

The 9th CIRP IPSS Conference: Circular Perspectives on Product/Service-Systems
Governance: A New Perspective to Service Design Process

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Abstract

A common practice while developing product services is to adopt procedures that could facilitate well-defined mapping of the stakeholder's requirements for the offered product services. A central theme of this research is to explore a few of those aspects which are typically not captured by traditional service development processes. This includes transition from stakeholder's needs to product services design like financial, marketing or customer relation targets and at the same level ensuring the balance between customer's satisfaction level and other stakeholder's expectations, thereby maintaining the comparative high-quality of offered services. In order to address this shortcoming in product service design, this paper proposes to employ a governance model by extending traditional service development process. Furthermore, a novel framework for industrial product service development is introduced, which consists of three process stages and takes into account the proposed governance model, along with product, process and resource models. This article also highlights some of key aspects which when considered in the governance model of our newly offered service design framework could allow service providers to tune services to optimal for individual needs.

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1. Introduction

In this era of global competition, the industry representing industrial product services clearly reflects the paradigm shift from leadership in technology to leadership in utilisation [1]. Therefore, product service providers aim to ensure that their business models are compatible with higher strategic priorities of the offered services, by shifting their focus from the design of physical products to the design of combined product service offerings. With service engineering, a major concern relates to the systematic development of new services [2], in particular, for Industrial Product-service systems (PSS) where many aspects dealing with dynamic interdependencies of product and service still remain the subject of further investigation. This PSSs business to business application environment, representing the sociotechnical system, perhaps confront with many obscure immanent dependencies between product and services that are shared with persons involved [1].

In addition, the development of product services faces a burden to confront with concerns that goes beyond this integrated offering which encompasses the wholesome requirements of product services, by ensuring the connection between the customer's satisfaction level and other stakeholder's expectations [3]. Therefore, encouraging the adoption of a customers' perspective even in the design phase, in customer linking activities, and to align their service provision to customer expectations. Furthermore, we have noticed that another important aspect which has not received much attention in the early phases of service design relates to issues like legal compliance, technical standards and national and international regulations. Therefore, governance related issues tend to be exercised in different ways and at different stages of service offerings and play a crucial role in any organisational structure which has direct influence on the firm's value, operating performance and eventually on the product market competition [4].

Many service providers are hampered by the fact that their current strategy and processes are not designed well enough to efficiently develop and deliver services. As mentioned by Bullinger et al. [5], such difficulties are frequently encountered when new services are created by companies. This may be for many reasons including that they are not clearly defined, that there are no unequivocal descriptions of the service contents and that the relevant processes and the necessary resources are not in place thereby obstructing the seamless integration of product and service contents.

While various models have been proposed with different procedures for the systematic development of new services, many superior factors are often neglected such as setting the revenue percentage [6], the estimated budget [7], warranty or goodwill cost [8], and a conformance rate service level agreement [9]. This can have an impact on the way new services are developed, but nevertheless are rarely incorporated into the existing new service development processes or when the existing services are to be improved. Therefore, this key question on how to design the service development process efficiently in order to ensure comparative high-quality service is still not fully answered.

This paper seeks to address this gap and investigates how these aspects can be covered in service design processes which could enable machine producers to design the potential services for their product in an optimal way. Initially, in this attempt at designing services for industrial products, this research is based on the foundation of a service concept where three different models are proposed that ought to be taken into account in service development: the *product model*, *process model*, and *resource model* [10] [11]. The term *product model* maps what a service does. In this context, this term is used intentionally as the services are considered as products in a same manner as any tangible product. The *process model* specifies how the aspired service will be made available. The term *resource model* deals with the planning of resources, needed for the subsequent provision of services. Thereafter, we have taken into account the work done by [12], where for the development of industrial services, a guided, easy and fast choice of alternatives approach is proposed with the use of service design parameters.

The rest of the paper proceeds as follows:-. section 2 introduces the concept of a *governance model* in service design and proposes its structure; section 3 provides a systematic approach to service development process, which consists of three stages: i) general requirement analysis; ii) eliciting service design requirements based on the design concepts, and iii) establishing design parameters for the service process model, which together make up the product's service design framework; section 4 outlines two aspects towards service design representing service provider and the customer perspective; and finally, Section 5 concludes the paper.

2. Governance Model

The concept of a *governance model* in industrial service design aims to address major concerns dealing with the exercise of authority, control or the manner which the design should comply with these standards. In other words, the *governance model* can be defined as the set of business-level requirements

as agreed by all internal stakeholders such as a set of organisation rules and policies, firm standards, guidelines and overall targets.

In our investigation to confirm the given features of governance in the initial design phase of the service product, we have extended the service development process [6], by introducing the concept of *governance model*, as shown in Figure 1. The structure of the *governance model* varies drastically based on the understanding of different stakeholders, with the objective to balance different overall business and customer concerns, which have direct and indirect consequence on the offered product service efficiency. These stakeholders represent different business-to-business relations. For example, compliance with customer targeted value, could have direct impact on gaining the higher sales ratio and on the other hand indirectly effects the efforts to maintain the customer complaint rate at low level. In this paper, we have for example, taken into account few of the prominent aspects which deals with stakeholder intentions to achieve their targets, such as a set of financial and marketing targets by service provider, and also considered the customer perspective by acknowledging those factors that influence customer expectations.

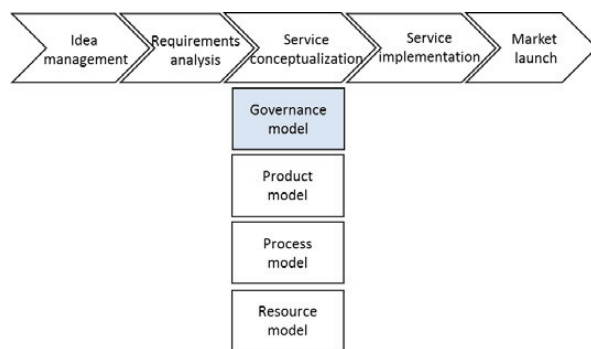


Fig. 1. Governance model - an extended service development process [6].

The structure of the *governance model* reflecting some stakeholders' objectives and their possible matching service parameters are displayed in Table 1. This *governance model* with a few proposed service design categories in conjunction with few relevant service design parameters, can serve as a template that could facilitate product service providers to develop their own *governance model* in accordance to their business needs. The recommended five basic service categories for the *governance model* are defined as follows:

1. **Financial Targets** - represents the financial goals of a business that needs to be fulfilled and should be considered under the service design parameters of different relevant service categories.
2. **Marketing Targets** - represents the marketing objectives to achieve and should be endorsed by the overall service design parameters.

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