Service Value Co-creation for Enterprise IT Solution Services

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Abstract

Service value co-creation is an important issue in service science. We proposed KIKI model as a standard procedure for service value co-creation in B to B collaboration [1]. On the other hand, MUSE (Methodological Universe for the Services Environment) was developed as a new methodology for IT solution services [2]. From the view point of service value co-creation, both have similar characteristics. In this paper, the relationship between KIKI and MUSE are discussed and it is shown that MUSE process can be specified by the standard process for service value co-creation in KIKI model. The value co-creation process using MUSE is introduced through a case study.

Keywords: KIKI model, MUSE, IT solution service, Service value co-creation, Objective value, Functional value, Design office

1 Introduction

In current enterprise IT solution services, many customers cannot utilize IT systems effectively nor reap any benefit from their services due to problems encountered and failures. To rectify this situation, we have analyzed these issues by applying Service Engineering (SE [3])'s viewpoints. Value co-creation and collaboration among customer and IT service providers in the early stage are important to create a basis of the following steps of IT solution services. Furthermore, it shows that significant activities of the design office and effective use of MUSE are valuable and indispensable for achieving the customer's end goal [4-7].

Through those analyses, we introduce the concepts of two IT service values in IT solution services. The first is an "objective value" in grand design phase and the second is a "functional value" in IT service realization phase. Those values are correlated and it is crucial to clarify the relationship between them for successful IT solution services. Collaboration is important for realizing and achieving the values.

In the meanwhile, we proposed KIKI model as a standard procedure for service value co-creation in business to business (B to B) collaboration. Service value co-creation process seems to have similar characteristics in IT solution grand design phase. Through the comparison, we have recognized that MUSE would be a practical methodology for service value co-creation in KIKI model. Thus, KIKI model is very effective for service value co-creation in IT solution service domain as well.

In this paper, first, KIKI model is explained briefly. Then, the method of MUSE and its relationship with KIKI model are described. Next, a case study is reported for demonstrating the effectiveness of service value co-creation for IT solution services facilitated by the design office using MUSE methodology. Finally, we refer to the future of IT solution services.

2 KIKI model for service value co-creation in B to B collaboration

2.1 B to B collaboration model

Customers in a business to consumer (B to C) service are individuals and service values differ depending on each customer's characteristics or tastes. Therefore, service providers introduce personae [8] by defining their life styles and characteristics to design standard services toward the introduced personae. However, service values in B to B service are defined between service provider and receiver as collaborators, especially in B to B IT solution services.

We can see from Fig. 1 both collaborators offer reciprocally necessary information and/or support the actions of their partners. Services are activities to support human beings or organizations to enable them to achieve their objectives or desires. We consider collaboration as a co-creation process where collaborators have service behaviors that benefit each other.
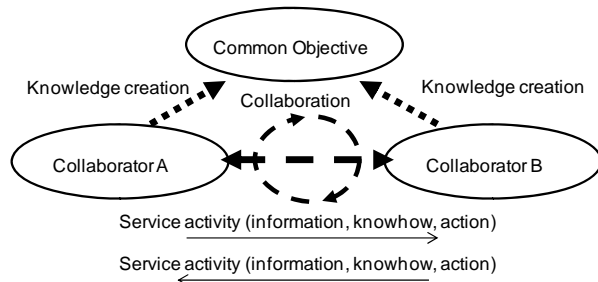

Figure 1 B to B collaboration

2.2 Service value co-creation process in KIKI model

Service value depends on the relationship between the service and its situation, and a more suitable service can be provided if the service field is identified. From such considerations, KIKI model was proposed, where we devised the following four steps for service value co-creation in B to B collaboration [1].

Step.1 (K1). Knowledge sharing related to collaboration: The collaborators in the service value co-creation process understand and share the objectives of the B to B collaboration and its service field, which consists of service providers, service receivers, and the environment around the service. Therefore, the collaborators share knowledge and information related to their purpose.

Step.2 (I1). Identification of the service field: The service field is identified using various technologies such as data mining and questionnaire analysis or collaborations between providers and receivers of the service. What kind of service support is needed for the receivers is investigated.

Step.3 (K2). Knowledge creation for the new service idea: Suitable service behaviors are designed after understanding the service field. Through participants collaborating in the service value co-creation process, new knowledge for service is created by combining various service ideas and technologies.

Step.4 (I4). Implementation of the new service idea: The created new service idea in Step 3 is implemented by considering business model, pricing of services or required IT systems. Collaborators in service value co-creation process evaluate the results of knowledge creation step for the required service and take them into account in the following process for enhancing services.

The above four steps in the service value co-creation process can be described on a two-dimensional plane, as shown in Fig. 2.
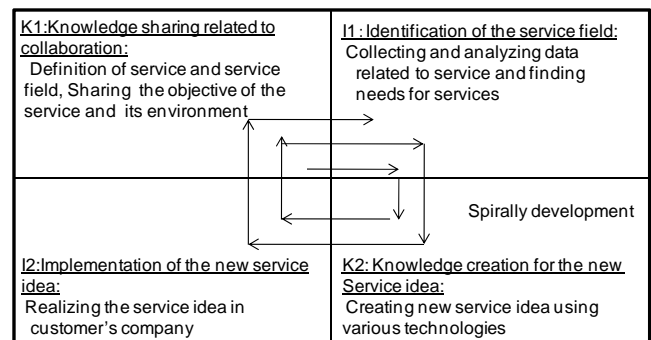

Figure 2 KIKI model

The service that results from this service value creation process can be further enhanced by repeating these four steps of service value co-creation in a spiral of development. As the value co-creation process is repeated, collaborators come to understand the service field much more fully. The result is that the participants eventually understand the needs for services more deeply and generate more suitable service ideas.

3 Service value co-creation in IT solution services

3.1 Two values in IT solution services

There are two IT service values in IT solution services. The first is an "objective value", which is the customer's end goal achieved by utilizing IT solution services. The second is a "functional value", which is a function provided by actual IT system or related services. These two values are intrinsically related and their relationship is shown in Fig. 3 by using SE notations.

There are two phases in IT solution services, which are the grand design phase and the IT ser-

vice realization phase as illustrated in Fig. 3. The upper part is the grand design phase where a customer's "objective value" is extracted and committed to by the customer.
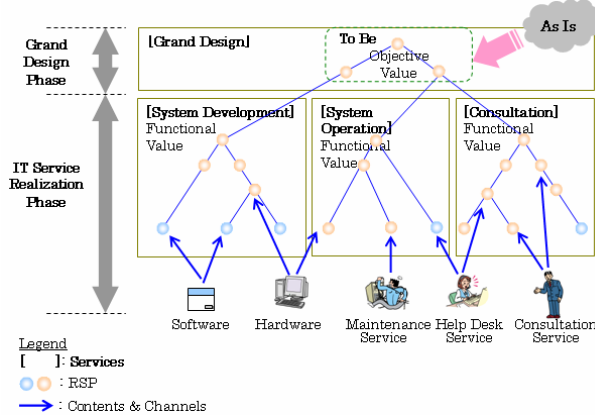

Figure 3 Value chain in IT solution service

The lower part is the IT service realization phase where the "objective value" is translated into "functional values". These "functional values" are broken down into a detailed functional structure, such as system architecture, subsystem and applications, then screen layout and data to be handled in an IT system. After software, hardware and other related services are developed and integrated into upper level of services in the IT service realization phase, the utilization of services with "functional values" and those interactions can finally achieve the "objective value".

3.2 Importance of design office

Although the two values are correlated and chained, they still remain separated in many cases. Consultants are usually devoted to extracting the "objective value", while development companies concentrate on accomplishing the development of IT systems, and operators are mostly concerned with regular operations. These people in these businesses are focusing on realization of "functional values" and care little about whether the "objective value" has been achieved or not, and sometimes neither does the customer who is appropriately satisfied with available services.

It is essential to observe and manage entire IT solution services from a bird's eye view from a consistent perspective throughout the IT solution service lifecycle. In addition, without any strong

determination by executives or collaborative work among stakeholders, these services stagnate and become stacked, and it is hard to ascend to the stage of achieving the "objective value".

Therefore, the concept of the "design office" is introduced, who is not only responsible for the design of the IT solution services but also for achieving the customer's "objective value". Its roles in the grand design phase are value co-creation with the customer and substantiating its knowledge and needs into the grand design of entire services. It promotes stakeholders throughout the service as a facilitator and a producer, also provides business process reengineering (BPR) consultation services, project management services and follow-up services, such as training, helpdesk support in the IT service realization phase.

The name "design office" here represents its role, and it does not matter who plays. The reason we present the design office as a single agent is because we think that its role is very important for overseeing entire services from a consistent perspective throughout the IT solution service lifecycle. Furthermore, an important role for the design office is to manage and adjust all parties, including stakeholders, IT development companies and other IT service providers, which are taking part in pursuing customer levels up to the "objective value".

4 MUSE Approach

In this section, we introduce MUSE in the grand design phase, which is a practical way of service value co-creation in KIKI model.

4.1 Procedure for grand design phase

The procedure for the grand design phase can be seen in Fig. 4. This phase is divided into six steps. The purpose of steps 1 and 2 is to understand AsIs (e.g., current business situation and current issues) and to share a common perception with stakeholders. We mutually recognize the problems to be solved in these steps, and describe the structure and dynamics of the enterprise as the AsIs model.

Next, ToBe (where we clarify the vision and the end goal of the customer in the future environment) is discussed in step 3. The future vision and the end goal are clarified in step 4, where the

view of the structure as well as dynamics in the future is modeled and drawn in a picture. The "objective value" of IT solution services becomes obvious and specific through these steps.

Then, the "objective value" is translated into "functional values" in step 5, where the entire IT solution services are overviewed from a bird's eye view. Finally, step 6 involves planning and budgeting of the discussed grand design.
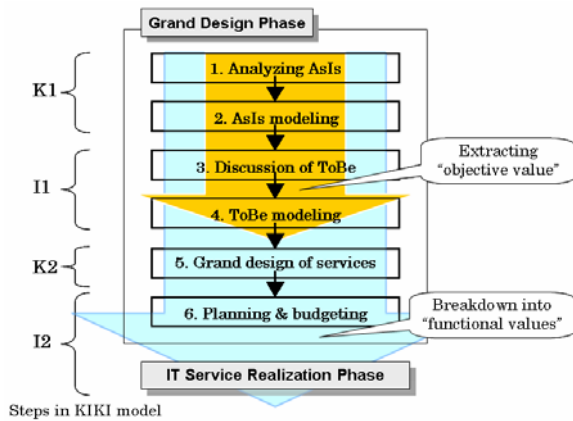

Figure 4 Procedure for grand design process

4.2 MUSE method as a communication tool

MUSE method plays two roles. The first is as a communication tool and the second is as a modeling tool.

MUSE method as a communication tool is used in steps 1 and 3. In usual case, several teams are formed, such as workers who present work tasks in the enterprise business cycle, middle managers and executives. AsIs problems and the ToBe end goal were repeatedly discussed in a brainstorming style by each team. In MUSE, we have merged brainstorming [9] and KJ-method [10] and expanded into the anonymous way of discussion. It consists of the following six steps.
(1) Participants are seated around a table.
(2) Participants write down their opinions on post-it notes according to the theme of the session. All notes are gathered and shuffled, and distributed back to each participant.
(3) A session consists of the following steps.
 (a) First, a chairperson selected by the participants chooses one of the allocated notes. The chairperson reads aloud the opinion written on the note, and places it on the MUSE sheet.
 (b) Then, the chairperson forces other participants who have the same or similar opinions on

their notes to read the opinions on them and express the points of similarity. The chairperson has the rights to accept or reject the proposals of participants.
 (c) In this way, all notes with the same or similar opinions are presented and posted near the chairperson's note on the sheet, and then the first session is over.
 (d) In the next session, another participant becomes the chairperson, and the session then starts.
(4) Sessions are continued until all notes are posted on the sheet. In this way, the participants' opinions are gathered and categorized in the form of islands of notes with the same or similar opinions. Fig. 5 is a snapshot of a session using MUSE method.
(5) After the above sessions, an appropriate title for each category is discussed and written on the label, different color note, and placed on top of each category.
(6) The relation map of title labels is configured in tree style according to the important axes such as cause and effect, or principles and practice.

Figure 5 Snapshot of a session using MUSE method

MUSE has four main characteristics: (1) democratic, (2) game sense, (3) rapid analysis, and (4) breakthrough, which are due to the following facts.

The anonymous way leads discussion in democratic manner, without any constraints of age, sex, experience, power, or raised voices, and participants can think deeply and understand others' opinions that they share until the discussion ends. Participants also enjoy the discussion in a game sense to win the debate and finish up the allocated notes as earlier than anyone. Furthermore, even if the participants have never met before, the total time for all sessions usually only takes two to three hours, and importance and

concerns felt by the participants can be over-viewed on the relation map. In addition the consciousness level of participants is improved through intensive discussions among participants from different points of view, and as a result unexpected breakthroughs are often achieved.

4.3 MUSE method as a modeling tool

MUSE method is used as a modeling tool in steps 2 and 4 in the grand design phase. While in step1 or 3, discussions among the participants are emphasized, in step2 and 4, over-viewing the enterprise activities are emphasized. Problems and values are extracted from the overall viewpoint by walkthroughs in the AsIs and ToBe models.

The AsIs modeling of MUSE method consists of the following steps.
(1) Extract data sets from existing documents which are related to the customer's business activities.
(2) Find agents who use the above data sets.
(3) Extract the functions of the agents, and describe them as the actions of the agents.
(4) Find artifacts associated with the business, such as facilities, manufacturers, end customers, and so on.
(5) Describe those agents, data sets, and artifacts

in post-it cards, using MUSE notation. Fig. 6 shows the MUSE notations for modeling.
(6) Draw the overall image of work tasks, through overlooking a set of agents and data on the MUSE sheet.
(7) Place artifacts at the proper position and mark boundary lines on the MUSE sheet for making clear the region of each section. Fig. 7 is an example of MUSE modeling (AsIs).

In this AsIs modeling, work tasks and work flow dynamics are verified afterward by the walkthrough procedure together with the customer and the design office, which means to walk virtually along work flows in the model. Problems such as loss, complexity, inconsistency, overlaps of work tasks are investigated through such over-viewing and walkthrough processes.
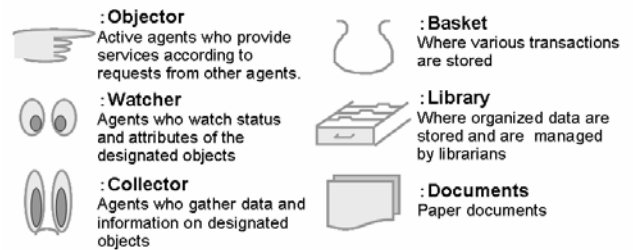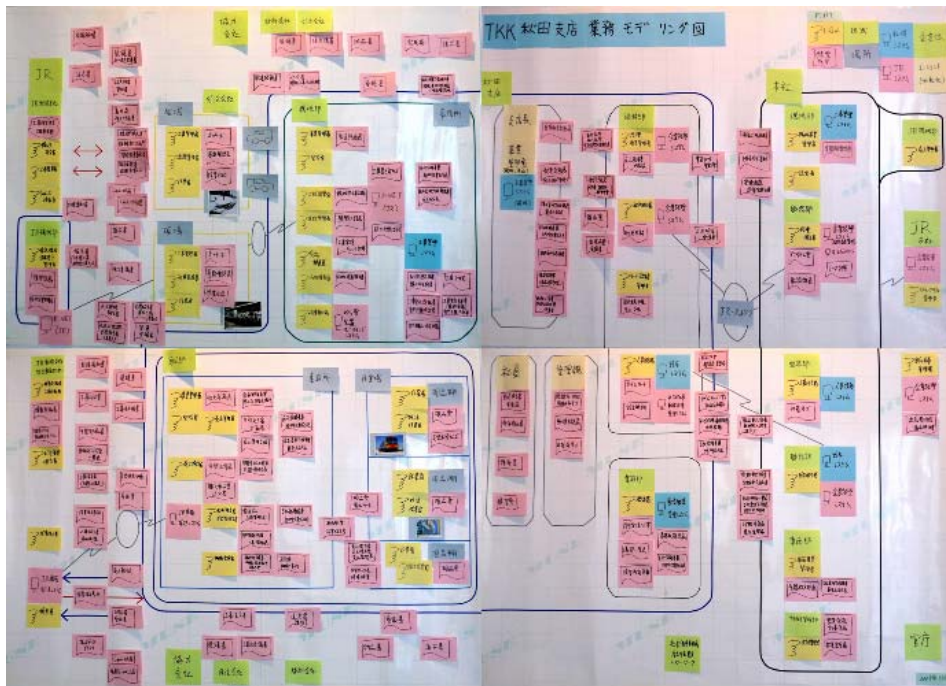

Figure 6 MUSE notations for modeling

Figure 7 An example of MUSE modeling (AsIs)

Although AsIs is vague and unclear at the beginning, it is important to identify inconsistent and conflicting current situations, which are mirrored explicitly in the overall picture on the MUSE sheet.

As the next step, we draw the ToBe model. First, we analyze and decompose the work tasks and into function level. Then, we recompose ToBe functions and agents who serve those functions. For drawing ToBe model, we arrange agents in the optimal positions with proper data in the MUSE sheet. Following three aspects are important points to determine where to place the agents on the sheet: (1) to follow up the vision of the customer, (2) to be free from the current rules and organization, and the conventional manner, constraints and customs, (3) to define the measures for evaluation of the overall system.

The structure and dynamics of the future organization described in ToBe model is surely achieved by the capabilities of IT and BPR. IT significantly contributes to overcome time and space differences, and volume and accuracy constraints, and BPR also contributes very much to remove organizational, rules, and other environmental constraints.

The characteristics of MUSE modeling are: (1) overall enterprise activities are visualized, (2) properly analyzed, and (3) the structure and dynamics are overviewed within a short time by a small group of people.

Those characteristics are resulted from the uniqueness of MUSE modeling method, such that (1) there are no process flows in the MUSE modeling sheet, (2) because iconic notations of agents and data are used to illustrate business activities within the company and inter companies, it is easy to understand by those who are not familiar with IT terminologies, (3) no-one could draw AsIs or ToBe modeling picture in free hands, but you can draw them according to MUSE modeling steps, and (4) walkthrough in a model helps us to verify the work tasks and work flow dynamics from various view points, such as a certain agent's view point or a certain data's lifecycle, and problems and values rise to the surface.

4.4 MUSE as a practical methodology for KIKI model

Using KIKI's terminology, the purpose of MUSE in grand design phase is to share the service system itself and to build service field for value co-creation within the stakeholders. Step1 and 2 correspond to K1, step3 and 4 correspond to I1. Because the clarification of "objective value" corresponds to I1 (Identification of the service field associated with customer's requirements) and the "functional values" to K2 (Knowledge creation for the new service idea). Therefore, Step 5 corresponds to K2 and Step 6 and the following IT service realization phase to I2.

Also, we claim that the role of the design office, which knows both customer and IT vendors, is important for such collaborative works. Thus, MUSE steps conducted by the design office can be considered as a practical methodology for KIKI model in IT solution services.

5 Case Study

5.1 IT solution service for a utility company

As a case study of IT solution service, we discuss the case of a utility company. The IT system for the facility management division of the company was developed and completed in a short time and has been successfully operating since 2003 [11]. The objective of the IT system is to realize PDCA (Plan, Do, Check and Action) cycle for managing lifecycle of facilities, through reengineering and improving work processes. We have engaged in this IT solution service as a design office.

This IT system is used by more than 2,000 workers of the company, and has been continuously enhanced since the beginning of operation. Because of such successful deployment in the above division, the IT system has been extended in large to other 3 divisions and fully contributed to improvement and restructuring of the business activities of the company. As a result, the whole system saved financially one half of the investment cost as compared with that of traditional approach. Due to such a meaningful contribution, this project won the 2005 Shibusawa Award and the 2006 Ohm Award (prestigious Japanese awards in the filed).

5.2 Value co-creation among the stakeholders in grand design phase

The grand design phase has started from the investigation of the customer's activities. In the above case, there are various stakeholders as

follows. There are the head office, branches, and field maintenance offices inside the division, other divisions in the company, contractors outside the company, and end customers who finally receive utility services.

In the process of analyzing AsIs of activities in the facility management division, we, as a design office, realized that so many tasks were overlapped and complexly related, and their definition and responsibility were vague, and furthermore rules among them were often unwritten. There was no one who was able to describe the overall activities of managing facilities. Then we thought that our developed methodology MUSE would be useful to overview those work tasks and their complex relationships. From this view point, we propose MUSE and the customer accepted it.

The procedure for grand design phase shown in Fig. 4 was executed using MUSE communication tool and modeling tool. After current activities analysis in step1 and 2 stakeholders understand and share the real problems of AsIs. Those steps correspond to K1 in KIKI model.

In step3, the vision of the facility management division and its core concept were discussed. Through this discussion and walkthrough in the ToBe model in step4, the vision and concept were redefined. A catchphrase, "From Construction to Maintenance" was adopted. This means that the period of high economic growth has been ceased, and we should change the facility management style. That is, it is more important to focus on maintaining currently available facilities rather than to construct new facilities. Those steps correspond to I1.

According to this concept, the "objective value" of the IT solution service was discussed and specified as "To realize PDCA cycle for managing lifecycle of facilities through IT services". To satisfy this objective, the requirements of IT system and related services with the "functional values" were discussed in step5 (K2).

Then those new IT services were planned and budgeted in step 6 and were realized in the following phase described in 5.3 (I2).

According to those steps in MUSE methodology with the design office support, we could reveal and clarify the customer's "objective value" in a short period and go forward to IT service realizing phase. Although it became harder than before for customers to optimize and balance the overall system goals by themselves,

collaborative work was a crucial factor to achieving effective services. As is shown in this case study, MUSE and the role of the design office are practical and reasonable way for service value co-creation in KIKI model.

5.3 Value co-creation among customer and IT venders in IT service realization phase

Following to the grand design phase, IT service realization phase started, which is a later part of I2 in KIKI model. In this phase, the collaborative work among customer and IT venders, especially IT users in the customer and system engineers of IT development companies, became important.

In this case, the "objective value" was "To realize PDCA cycle for managing lifecycle of facilities through IT services". There is dilemma that users of IT systems could not assess how to improve their business process due to inadequate knowledge about IT technologies, and IT system development companies could not effectively utilize IT technologies due to insufficient knowledge about customers' business processes.

This dilemma was solved by organizing several joint teams of IT users who represented work tasks in the facility division and system engineers at IT system development companies. The members of those teams exchanged ideas and had discussions toward accomplishing the user's final objective. The ideas of managing lifecycle of facilities using an IT system were discussed and reviewed repeatedly by the project managers of the customer. This process was continued and repeated over short periods and "functional values" are broken down into details.

Through those value implementation processes, the IT service realization phase has successfully implemented and the main subsystems of IT system for facility management were developed and started operation within 18 months. As a result, the system could change customer's work styles into a flat organization without middle management and resolve sectionalism issues by using the same information and making their business activities more efficient. The principle behind IT solution services could successfully be changed "From Construction to Maintenance".

6. Conclusion

We have introduced by showing successful case

study: (1) there are two values i.e. "objective value" and "functional values" in IT solution services with value chain, (2) significant activities of the design office and effective use of MUSE are valuable and indispensable for clarifying and achieving the customer's end goal, which is the "objective value", (3) collaborative work among customer and IT venders becomes a crucial factor to realizing effective services, which are "functional values". Those are the procedure of K1, I1, K2 and I2 in KIKI model and MUSE methodology and the role of design office are the practical way for actuating KIKI model in IT solution services.

In the last, we would like to mention that IT solution services have been playing important roles in achieving a future vision for customers. We need to manage IT solution services sustainably to effectively and continuously utilize IT systems by planning IT strategies, drawing up roadmaps to achieve the strategies, executing the roadmaps, and modifying the strategies depending on the changing environment. The design office, from this viewpoint, should clarify the relationship between business strategies and IT solution services to explain the necessity for IT systems. Collaboration and service value co-creation among stakeholders are necessary to plan such IT strategies and effectively execute IT solution services. The role of the design office, which maintains a consistent view of IT solution services and prepares opportunities for collaborative discussion, is crucial in providing successful and sustainable IT solution services.

However, the most important success factor is the customer's will to effectively utilize IT solution services in their business. The design office and MUSE will support the customer's resolve as far as there is a strong will to attain IT values in enterprise by co-creation among related parties.

Acknowlegement

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