications, projects and activities.
- **Investment in the rural local society.** Rural schools are important for the local society. The DIAS project aims at the preparation of the multigrade school teacher to become the facilitator of the transformation of the multigrade school to a core node in its community.

The DIAS business model is focused on creating new customer pools and not increasing the share of an existing customer pool, by deploying an innovative business model using mature technology.

Stage 1: The value proposition to the customer is the following: elearning service for primary school teachers in remote and isolated areas, by deploying a Digital Video Broadcast satellite platform for fast and efficient delivery of educational content. In table 2 the Buyer utility map is presented.

	<i>Purchase</i>	<i>Delivery</i>	<i>Use</i>	<i>Supplements</i>	<i>Maintenance</i>	<i>Disposal</i>
<i>Customer productivity</i>	Easy search of the service.	To customer premises	Training is needed	A web educational portal	External maintenance, provided by the service supplier.	The service does not create waste items
<i>Simplicity</i>	Telephone	To the	Equal to		It is easy to	

¹ Multigrade school is the term used for a school that the teacher works with more than one class of students, as the number of students in the school is very limited.

	order	customer premises	usual pc programs		maintain and upgrade the service, by increasing the bandwidth	
<i>Convenience</i>	One-stop shopping		A pc in the teacher's room			
<i>Risk</i>	minimized					
<i>Fun and image</i>			The students can participate actively			
<i>Environmental friendliness</i>						PC and antennas waste

Table 2: Buyer utility map for DIAS service

Stage 2: In order to deliver the service the architecture of service delivery has to be specified. It is composed by satellite telecom infrastructure, Digital Video Broadcast platform, a software for elearning process, an educational web-platform, educational content and customer's equipment.

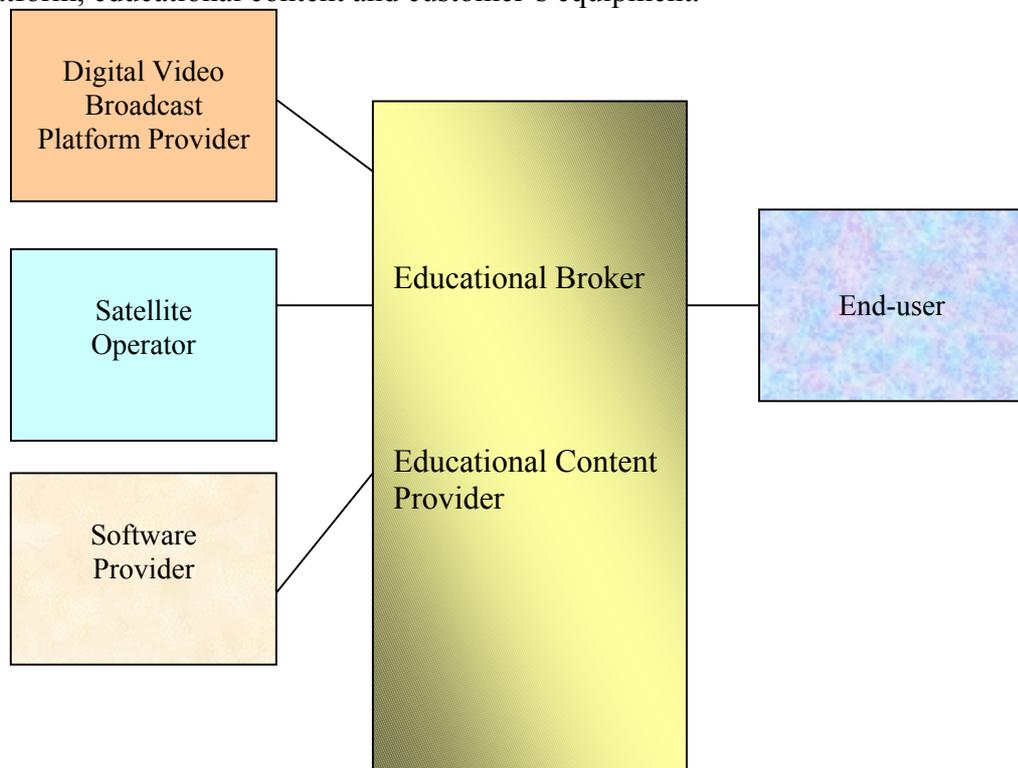


Figure 4: Actors in the DIAS value chain

Stage 3: Actors involved in the value chain, with the resources to deliver the value are: the satellite operator, the Digital Video Broadcastplatform provider, the software licensor, the educational content provider, the professional tutor provider and the end-customer (Figure 4). It is more a value network instead of the traditional value chain of the industry. Nevertheless, the positioning in the value network is not predefined and various positions could be chosen. An issue that affects the power of each stakeholder of the value chain is that the Digital Video Broadcast platform provider can dominate the entire chain. Also, a third party provider could provide the service by integrating the various activities of each traditional stakeholder.

Stage 4: The competition is defined by the convenience, the easiness and the cost of the real (traditional) learning models. But in the traditional model the teacher has to be present every day in its classroom, so the educational classes for a teacher should be in the afternoon, very near the isolated areas the teacher works. In this sense the e-learning approach is a necessity versus the traditional learning seminars or workshops which could be considered as a substitute.

Stage 5: The economic model is defined by the strategic price. The strategic price for this service is comparable to the price of a seminar or a workshop. The applicable economic models, according to our preliminary research could be flat-rate model and pay per volume of data exchanged. Further research is still in progress in this stage.

Stage 6: Relations among actors are defined by their contractual obligations that reflect their capabilities to achieve the value proposition to the customer. A detailed analysis is in progress.

5 Conclusion

Business model is a concept fundamental to business performance, particularly for the numerous telecommunication and business application services of the new digital economy. For this reason, the concept of 'business model' has become quite popular, especially today, in the dawn of the new networked economy. However, despite the extensive use of the business model concept, only limited scientific research has been conducted in this area. In this paper we present a literature review on the definitions, the components and the theoretical foundations of business model. Then we focus on the emerging business models concerning telecommunication and business application services. Finally, we review the research that has been conducted so far, concerning methodologies for designing new business models, and we propose a new framework for 'digital' business model design. We present business case where the new framework has been used. The important outcome of the validation of the proposed framework methodology in a real-life scenario, is that all aspects of this innovative business idea have been taken into consideration under a unified and methodological way. Several shortcomings were identified in the evaluation of the industry stakeholders, in the definition of the capabilities needed to achieve the value proposition. So far, the business model of DIAS has been presented to stakeholders with success, although has not been commercialized yet. Further research is in progress towards elaborating the above framework into a detailed methodology.

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