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# VALUE CARE: MANAGING THE EMERGING. THE CASE OF DEVELOPER SUPPORT FORUMS

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VALUE CARE: MANAGING THE EMERGING. THE CASE OF DEVELOPER SUPPORT FORUMS.

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Value care: managing the emerging. The case of developer support forums.

#### ABSTRACT

This conceptual paper explores the way pioneering Web-based enterprises manage the emergence of new value, by studying the phenomenon of external developers support. While the process observed initially appears to be a case of problem-solving, "value care" emerges as an original process. This "business module" enables the management of both immanent and potential value for the enterprise.

Keywords: Business model innovation, Problem-solving.

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This conceptual paper explores the way pioneering Web-based enterprises manage the emergence of new value, by studying the phenomenon of external developers support. While the process observed initially appears to be a case of problem-solving, “value care” emerges as an original process. This “business module” enables the management of both immanent and potential value for the enterprise.

**Keywords :** Business model innovation, Problem-solving, Open Innovation.

**INTRODUCTION**

Business models have recently emerged as an object of research *per se*, as research explores the new ways in which enterprises “do business”. Recent studies on business models are characterised by two tensions: on the one hand, there is challenge for “holistic” approaches on business models (Zott et al., 2011; Achrol and Kotler, 2012; Rayna and Striukova, 2014), synthesising the different approaches in which business models have be addressed so far. On the other hand, there is a challenge for the expansion of our perception of business models themselves, by the integration of *potential* values as well (Hatchuel and Segrestin, 2007;

Segrestin and Hatchuel, 2012; Maniak et al., 2014). Besides, enterprises are characterised by their very *potential* to create value, even though this dimension is often underestimated in practice (Hatchuel and Segrestin, 2007; Segrestin and Hatchuel, 2012).

Still, as Teece and Chesbrough (2002) has noted early on, what we observe in practice is most frequently the use of hybrid business models, of which the analysis requires the parallel study of the managerial challenges they imply.

This paper uses a phenomenon-based research strategy (von Krogh et al., 2012) to provide concepts that contribute to the construction of a unified theory of business models, addressing both tensions and building on the experience of the phenomenon of the expansion of Web-based enterprises. Constructing a modular framework for the analysis of business models (Chesbrough and Rosenbloom, 2002; Teece and Chesbrough, 2002; Leih et al., 2014), we find that this expansion is mobilising the business module of value care, enabling Web-based enterprises to manage the emergence of new values.

## **THEORETICAL FRAMEWORK**

### **Different value foci and managerial challenges**

To integrate the tension between synthesis and expansion of business models approaches in our research scope, our study will be based on two levels of analysis: the first level concerns the distinction between *immanent* and *potential* value. By immanent value we will refer to the resources, the competencies and the lineages of products an enterprise can already develop (Teece, 2010), while by potential value to those that an enterprise could develop in the future (Hatchuel and Segrestin, 2007; Segrestin and Hatchuel, 2012; Maniak et al., 2014). The second level of analysis for business models concerns the different modalities of value acquisition. Thence, we will refer to the notion of value capturing to describe acquisition

mechanisms of value as a resource, and to the notion of value realization to describe acquisition mechanisms of value as an offer.

The above mentioned dimensions enable a first classification of hybrid business models in three major categories, according to their focus value: 1) value creation, 2) value proposition and 3) value delivery. Table 1 provides a synopsis of these categories, to be reviewed in the following paragraphs, along with the corresponding managerial challenges. These “business modules” express different foci on value, which can be mobilised either by separate enterprises within the broader value chain of a business ecosystem, or by separate departments of a multinational corporation.

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Insert Table 1 about here

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### **Business modules focusing on value creation**

The first category concerns business modules that focus on value creation. They are characterised by immanent value capturing and potential value realization, and are mostly met in traditional enterprises. Enterprises focussing on this value prioritise the indicator of the volume of production in the measurement of the performance of their activity. Such a focus is the case for suppliers or the manufacturing units of large corporations. Their major challenge is to manage their organisational and their technological interfaces.

Based on an expertise on value creation (Argyris, 1977; Hatchuel and Weil, 1995), those business modules rely on the management of the organisational interfaces, both at an internal

level (Cooper, 1990; Iansiti and Clark, 1994; Elerud-Tryde and Hooge, 2014; Reid et al., 2014) and at an external level (MacCormack et al., 2001; Chesbrough, 2003; Reid and de Brentani, 2004). The control of these interfaces can also be enabled by technical means, namely the interfaces and the design rules of a product or a platform (Baldwin and Woodard, 2010; Gawer and Cusumano, 2002). Value is then captured at the network externalities (Rochet and Tirole, 2003; Brousseau and Penard, 2007; Boudreau and Hagiu, 2010; Suarez and Cusumano, 2010), embedded at the interfaces of the business modules.

The use of contemporary Web-based platforms at the internal or the external interfaces for the fulfilment of the requirements of this model is found to serve other functions, such as the need of the participants for expression (Haefliger et al., 2011; Elerud-Tryde and Hooge, 2014), a phenomenon introducing new challenges for this model.

### **Business modules focusing on value delivery**

The second category concerns business modules that focus on value delivery. They are characterised by immanent value capturing and immanent value realization, and are mostly met in services. Enterprises focussing on this value prioritise the indicator of the volume of sales in the measurement of the performance of their activity. Such a focus is the case for services or marketing units of large corporations. Their challenge is to enable clients to engage in the desired transaction.

In services, value capturing and value realization often occur simultaneously, during what is also called the “moment of truth” (Chase, 1978; Gummesson, 1990; Grönroos, 1990; Wynstra et al., 2014) in the interaction amongst the stakeholders. Still, the clients are actors of the transaction, too, that is why they have to be enabled to participate in value capturing and realization. Hence, this mode often emphasizes on the “prescription” of value to its consumers (Hatchuel, 1995; Benghozi and Paris, 2007).

The “freemium” model, broadly met on the web (Teece, 2010; Baden-Fuller and Haefliger, 2013; Rayna et al., 2014) challenges this approach, with the dissociation between the value capturing and the value realization, as enterprises first capture users and “initiate” them to the value of the product before - some of them - actually pay for an advanced use. In parallel, on-line client communities can also undertake the task of (further) client enabling (Brousseau and Curien, 2007; Jarvenpaa and Lang, 2011).

### **Business modules focusing on value proposition**

The third category concerns business modules that focus on value proposition. They are characterised by potential value capturing and immanent value realization. Enterprises focussing on this value prioritise the indicator of problem resolution or the conception of innovative ideas for the measurement of the activity of their performance. Such a focus is the case for innovation intermediaries or design units of large corporations. Their challenge is to constantly create and develop new solutions or concepts.

Provided the challenge of constant innovation (Teece and Chesbrough, 2002; Le Masson et al., 2010b) which is ruling contemporary competition, innovation intermediaries help other enterprises to formulate a problem, establish a confidential process and document the value proposition (Chesbrough, 2013, p. 147). Thus, an important number of studies and approaches have been proposed to that end, including crowdsourcing (Howe, 2006; Benkler, 2006), user-based concept evaluation (Haefliger et al., 2009; Benkeltoum, 2008), idea competitions (Piller and Walcher, 2006; Blohm et al., 2011) beyond web-based innovation intermediaries for problem solving processes (Chesbrough, 2006; Lakhani et al., 2007; Ebner et al., 2009). In this framework, innovation is studied as a design problem aimed at changing the way a system is decomposed into components (Thomke et al., 1998; Bernoff and Li, 2008; Baldwin and Woodard, 2010).

### **Self-sufficient value models and emerging stakeholders**

While the Web is integrated in the different business models according to the value focus of each enterprise, seen from at a larger scale, the one of a business ecosystem, it also creates the space for the emergence of new, hybrid actors (Fauchart and Gruber, 2011; Raasch and Von Hippel, 2013; Chrysos, 2013; Rayna and Striukova, 2014), often developing value by and for their own.

Hence, according “private-collective model” (von Hippel and von Krogh, 2006), which has principally emerged through user innovation studies and the case of open-source software (von Krogh et al., 2012), value proposition is made by and it is delivered the users (von Hippel, 2007), while the process of value creation is undertaken within user communities (Lakhani and von Hippel, 2003; O’Mahony, 2003; Auray, 2004; Sojer and Henkel, 2010). Enterprises harness community-based value development by participating in value creation (West and Lakhani, 2008), by capturing value propositions (Lakhani et al., 2007; Mahr and Lievens, 2012) or using them as a network for value delivery (Kalyanam et al., 2007; Fichter, 2009). While the scale of value development in self-sufficient models is most usually insignificant when compared to the value development from the enterprises, such third-party stakeholders, different from customers, suppliers or partners, can be integrated in a business model as complementary processes (Baldwin and von Hippel, 2011), for potential value capturing or realization. In parallel, those developing value in this mode, the “developers” can have hybrid incentives which can be transformed in the way (Raasch and Von Hippel, 2013; Chrysos, 2013). Besides, value created in a “bottom up” mode for own use, can also trigger entrepreneurial incentives (Shah and Tripsas, 2007; Haefliger et al., 2010).

Still, the business model approaches reviewed previously do not integrate such forms of emerging stakeholders.

## METHODOLOGY

In order to study the originalities of the business models of Web-based enterprises, this study uses the phenomenon-based research strategy proposed by von Krogh et al. (2012). In addition, it assumes the consideration of value as “problem-solving” (Chesbrough, 2006; Lakhani et al., 2007; Baldwin and Woodard, 2010; Teece, 2010), where the formulation of a problem to solve corresponds to the value proposition, the solution of the problem to the value creation and the implementation of the solution to value delivery.

The first step of our investigation aims at the “*identification of the peculiarities*” (von Krogh et al., 2012) of problem-solving related to Web application development as compared value capturing and value realisation approaches, using a narrative method. The second step will “*review and evaluate research designs used*” by other scholars (von Krogh et al., 2012), based on the findings of the first step. More precisely, we will see that, surprisingly, this process is not much about solving problems. Finally, this paper will take an in-depth view in the conversations occurring in the forums and will propose an alternative research design in order for the phenomenon to be better reached (von Krogh et al., 2012), introducing the concept of *value curation*. This concept will help as contribute, eventually, to the next step portrayed by von Krogh et al., which is theory development.

### **Identification step: roles and stakeholders of the process**

The business model of successful Web-based enterprises is not limited to capturing and realising the immanent value they develop, nor is it restrained to the “standard” stakeholders of a business model (customers, partners and suppliers). In fact, enterprises like Amazon, Google or Facebook manage to *constantly enrich their value proposition to the users*, thanks to hundreds of thousands of developers creating new applications for their platforms, also enabling a transformation of their business models. For instance, while advertisement remains

the core of revenue for Facebook, the enterprise income from direct payments (for the use of applications such as games or for other goods) has increased by 45% from 2011 to 2013 <sup>1</sup>. This fact indicates that those enterprises integrate in their business model the dedication of resources for the management of the relationships between the enterprise and *potential* stakeholders, the developers. Their activity can be potentially valuable to the enterprise, to the extent that they manage to develop applications. Still, those developers cannot be considered as an asset of the enterprise, as they intend to capture and realise value by their own applications. Still, while all developers could *potentially* propose, create and deliver value, one cannot be certain about the immanent value of their activity.

This first step studies two “developer support forums”, *Google Maps* and the *Facebook* ones. The selection of these two enterprise forums is based on the fact that both enterprises are among the exemplary ones of the field, while - in addition - both enterprises have emerged and grown within the very context of on-line business. These elements suggest that an identification of “strange”, yet common methods is very likely to be representative of the original action norms used in the specific industrial settings.

The identification of the websites, where forums themselves are situated, is easy, as a Web search with the name of the enterprise and the keywords “developer support” is sufficient to identify the addresses of the corresponding forums. In addition, these sites provide the option to actually download the entire discussion files. In this paper, the problem-solving cases studied concern the period from 1/1/2010 to 31/5/2010.

After a first, qualitative review of a number of “threads”, a conversation pattern is revealed, which is independent from the specific technologies under discussion, for both forums. Figure 1 illustrates the general schema of discussion in both forums, as induced from the reading of forum conversations.

1. Facebook Annual Report for the year 2013.

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Insert Figure 1 about here

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According to this pattern, each individual participates in the discussion with a pseudonym and an e-mail, from where it is possible to have some first indications on whether or not they belong to the enterprise staff or they are external developers. Forum participant profiles, also available in the web site, provide additional information on this question.

At first, a developer requests the resolution of a problem or the addition of a new feature to the product of the enterprise, according to his personal experience or preferences. The forum being public, other developers may also comment on the issue, usually saying whether or not they face the same problem or desire the same feature and, more rarely, propose solutions to the problem, either by directly suggesting the solution or by referring to a documentation. In parallel, the enterprise follows up the discussion. In case the enterprise considers that more information should be provided, it asks for it. In such a case, developers are likely to refer to their own applications or provide a copy of the problem effects (a “screen-shot” in the case of a graphical problem or the output code in case of data problems).

Once the problem is well defined, so as the value proposition becomes clear to the enterprise, the latter lets the developers know that the report or request has been acknowledged and that an internal process has been undertaken for its resolution. Eventually,

when the “bug” is fixed or the feature integrated in the platform, the enterprise informs the community.

Overall, this process could be seen as a process of immanent value capturing, as it is much about clarifying problems, or a process of immanent value realisation, as problems solved concern the enterprise’s own product. However, this conversation does not always lead to value capturing or value realisation by the enterprises: some problems are not resolved, issues can be reported because the developers ignore how the technologies actually work, while problem formulations and problem resolutions are not always accomplished. In addition, the Web platform under discussion is not solely used by the enterprise: it is also used by third parties to create their own applications and, thus, serve their own - often emerging - business models. Finally, this is a non-monetary exchange process, which can be explained by the fact that both the enterprise and the developers have (or intend to acquire) their own ways to realise value, but, still, they both use the same platform as a resource.

### **Exploration step: Testing the relevance of problem-solving criteria**

This step intensifies data gathering inside the focal concept (von Krogh et al., 2012) of problem-solving. It finds that what appears to be a problem-solving process is less so, as it is characterised by a very low rate of problems solved - which enables us to further proceed our exploration on a new basis.

It has been proposed that the rate of problem resolution can be used to qualify the performance of a problem-solving activity (Thomke et al., 1998; Bernoff and Li, 2008). Using an opportunistic design (Lakhani and von Hippel, 2003; von Krogh et al., 2012), we measure problem-solving performance for two different platform support forums which follow similar processes, *Google Maps* and *Facebook*, studying the simple question of whether or not the problems (“*defections*”) reported in the forums by the users are eventually solved, for the

period studied. Exploiting the fact that discussions are publicly available, we use the following indicator:

For the calculation of the number of the problems reported, the number of duplicated issues, that is issues that appear twice or more in the forum and thus have been merged, is subtracted. Technically, to these calculations we exploited the *CVS* files of the discussion provided by the enterprise forums, as well as a custom program we developed using *Perl* programming language to process these data. The number of developers actually creating applications with *Google Maps* and *Facebook* would be helpful information to further explore this data. However, we were not in position to obtain this information. A reason for this is the openness of the process itself: developers do not need to provide their personal information to develop applications with those services. An anonymous account is sufficient for application development, while each user may create as many accounts as he/she desires. In fact, Google's Developer Relations department once attempted to calculate the number of the developers using their platforms, although they gave up the effort<sup>2</sup>.

This step reveals, thus, another aspect of the phenomenon: on the one hand, value capturing and realisation is not immanent, it is potential: value propositions may or may not be captured, value creation may or may not be realised, the requested value may or may not be delivered. At the same time, it is a collaborative process on value, open to "hybrid" actors, which can potentially contribute value to the enterprise or even capture value for themselves.

2 Interview with Google Developer Relations manager, August 12, 2010.

### **Design step: process qualification and new research concepts proposition**

The third step of this methodology aims at the proposition of alternative concepts for the study of the activity of developer support through forum settings. To this end, we operate a qualitative analysis of three types of data from the *Google Maps* developer forum:

1. Actual discussions on the online forum.
2. A “cookbook” edited by and addressed to provider employees who work at the post of developer support.
3. Additional information acquired by two interviews we conducted with the author of the book.

While the forum conversations are available on-line, the “cookbook” was written by a *Google* employee to transmit her knowledge to her colleagues, and we have been able to access two early versions of the documents, the one written as a draft in February 2010<sup>3</sup> and the other as an early version of a complete *Developer Community Handbook Documentation* in March 2011<sup>4</sup>.

The author described the need addressed by the book<sup>5</sup> in its introduction:

*“The area of developer support is quite new, and there isn’t much written about how to do it - what works, what doesn’t. Given the increasing number of APIs, and I hope, the increasing number of people attempting to support API developers, we need to start documenting our field. This handbook is a first attempt.”*

3 Pamela Fox, Issue Tracking: Why & How, February 2010. Copy provided by the author.

4 Pamela Fox, Developer Community Handbook Documentation, Release 0.9, March 2011. Copy provided by the author.

5 Pamela Fox, Developer Community Handbook Documentation, p. 3.

As this statement suggests, developer support is a field under rationalisation, where the stakeholders themselves attempt to produce some criteria and ‘best practices’ on how to manage third-party developers.

Issues are highly technical and regard very specific concerns the developers face during the creation or the operation of their own application. An example of the problem formulation is the following<sup>6</sup>:

*“I have found that dragend event in Google Map also triggers the click event in IE. It is OK in Firefox and Chrome. Open IE/FF/Chrome console and see the result of this fiddle. Any workaround will be appreciated.”*

The above quoted suggestion can be characterised as a moment of value proposition formulation. Google Maps, as well as the browsers mentioned in the previous example (*Internet Explorer - IE -*, *Firefox - FF-* and *Chrome*) are used as resources for this activity. Still, the resolution of what appears here to be a compatibility problem of *Google Maps* depends on Google, and its resolution can be interesting for the enterprise to the extent that it is valid and can be considered a problem to the degree it can be considered as one of the small tasks of a general strategy for *Google Maps* to create and deliver a value of interoperability for its users. In parallel, provided that developers use Google Maps for their one applications, the resolution of such an issue would also add value to their own business.

Still, the recognition of the value of a request by the enterprise is not always evident. As mentioned in the *“Developer Community Handbook”*, *“a developer posts what sounds like a valid bug, but doesn’t provide enough information”*<sup>7</sup> for the enterprise to understand its value.

<sup>6</sup> Google Maps Developer support forum, Issue 4072: Bug: Dragend Event also trigger Click Event in IE. Issue URL: <http://code.google.com/p/gmaps-api-issues/issues/detail?id=4072> .

<sup>7</sup> Fox, Pamela, *Developer Community Handbook Documentation*, p. 33 & Issue Tracking: Why & How.

A set of action is needed for the enterprise to capture and realize the potential value of developers' requests.

## FINDINGS

### **A mechanism for the emergence of new values and stakeholders**

The first step of our methodology indicated an original, non-monetary way of collaboration for the exploration of potential value capturing and value realization, always exploiting the platforms of the Web-based enterprises studied. The second step further showed that, very often, the value is not captured or created, as many problems remain unsolved. In parallel, this process remains open to everyone who is interested and capable of participating in the discussion, addressing thus hybrid or emerging actors.

The final step allowed us to model the way the enterprise manages this setting, as shown in the Figure 2. Respecting the levels of analysis proposed by our theoretical framework, the enterprise has to clarify two questions about developers' requests: 1) whether they contribute to value realization and 2) whether they contribute to value capturing.

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Insert Figure 2 about here.

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These findings are also summarized in Table 2 and will be presented in the following paragraphs.

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Insert Table 2 about here.

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## DISCUSSION

The originality of the developer forums studied here lies in the fact that they enable the treatment of value that can potentially be realized or captured. At the same time, this mode of management is keen to the specificities of the Web, such as the need for personal expression (Haefliger et al., 2011) or the openness to emerging stakeholders. In this context, as already outlined in Table 2, value care enables the enterprise to exchange with third-party developers and stream value towards the three different business modules we have reviewed earlier: value delivery, value creation or value proposition. Thus, the first challenge for the enterprise is to qualify whether the request of the developers can serve for immanent or for potential value realization. The second challenge is to determine whether or not the developers' requests can serve for immanent or for potential value capturing.

### **Enabling value delivery**

If the issue refers to the immanent way the enterprise both captures and realizes value, then the forum enables value delivery. Here, the enterprise enables the developers to actually use the platform as a resource for the creation of their own applications.

This action may take various forms: Firstly, the prescription (Hatchuel, 1995; Benghozi and Paris, 2007) of the use of enterprise's technologies for application development can be done, either by the enterprise or by other developers watching the forum in a community-like mode (Brousseau and Penard, 2007; Jarvenpaa and Lang, 2011). In addition, as the enterprises make use of a freemium model, where developers pay only if their applications draw much

traffic from end-users, the forum enables them to spot potential partners (Le Masson et al., 2010a), emerging through the vast public of developers.

### **Enabling value creation**

If the issue refers to immanent value realization and potential value capturing, then the forum enables value creation. Here, the enterprise uses the forums to manage both organisational and technological interfaces.

This contingency consists in the more traditional problem-solving logic, where the forum becomes an organisational interface supporting the technological interfaces, already in use by the developers. Thus, the forum enables the management of inflows and outflows of knowledge and information (Chesbrough, 2003; Reid and de Brentani, 2004; Lüthje and Herstatt, 2004), which can then be streamed into the enterprise's value creation processes (Iansiti and Clark, 1994; Koen et al., 2001, and others).

### **Enabling value proposition**

If the issue refers to potential value realization and immanent value capturing, then the forum enables value proposition. Here, the enterprise harnesses new value solutions or concepts in a regular basis.

Hence, developers proposing new features enable the enterprise to capture new values and to explore the potential value realization, by checking the popularity of the new features requested. Unlike idea competition or innovation intermediaries (Piller and Walcher, 2006; Lakhani et al., 2007; Blohm et al., 2011), there is a direct harnessing of new value propositions by the enterprise. In addition, these propositions are unknowable (Chesbrough and Rosenbloom, 2002) in advance, as they do come from by an enterprise process of design outsourcing.

### **Enabling potential value exploration**

Overall, value care enables potential value exploration, as it assures a collaborative conversation on the value of the enterprise's technologies, acting as a resource for different business modules. Enterprises require to create a form of "empathy" with the developers for this process to evolve and to be in position to recognize and refine the different forms of value coming from the ecosystem.

## **CONCLUSION**

Web-based enterprises manage to constantly expand their business in new markets. This paper has studied the particular mechanism of developer support forums, revealing an unknown dimension of this phenomenon: being a part of a complex business model architecture (Teece and Chesbrough, 2002; Chesbrough and Rosenbloom, 2002; Leih et al., 2014), the business module of value care has been identified as a means to manage emerging value.

Often ignoring who develops applications on the base of their platforms, Web-based enterprises manage to expand their business models by streaming the requests of the developers towards value realization or value capturing mechanisms. This process is not limited to a simple task of information management, as it requires the active participation of the enterprise in the formulation of the requests, both in what regards the ways in which the value can be captured and the ways it can be realized. The concept of value care enables researchers and enterprises to further address the phenomenon of potential value management.

While our research has been focussed on the enterprise level, the business module identified expands beyond it. Further research can combine our findings with the study of the emerging business models of hybrid actors, such as the developers or the makers (Chrysos, 2013; Rayna and Striukova, 2014). As it has been suggested (Raasch and Von Hippel, 2013) for such actors the value can be captured in the process, instead of the output. Our study

enables the formulation of the hypothesis that during value care incentives of emerging stakeholders may be transformed and new business models can emerge.

## APPENDIX

### Figures and Tables

<b>Value focus</b>	<b>Value creation</b>	<b>Value delivery</b>	<b>Value proposition</b>
<b>Managerial challenges</b>	Management of the organisational and technological interfaces.	Enabling clients to engage in the transaction.	Constantly creating and developing new solutions/concepts.

Table 1: Value foci and corresponding managerial challenges.

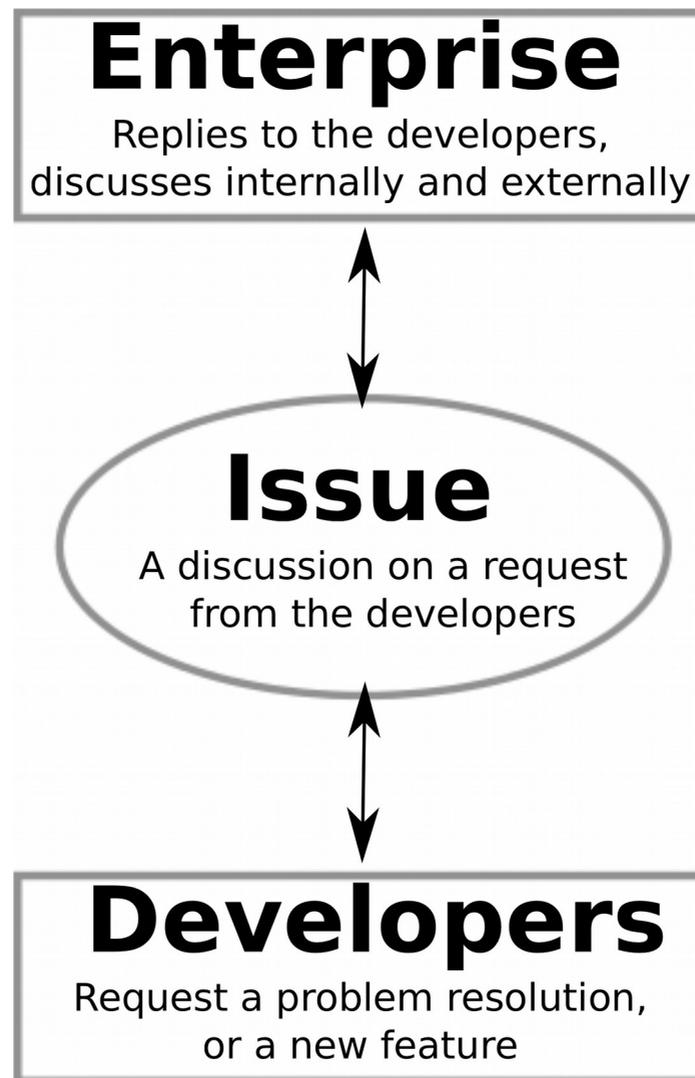


Figure 1: A model of the discussion on the forums between the enterprise and the developers.

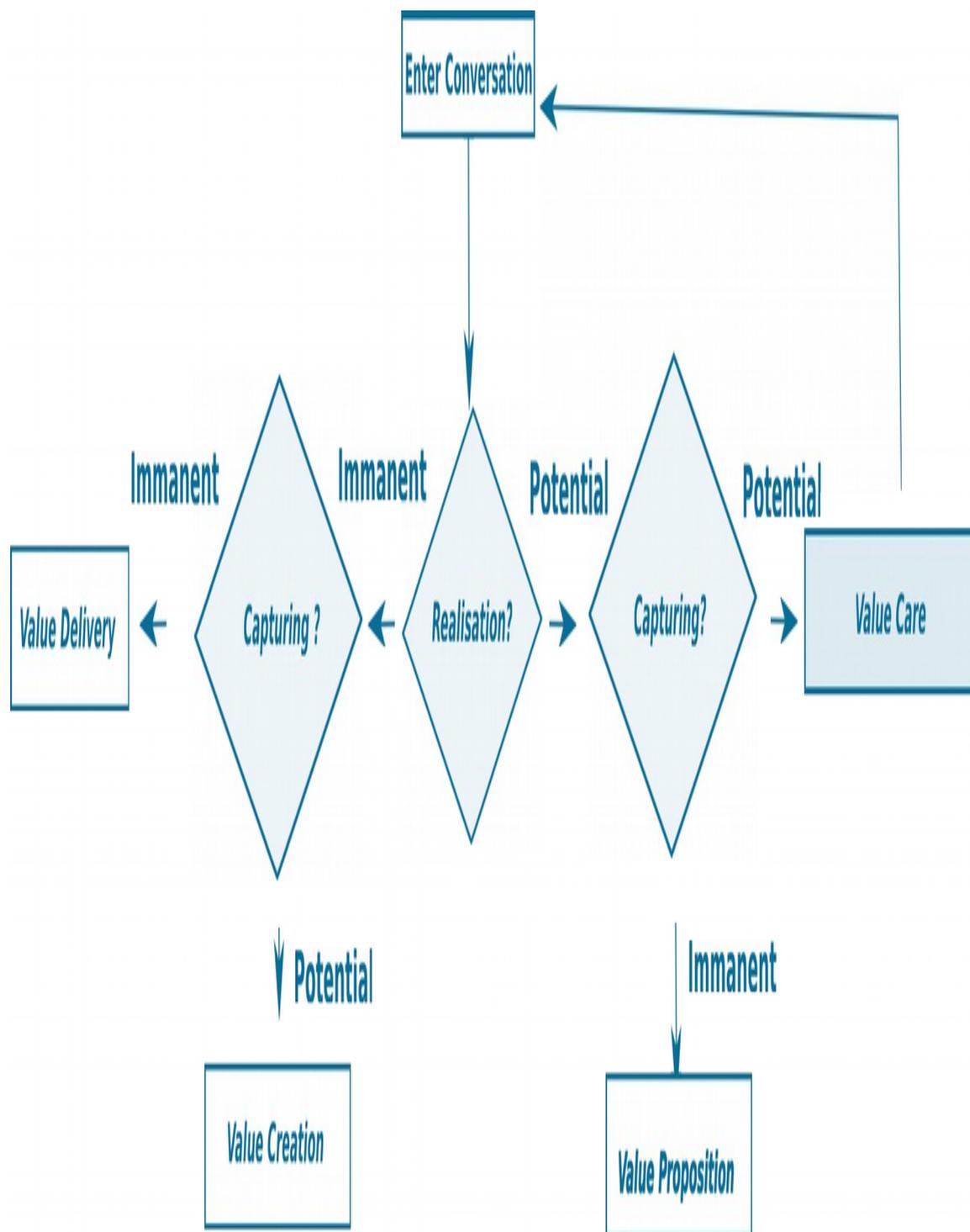


Figure 2: A model for the activity of “value care”.

<b>Value realization</b>	<b>Value capturing</b>	<b>Business module</b>	<b>Managerial challenge</b>	<b>Enterprise response example</b>
Immanent	Immanent	Value delivery	Prescription of use	“ <i>Here is the documentation.</i> ”
Immanent	Potential	Value creation	Interface problem resolution	“ <i>Provide instructions for us to reproduce your problem.</i> ”
Potential	Immanent	Value proposition	Interface extension	“ <i>Why and how many of the developers want this new feature ?</i> ”
Potential	Potential	Value care	Formulation of the value potential	“ <i>Provide more information.</i> ”

Table 2: Findings: different enterprise responses for different evaluations of developers’ requests.

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