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Chapter 8

Value visualization strategies for PSS development

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Abstract

The concept of value visualization is concerned with the way that firms communicate and demonstrate the value of their product-service systems (PSS), both internally and externally. In this chapter, a visualization strategy framework for PSS development is proposed. It is particularly tailored for industrial companies that are strategically shifting from selling products to becoming providers offering PSS. Value visualization strategies have traditionally focused on external sales activities. However, companies need to have a broader approach to visualization in all PSS development phases, as well as including different visualization techniques. Furthermore, different visualization strategies are needed for each particular development stage of the PSS. Companies need be able to make use of several different visualization strategies, depending on the actual content of the product-service system and its position in the development process. Whereas the product development process is rather heavy at the back, successful PSS development projects with high levels of service need to be heavy at the front (that is, they need to not only develop the system but also ensure its rollout). Examples are provided from eight market-leading companies in different industries, each of which are undertaking a strategic shift from identifying as product sellers toward becoming

providers offering PSS. To conclude, value visualization has become vital for winning new contracts and retaining existing ones. It is therefore a strategic resource that managers need to pay attention to, and continuously develop, in order to compete with PSS offerings.

Keywords: Value visualization, Value creation, Offering development, Product-service integration

1.1 Introduction

Managers and scholars alike have pointed out that it is in many ways challenging for manufacturing firms to carry out a PSS strategy (e.g. Jacob and Ulaga 2008; Kowalkowski et al. 2009; Mathieu 2001). The strategic shift from products to integrated offerings involves not only adding auxiliary services to the core product offering; it also requires redefining the company's business and changing the mindset of managers, employees and customers. KONE, for example, instead of defining its business as a provider of elevators and escalators, markets itself as dedicated to facilitating the flow of people through product-service systems. That is, their objective is "to offer the best people flow experience by developing and delivering solutions that enable people to move smoothly, safely, comfortably and without waiting in buildings in an increasingly urbanizing environment". Not only does such a repositioning require a new development and marketing approach, it also requires the ability to visualize the value of new integrated offerings (which consist of both products and services). Clearly, this is more complex than the communication of traditional product-based values and technical features.

In this chapter we forward visualization strategies as a means trying to understand how industrial companies can develop ways to approach customers in order to show the value of integrated PSS offerings. Empirically, in the light of increased service infusion in manufacturing firms, addressing visualization is of outmost interest. Theoretically, this is of particular relevance, since the existing research in the area of visualization has had its focus on traditional service industries and/or primarily in the B2C sector (e.g. Hill et al. 2004; Mittal 1999). Furthermore, visualization in B2B marketing tends to be limited to what Berry and Clark (1986) call 'documentation strategies', and it has an external focus, mainly on selling (cf. Anderson et al. 2007). However, visualization of value is a broader concept that includes the way companies quantify, communicate, illustrate and demonstrate the value of their offerings, not only to prospective and existing customers, but also to other actors in the extended business network and internally (within the organization). Based on a general model for service offering development, consisting of four stages (Kindström and Kowalkowski 2009), visualization strategies that take the entire process (from idea generation to the delivery of the integrated PSS offering) into consideration, are discussed.

1.2 Issues and Challenges

Visualization often involves communicating and demonstrating the value of intangible aspects that are difficult for individuals to understand, due to (among other things), immaturity in developing services and integrated PSS offerings. The most common strategies focus on sales management, and Fig. 1.1 shows a conceptualization of the customer value management process.

Fig. 1.1 Customer value management (Anderson, Kumar, and Narus 2007).

The first step is conceptualizing value. This includes identifying elements whose value comprises basically the same as the elements of competitors' offerings, as well as elements which are different (superior or inferior), to the offerings of competitors. Visualization becomes particularly important for those elements of the offering where the supplier and customer disagree with regard to the value relative to the value of competitors' offerings.

The next step is to formulate a competitive value proposition. As managers in charge of successful value-based selling point out, this does not equal listing all possible benefits customers receive from the offering (Kindström 2009). Rather, it implies that suppliers should highlight a few elements that will create the greatest value for the customer. This requires knowledge of not only their own offering, but also of the business processes of competitors and customers.

The third step is substantiating the value proposition. This can be assisted by use of case histories and value calculators. Case histories document the value that reference customers have received from the supplier's offering. Value calculators are often spreadsheet applications that salespeople, service technicians and specialists can use to demonstrate the monetary value that the customer will receive.

Finally, suppliers need to tailor the right PSS offering for each customer segment and profit from the value provided by both understanding the cost to serve and the customers' willingness to pay (Anderson et al. 2007).

The sales management approach to value visualization proposed by Anderson et al. (2007) and illustrated in Fig. 1.1 is a useful starting point for a further discussion about visualization strategies. However, complex, integrated PSS offerings are typically not sold on an operational level. Rather, these investment decisions are made on a strategic management level, where other forms of visualization and also different skills are necessary (compared to more basic, low-value offerings). Hence, this requires a different approach from sellers as well as buyers to product and service sales. Furthermore, in the different stages of a PSS development process there are different visualization needs, and even before entering a development process of a particular offering, companies must visualize concepts on a broad level. This broad approach is needed in order not only to build

up an understanding and acceptance of new concepts and ideas internally, but also to create an external demand pull (Kindström 2009).

1.2.1 Visualization in the PSS development process

Using a generic offering development model based on the four stages *market sensing*, *development*, *sales*, and *delivery* that is adapted to manufacturing companies (Kindström and Kowalkowski 2009), the scope of visualization is widened to include all stages of PSS development; from the sensing of market opportunities to the actual value creation. In this way, a process dimension is added to the research on visualization strategies.

Table 1.1 offers a brief description of the different stages and selected key aspects of these stages. Very often, not only in new product development (NPD) literature but also in new service development (NSD) literature (e.g. Scheuing and Johnson 1989), the process tends to be limited to what we view as the development stage. Although the development stage with no doubt is critical, Kindström and Kowalkowski (2009, p. 159) argue that “there is a need to make explicit also the other three stages of the development process in order to fully grasp the complexities of and prepare the organization for its new offerings”.

Consequently, market sensing is regarded as a distinct stage which is critical regardless of the extent of actual, formalized development in Stage 2. It involves a thorough scanning of existing and potential customers, the installed base, competitors, the business network, etc. before explicitly addressing promising ideas in the development stage. Furthermore, the development of the offering alone is not sufficient for a successful market launch and implementation process, but also to ensure the sales and the delivery of the offering is fundamental (Edvardsson 1997). Thus, the sales and the delivery processes need to be taken into consideration in an extended PSS development framework, especially in companies with a sales force that is predominately used to selling products and not services and/or solutions (Kindström and Kowalkowski 2009).

Accordingly, compared to previous studies, the latter two stages of the framework in Table 1.1 are emphasized: rather than seeing integrated PSS offerings as a bundle of product and service elements, customers tend to approach these offerings as a set of customer-supplier relational processes, comprising not only the customization and integration of products and services, but also the deployment and post-deployment support services (Tuli et al. 2007). Compared to basic product and service approaches (where the value emphasis tends to be on value-in-exchange), the relative emphasis of the value propositions for integrated PSS offerings needs to be based on the customer perceived value-in-use (Kowalkowski 2008b). This requires not only a long-term orientation of the development process, but also a genuine understanding of the customers’ unique usage contexts, in which the value is created (Vargo and Lusch 2008).

Table 1.1. A four-stage process for integrated PSS offerings.

Stage	Description/rationale	Key aspects
1. Market sensing	A continuous process taking place within the company and in dialogue with customers. Although the customer is in focus, sensing internal business units and the wider business network is also needed.	Balancing an internal and external focus. Local and central innovation and learning. Structuring the existing portfolio and its inherent values.
2. Development	Development requires the involvement of customers and several functions, including more cross-functional and intra-organizational elements and coordination aspects than required for product development. The local organization and its front-line employees should be involved during all steps of this stage (idea generation, concept development, pilot study etc.).	Designing development process with customer involvement (not only blueprinting complex product development models).
3. Sales	It is essential to help customers appreciate the distinctiveness and benefits of the new PSS offering and, thus, to ensure that the front-line employees have sufficient knowledge in order to convincingly sell. Companies often emphasize the processes of designing and defining new offerings, and seldom put much effort into developing tangible actions for how to commercialize and scale up the new offering.	Developing measures and sales tools that better reflect PSS. Changing existing mindset, norms, and values.
4. Delivery	It is in the delivery stage that the difference between visualization of products and services become most evident. Services are created in an interaction with the customer during the delivery process, and are often highly localized. If integrated PSS offerings are to be delivered effectively and efficiently, an PSS delivery infrastructure needs to be in place. This infrastructure often is different from a 'pure' product delivery infrastructure with no local service organization.	Making integrated offerings visible for customers who are used to receiving products.

By combining research on visualization strategies and research around PSS development, it is possible to increase understanding in how and where in the development process companies can use value visualization strategies.

1.2.2 Value Characteristics of Integrated Offerings

When developing PSS, it is vital to understand what value potential these offerings have, what customers expect from these offerings and ultimately what value to visualize. It is possible to identify three broad categories of value (cf. Lapierre 2000; Ulaga and Eggert 2006):

1. product-based values,
2. service-based values, and
3. relationship-based values.

Traditionally, most suppliers have focused on product-based values, and therefore are good at visualizing these. Typical values derived from this focus include product performance, quality and unit price. These values used to be ‘order winners’ and many product oriented companies still put a heavy emphasis on these values. However, they alone are no longer enough as differentiators (cf. Vandermerwe 1994).

Service-based values are more difficult to evaluate and quantify, due to intangibility, and thus harder to visualize. Since many services are regarded as add-ons that can be given away in order to close a product deal (Anderson and Narus 1995; Oliva and Kallenberg 2003) these values have traditionally been obtained by customers free-of-charge to stimulate product sales. Typical service-based values include operation costs, customization benefits and service consistency.

Finally, relationship-based values are founded in idea that that the supplier and the customer maintain a relationship over time (Grönroos 1997; Vargo and Lusch 2008). As for service-based value, relationship-based value is difficult to monetize and visualize, and is therefore often neglected when formal contracts are established. Typical values include proactivity, trust, long-term commitment and shared norms and mindsets. For integrated PSS offerings, all three categories of value are central (see Fig. 1.2).

Fig 1.2 Customer perceived value in different types of offerings.

Table 1.2 summarizes the primary product-, service- and relationship-based values, the focus of visualizations in the different stages of the PSS development

process and the associated key measures (cf. Kindström 2009). Since the simplified division of the development process into the four stages does not fully capture the shifting focus of visualizations, Table 1.2 includes a more fine-grained division (where the development, sales and delivery stages are further divided into sub-stages).

Table 1.2. Internal and external value focus in the different stages.

Stage	Internal value focus			External value focus			Key measures
1. Market sensing	–	–	–	–	S	R	Profitability, revenue growth, customer needs
2. Development							
<i>Concept</i>	–	S	R	–	S	R	Profitability, revenue growth, customer needs, market growth
<i>Realization</i>	P	S	–	–	–	–	
3. Sales							
<i>Pre-sales stage</i>	P	S	–	–	–	R	Reward systems
<i>Pre-contractual stage</i>				–	S	R	Long-term commitment
<i>Negotiation and contract stage</i>				P	S	–	Cost, price
4. Delivery							
<i>During delivery</i>	–	–	–	–	S	R	Trust, commitment
<i>Post-delivery</i>	–	–	–	–	S	R	Customer's production and business performance

Legend: P = Product-based values, S = Service-based values, R = Relationship-based values.

From a value perspective, what distinguishes PSS offerings from industrial products is the emphasis and inclusion of service- and relationship-based values. This means that, in order to differentiate PSS offerings from more basic ones (i.e. products) and to be able to justify a higher price, manufacturing firms need to focus their external visualization efforts on service- and relationship-based values. Similarly, service- and/or relationship-based values are pivotal to visualize internally in Stages 2 and 3 (Stages 1 and 4 are more explicitly externally oriented) in order to balance the product-oriented culture prevailing in many firms and business units. Nevertheless, product-based values also have to be explicitly addressed during development and sales in order to succeed with the integration of the product and service elements of the PSS offering.

1.3 Solutions and Recommendations

Traditionally, value has been seen as relatively easy to communicate (as the focus was on product-based values). However, as companies are moving towards PSS, it becomes increasingly difficult to find effective ways to communicate and demonstrate value. In parallel with a move from cost-plus pricing to value-based pricing, companies must move towards value-based visualizations.

This requires a shift in focus and expectations, from basic product performance metrics to more complex measures, addressing productivity and customers' business performance. Since services are inherently intangible, except for the often tangible results and customer experiences (Lovelock and Gummesson 2004; Vargo and Lusch 2004), it becomes more difficult to produce 'product-like' fact sheets that convey the full meaning of a PSS offering before use. It is often more difficult to visualize the potential value of a service than a product, due the nature of a service (with a high interactive content) and also due to the inexperience of many buyers when evaluating services and PSS offerings (Lindberg and Nordin 2008). This implies that suppliers need to find ways to translate intangible arguments into unique selling points. Calculating cost savings, increases in revenue and the value of productivity enhancements and dynamic effectiveness are all examples of new ways to visualize the value of integrated offerings.

Different offerings require different visualizations, and also have different visualization needs, depending, for example, on the buyer's disposition and the importance of the offerings to the customer's business and production processes. A number of different factors that influence the need for visualization and the strategies employed can be identified:

- the complexity of the offering,
- whether the offering is radically new to the market or if it is an incremental change,
- the importance of offering for customer's business and process, and
- the degree of intangibility of the offering.

One way to approach the visualization of soft values is to use bundling strategies, to combine soft value elements with hard value elements (i.e. both services and products, and design PSS bundles that have both aspects and thus attract customers with a complete value bundle). This is traditionally done when offering added services, although these services are often added for free. Typically, this is especially attractive when having to address a large installed base.

An additional benefit from a bundling strategy is the possibility of leveraging the understanding of the core product (when visualizing the value of the integrated PSS offerings), for both the customer and the internal organization. Thus, a bundling strategy might decrease the need for difficult visualizations of service-based and relationship-based values. Furthermore, many companies need to use the product as leverage, despite the increased focus on services. By showing the interactions and linkages between the services and the core products in the PSS (for example in a film sequence or in a simulation), companies find it easier to find

resonance with the customers (cf. Anderson et al. 2007). By including various forms of tangible evidence, companies can get around the problem of having integrated PSS offerings consisting mainly of intangible elements. It is often easier for customers to understand these offerings if the supplier uses associations with tangible aspects, such as the role of the equipment. This implies that product-based, hard visualizations are more important in order to win new customers than retaining existing customers. Likewise, it implies that soft, service-based and relationship-based visualizations are central for cultivating and further developing an existing relationship (for example, through increased service provision).

From a design engineering perspective, a key aspect of value visualization of PSS becomes the design not only of the product offering but of the design of the complete system. This means that product design and development skills need to be combined with service engineering methods and tools. The starting point should be sensing and seizing opportunities for value creation (for the customer but also for the supplier) rather than product technology per se. This resonates with Table 1.2 where the visualization focus initially should be on service-based and relationship-based values rather than product-based ones. The extended service blueprint (Shimomura and Arai 2009), with the modelling of parameters and human and physical processes, and similar tools can serve as points of departure. Thus, the design engineering task requires the ability to integrate not only the product(s) (i.e. on a component or subsystem level) but to integrate human and physical processes and bundle PSS offerings. Furthermore, it concerns various degrees of technical integration between internal organizational units and between supplier and customer (cf. Kowalkowski and Brehmer 2008).

Evident in all the companies in this research was that the value of traditional products was relatively easy to communicate, both internally and towards customers, because the focus was on product-based, hard values. However, as companies are moving towards integrated PSS offerings, it becomes difficult to determine which value to communicate and how to demonstrate this. Having the capability to visualize the new values is regarded as central for succeeding with service infusion, and to subsequently successfully develop and sell PSS offering. Not surprisingly, this is something that all companies (to various degrees), also find challenging.

1.3.1 A Process Framework for Visualization Strategies

Evidence from the case companies show that manufacturing companies offering services and integrated PSS offerings must expand their visualizations beyond the traditional techniques used for products. Table 1.3 provides empirically grounded findings for a number of key issues related to the different stages of the offering development process. The purpose is both to show best practice methods and the focus of visualizations in the different stages, as well as to illustrate the wide variety of the visualization techniques used by the companies studied.

Table 1.3. Value visualization strategies in practice.

Stage	Focus of visualization	Visualization techniques used	Key stakeholders	'Best practice' visualizations identified
1. Market sensing	External	Trade shows, community activities, top management presentations	Industry in general, top management and internal product organization	None mentioned
2. Development	Internal	Case studies, reference sites, business cases, top management promotion, 'the successful example'	Top management, business area managers (with investment budgets), key customers	Simulations, virtual reality demonstrators
3. Sales	External	Case studies, reference sites/customers ('the successful example'), Value calculators/demonstrators (typically spreadsheets), film sequences, role play	Customer purchasing organization (higher up than operational level only)	Simulations (showing revenue, sales, costs), virtual reality demonstrators, case histories
4. Delivery	External	Reports, follow-up meetings, statistics, news letters stickers	Mainly customer operational organization	Reports, productivity statistics, comparisons, service plans/booklets

An issue that the companies frequently encounter is the importance of getting top management support and understanding (cf. Kowalkowski et al. 2009). This is not just a matter of educating top management about the need for integrated PSS offerings, but also to direct the same effort into understanding both services and products. Top management commitment results in higher demands for structured processes, deadlines and for well-developed ideas, and it communicates a sense of importance and urgency to the entire organization. Typically, top management needs hard, tangible visualizations and evidence in terms of market potential and profitability, and this can be somewhat problematic with integrated PSS offerings that have a high service content, since it can be more difficult to show on short term effects of services than products. Middle management working with business development can often feel frustration if traditional performance metrics are not complemented with new that better reflect and, thus, better visualize the value of integrated offerings. PSS development requires a longer time horizon, and measurements such as customer equity and return on relationship need to complement return on investment and other short-term ones (cf. Gummesson

2004; Rust et al. 2004). Hence, it is short-sighted to only focusing on the short-term gains of single product and service sales, rather than the potential value creation of the entire PSS throughout the customer relationship lifetime.

1.3.2 Visualization Strategies and the Intangible Nature of PSS

Although physical products are, by definition, tangible, product/service systems also have an intangible nature. This is not only due to the characteristics of the offering's service elements, but also because of the inherently process-oriented nature of PSS offerings (cf. Kowalkowski 2008a). Previous research has emphasized that making services tangible deserves special attention when visualizing their value (Berry and Clark 1986; Berry and Parasuraman 1991; George and Berry 1981). In studies of service advertising, it has been found that service marketers provide more factual information, or performance cues, than are provided for products and that, as offerings become more intangible, this tendency is emphasized (Grove et al. 1995; Tripp 1997). However, visualization must not be limited to advertising and promotional activities (as tends to be the case in B2C marketing), but should permeate all marketing activities and support value creation for both customer and supplier (cf. Grönroos' (2007) view on marketing).

In order to understand how to visualize the value of services and integrated offerings to different actors and in different situations, companies make use of so-called 'tangibilization' strategies (Berry and Clark 1986; Hill et al. 2004; Mittal 1999). Four general strategies have been put forward, and these can be used to convey the value of a service offering: *envisioning* (this tangibilization strategy is termed 'visualization' by Berry and Clark), *association*, *documentation* and *physical representation*:

- *Envisioning* involves the use of vivid cues in order to persuade customers and to assist them to experience the service mentally. Such a strategy evokes a clear and vivid mental image of the positive outcomes associated with the service. Virtual reality simulations and interactive spreadsheet applications are examples of possible techniques. Narrative (such as case stories and dramatization or so-called service scripts) is another example of an envisioning technique.
- *Documentation* refers to the provision of relevant information regarding key attributes, features and benefits of the offering. There are three types of documentation:
 - consumption (the activity of customers in their consumption role),
 - systems (facts and statistics linked to the service delivery system), and
 - performance documentation (reference cases and cost calculations).

- *Association* means linking an object (such as John Deere's deer, or Scania's griffin), place (such as the perception of a national company despite foreign ownership) or a person (such as Tiger Woods and Accenture) to the offering.
- *Physical representation* is similar to *association*, but focuses on core attributes that (directly or peripherally) are part of the offering. Examples of this are buildings, vans and employees (such as service technicians) in company uniforms being helpful and knowledgeable. This also includes the design of the product (such as a robust pump) signalling durability and quality.

If these four visualization strategies are compared with the value demonstrators generally discussed in a B2B context, those B2B strategies can often be narrowed into one strategy, that of *documentation* (e.g. case histories, value equations and value calculators). As a matter-of-fact, when looking at how manufacturing companies have worked with visualization in the past, and how many companies still deal with this, a documentation strategy is what first comes to mind. Furthermore, since the interaction is more present in B2B settings of reasonable complexity, demands on visualization competence are higher on the supplier than in B2C settings where messages are more one-directional (i.e. advertising and promotion rather than two-way communication and dialogue).

Table 1.4 is maps the four visualization strategies into the offering development framework. One conclusion is that it is not enough to rely on just one specific strategy. If a company is hoping to launch integrated PSS offerings managers must broaden their perspective and probably address all four visualization strategies, in order to maximize the chances of success. In particular, managers need to pay attention to the sequence of strategies, and also to whom they should use what strategy.

It is also interesting to note that the focus shifts not only between the different stages, but also within each stage. A clear trend is, that in order to inspire customers and to get their attention, intangible visualizations are of great use, especially to convey relationship-based values early on in the different processes. However, as decisions are to be made by the customer, more tangible elements must be included, most notably documentations and/or demonstrators. To sum up, finding the right visualization strategies is not easy, but it is essential for most companies and particularly so for companies aiming at increasing the service content in their integrated PSS offerings.

Table 1.4. Mapping the visualization strategies into the development framework.

Stage	Visualization strategies				Typical managerial activities	Typical outcomes	Key actors
1. Market sensing	–	–	A	P	Addressing larger scale change efforts instead of specific. Creating a champion. Building a brand.	An increased level of service understanding internally and externally. Loading brand and company with service values.	Senior management, marketing organization
2. Development							
<i>Concept</i>	E	–	A	–	Communicating the idea.	Internal understanding A description of how the offering works	NPD and R&D units, NSD units
<i>Realization</i>	–	D	–	–	Providing market, revenue, and customer data (a business case) as well as internal demands (such as infrastructure)	Decision support for investment	Business development, business intelligence
3. Sales							
<i>Pre-sales stage</i>	E	D	A	–	Finding emotional levers and communicating a feeling. Producing reference cases.	Arouse customer interest; making them believe in the concept.	Marketing organization, ICT specialists
<i>Pre-contractual stage</i>	E	D	–	P	Producing facts, figures, calculations and measures.	Giving the customer decision support for an investment.	Sales managers, salesmen, service managers
<i>Negotiation and contract stage</i>	–	D	–	–	Agreeing on contract details.	Measurements and evaluation procedures.	Sales managers, key account/project managers
4. Delivery							
<i>During delivery</i>	–	D	A	P	Customer-facing personnel must be relationship oriented	Customer feels secure and trusts the supplier – peace of mind.	Technicians, engineering and/or application specialists
<i>Post-delivery</i>	–	D	A	P	Designing interaction/touchpoints and evidence of presence	Service reports, measurement evaluations (such as performance)	Key account/ service managers

Legend: E = Envisioning, D = Documentation, A = Association, P = Physical representation.

1.4 The Visualization Process: Examples in Industries

The visualization strategy framework is based on in-depth studies between 2004-2009 (Kindström 2009; Kowalkowski 2008a) of business development at eight international, market-leading manufacturers. During this period, each of these were (to various degrees), undertaking a strategic shift from product sellers towards service and solution providers (see Table 1.5).

Table 1.5. Manufacturing firms included in the study.

Manufacturing firm name	Industry	PSS offerings
Aleph	Garden and forestry equipment	Extensive service and support contracts with uptime guarantee
Beth	Fluid handling	Customized service level agreements, systems engineering and rental
Gimel	Mining equipment	Lifecycle services, capacity-related and gain-sharing agreements
Daleth	Gas supply	Automatic gas supply, liquid management, process management services and solutions
Zayin	Welding and cutting	Systems selling, customized welding solutions, process and application support
Yodh	Material handling	A wide array of rental plans, fleet management and specific full service agreements
Lamadh	Aviation	Systems engineering agreements, customized technical systems and aircraft availability
Semekh	Buses and bus chassis	Vehicle and transportation management, extended coverage contracts, uptime contracts

The transition from products to integrated offerings with an increased service content has major implications for the traditional product development processes. It implies that business, market and customer aspects need to be taken into account to a much higher degree early in the process. That is, as service development projects take a more central role, emphasis shifts from technology push to demand pull. Whereas the traditional product development process is rather heavy at the back (a lot of time and resources are spent on the technical core in R&D projects), successful service development projects need to be heavy at the front (Kindström and Kowalkowski 2009). This means that the rollout of services as well as integrated PSS offerings may require more time and resources than the traditionally resource-heavy development stage. This can be further emphasized by the example of business development managers at an industry workshop, as illustrated in Fig. 1.3.

Fig. 1.3. The changing focus in offering development processes – an industry example.

Although somewhat simplified, Fig 1.3 shows the relative focus on the different stages in the development process. Hence, even if the toll gates between the formalized stages are the same, the amount of resources (such as money, competencies or time) spent in the different stages of the development process will depend on the service content of the integrated PSS offering. In order to address the communication and demonstration of value throughout the development process, the four-stage development framework in Table 1.4 will be used, as this is a way to approach and structure the visualization concept and demonstrate it with industry examples. By doing this, it is possible to better understand what visualization strategies to use, who is involved in utilizing them, and to whom they should be directed.

1.4.1 The Market Sensing Stage

The visualizations at the market sensing stage take place at a very general level, as this stage occurs before the PSS offering enters any specific development process. This stage should not be regarded as a one-way, outside-in sensing of customers and the external environment alone, but should also encompass a broader view of communication and dialogue with both external and internal stakeholders. Rather than focusing on any specific PSS, visualization in this stage is related to the overall marketing and service strategies of the company. In a way, the market sensing stage is also about shaping the environment, not only reactively adapting to it (cf. Normann 2001; Teece 2007).

Senior management formulates market strategies and targets, including whether or not to reposition the firm on the marketplace through integrated PSS offerings. This also includes market communication, such as the CEO's statement towards employees or stakeholders. The president of Beth, for example, has articulated the transition into services in the corporate magazine by stating that customers need total solutions and that both customers and suppliers stand to benefit

from ‘servitisation’ (Kowalkowski 2008a). In other companies, which have a larger share of PSS offerings and sales, senior management have made similar statements, both internally and externally. The senior management for Yodh, for example, argued that “we are today essentially a service organization; it is the total service offering that is the key thing”. In many markets, more than 50 % of Yodh’s new products are sold through rental plans (i.e. integrated PSS offerings), something which requires a different business and revenue model, and more extensive visualization strategies.

1.4.2 The Development Stage

Initially, the development stage revolves around internal visualization, in an attempt to find internal support for new forms of offerings. This focus is primarily based on the fact that most companies operate in a rather product-oriented culture where services and PSS solutions can be difficult to gather support for. However, different biases are obtained depending on maturity in developing and delivering services and whether or not services are an integral part of the PSS offerings.

“To be able to take advantage of the opportunity of selling integrated offerings, we have to start internally to show our sales personnel that also services are important and a good thing” – Business development manager, Zayin

Companies that already have a portfolio including services which they are developing incrementally, tend to start with internal visualizations in order to expand service-related sales and to convince sales staff to focus on services. On the other hand, companies that go from a product-dominated offering portfolio and develop more radically new PSS offerings tend to focus the visualizations towards external actors in order to create a market pull that can be used internally to get the necessary support needed.

“You cannot break through internally, but will get to a certain level and then hit a wall if you cannot show on customer interest and pull. Without this interest it is difficult.” – Business development manager, Lamadh

Since the companies often are relatively new to PSS, there is frequently a need to visualize how the actual process works. Gimel, for example, employs an advertising agency to identify and communicate how the actual service development and innovation process works. It is no longer possible just to use slides and spreadsheet applications for this.

The emphasis on product development means that when visualizing values, in most cases, companies will employ similar methods and techniques for services and products. Many companies emphasize the need to begin with internal visualizations, in order to obtain support and reach investment decisions. These visualizations are often based on previously defined templates, developed for products

but used for both products and services. The use of templates minimizes the personal traits of the presenter and is supposed to provide a more objective summary, and they discuss basic aspects of development, such as the “business idea” and the value to be delivered to the customer. Unfortunately, this documentation strategy is used as decision support for business management, but does not typically involve an understanding of market potential and direct customer input, and this is something that can create difficulty in later stages. The way in which customer value is presented is often not specified in these templates, and this is an important omission, as it is essential for the successful development of PSS offerings that customer values and associated visualizations resonate with the values of the brand.

There are, nevertheless, examples of companies successfully developing and launching offerings that employ a different approach with less a less rigid process and less reliance on formal documentation. In these cases, business developers have greater freedom of input into their own projects, over a longer time period. Furthermore, these individuals (because it is often an individual effort based on a personal conviction) usually work closely with a select few ‘lead user’ customers in their development efforts. Generally, once a project needs a budget, a more traditional approach is needed, including a business case and cost calculations.

Distinguishing between a prototype (or a test installation) and a full launch (scaling up) is another aspect of visualization at the development stage. For many companies, it is relatively easy to get approval and funding for a test drive or a prototype, when this is aimed at a well-known customer (one the company has an established relationship with). However, obtaining approval and resources for a full launch is much more difficult, and requires strong visualizations, often based on hard facts such as market potential and revenue. The challenge here is often to get the visualization across with the softer issues. However, as pointed out by many companies, and also in research (cf. Magretta 2002), it is a matter of being able to combine both hard and soft facts. Common visualizations include quotes and active promotion from top management. Another visualization involves the ‘successful example’, where a customer uses the PSS offering of another company (a competitor or a firm from another industry), or another company succeeds with similar service offerings. A more novel approach uses storytelling, developing stories around the offering in order to increase understanding and achieve a commitment.

Daleth uses stories internally, mostly stories depicting what can happen if the product or service does not work. For Daleth, this is a simple way to visualize, in words, an offering. They also use drawings (comic strips, for example) to show on a sequence of activities, in order to create a sense of recognition. People then reach an understanding without crunching numbers. The company has used this approach to explain roles in reference to new offerings – it visualizes how things work for employees. Where many roles are involved, one can visualize the work of other people, and through this get the complete picture. Daleth only uses this internally to obtain support for new offerings.

1.4.3 The Sales Stage

The sales stage can be divided into the pre-sales and pre-contractual phase, and the actual contract negotiation phase. Visualization in the pre-contractual stage is rather traditional, in that the companies use documentation strategies, such as cases and reference customers, projects, sites and tests, to communicate the value of their PSS offerings to a customer. Basic value word equations can enable the supplier to illustrate the difference in value between the best offerings of the supplier and their main competitor (cf. Anderson et al. 2007). For example, the value of a new cost-efficient pump solution for sewage plant customers could be illustrated as follows:

$$\text{Total energy savings} = (\text{Energy used [kW]} \times \text{annual run time [h]} \times \text{Cost per kWh} \times \text{number of years solution in operation})_{\text{Competitor offering}} - (\text{Energy used [kW]} \times \text{annual run time [h]} \times \text{cost per kWh} \times \text{number of years solution in operation})_{\text{Supplier offering}}$$

With service offerings and agreements including a wider array of parameters, the equations can become very complex, but the basic idea remains the same: quantifying and visualizing the value of the offering relative to the competitors. Value calculators (such as spreadsheet applications) can also be used internally to facilitate the decision making (for example, deciding whether to repair or replace broken equipment at customer sites, something that traditionally have been done more ad hoc and by rules of thumb rather than systematically and with the data needed available). Pilot cases are often used to gather information and create tangible evidence (such as folders and online applications) to show how the offering works.

Gimel works on visualization of their new offerings and service for trade shows, in order to increase understanding in general. However, managers have experienced that they need something to show something tangible in order to create a dialogue or to build up interest. Without hardware it is difficult to do this.

In the negotiation phase, visualizations become more factual. Whereas earlier in the sales stage the relationship dimension and values (such as trust and commitment) are emphasized, hard facts become more important towards the end of the sales stage. These usually include product-based values, costs, penalties and other legal issues. However, as integrated PSS offerings become more complex, the factual dimension (exemplified by the inclusion of a legal department), is put into focus earlier in the process, even as early as in the development phase. This necessitates suppliers finding ways to monetize the soft values inherent in their offerings. In general, the contract negotiation process becomes more important for more complex offerings. One consequence of this is that the supplier and the customer need to agree on measures that decide the success of an offering, such as how to measure productivity and uptime in availability contracts.

Aleph has a number of highly complex spreadsheet applications that are used to show the value-creating potential of their new integrated offerings, identifying reduced total costs and increased total revenue. However, these spreadsheets are often too sophisticated to use, and therefore Aleph has also developed stripped

down versions, illustrating key points (such as customer profitability), in diagrams and graphs, which are often interactive. Gimel works with key indicators: numbers that influence the price (such as energy consumption, wear and tear material, capital and output). But they also try to include some less tangible aspects, such as trust.

More complex visualizations include case studies from major reference customer and scenarios. Scenario discussions are becoming more and more interesting, particularly since computers and virtual simulations are accessible for almost all industries, allowing advanced visualizations, even for softer aspects of the offering (such as service interactions).

During the sales stage, the prevailing focus is often on product. A consequence of this is that sales pitch will often focus on technical matters related to the products. When selling more complex, integrated offerings with higher service content, this is not enough. Instead, the focus must be on customer value and processes. Sales personnel have a tendency to ‘teach’ the customer the technology, whereas with more complex offerings, the buying decision is often made higher up. Thus, the initial focus must be on business issues; technical issues come afterward. The sales person is obviously an important actor when selling integrated offerings. Generally, sales persons that are proficient in selling services and solutions are also good at building relationships on several levels in the buyer’s organization, at information exchange and understanding the customer’s reality (e.g. when an investment decision is on the horizon), and at finding connections to customer perceived values in existing solutions. A competent PSS sales force is also competent in finding unique selling points and a selling focus that resonates with the customer (cf. Anderson et al. 2007). Finally, they have to have the ability to listen and sense customer’s expressed and latent needs.

“You add many more layers to the sales person when approaching services. For example, completely new contact persons, instead of purely operative personnel they need to approach e.g. financial staff. You add more knowledge, create new forums for interaction and new rooms for discussion and sales. Not everyone is comfortable or proficient in this new role.” – Business developer, Semekh

Evidently, training the sales force becomes important. However, not every product sales person is suitable for selling solutions (Krishnamurthy et al. 2003) and they will therefore not be able to visualize the new values. This means that new competences must be added. Therefore, a gradual change of skills, processes and personnel takes place.

1.4.4 The Delivery Stage

Transition from the sales stage to the delivery stage is the part of the process where many companies are the least thorough and systematic. The handover from sales to delivery is critical, yet it is in many cases not working well. Once the PSS

offering is sold, little effort is put on visualizing the value delivered. A company that has recognized the importance of visualization in the delivery stage is Daleth, which has developed a 'Photo Service' concept to use internally as part of the training material for technicians.

However, the entire service and support organization must understand what it is that has been sold, and must be aware of the expectations of the customer. A close coordination between sales and delivery is often pivotal to ensure a successful delivery of the complete PSS offering. This becomes even more important when dealing with long-term contracts, as these include relationship dimensions and mutual development (that is, not only static, but also flexible and dynamic business development).

Similarly, the customer must be aware of what it is they have purchased. If, for example, this is a fixed price contract specifying availability, that at the same time specifies certain activities that the customer must perform, all parties have to be on the same page. Here it is crucial to agree on the evaluation criteria and create a mutual image of what the offering constitutes, that is, to establish the shared foundations for visualization. Obviously, this becomes more difficult as the complexity of the PSS offering increases.

A perennial problem with delivering services as part of a PSS offering is to show that a good job has been done, since many services are difficult to notice unless something is not working. For example, uninterrupted people flow systems in high-rise buildings and continuous supply of gas to the process industry are two critical processes that are particularly evident, and therefore tangible, when the system is not operating. Suppliers need to visualize the value delivered so the customers understand what it is they received. Similarly, it is important to reinforce the customers buying decision during the delivery phase and also afterwards, to instil a sense that they made the right decision. This is an important aspect of offerings with a high degree of intangible benefits such as trust.

Traditionally, most companies do not address this stage during their visualization discussions. At the same time, during this phase there are many opportunities to reinforce the relationship and visualize intangible relationship-based values, in order to increase the likelihood of customer retention through renegotiation or new sales. Reports, stickers, regular meetings (with customer representatives) and ICT solutions (which provide real-time data) are some of the techniques used to achieve this reinforcement. Daleth offers continuous and trouble-free supply of gas, and uses stickers (that the technicians put up at the customer's site) to illustrate their presence and the value delivered. Aleph uses reports sent regularly to show actions taken and to provide added value during the delivery phase. Similarly, they use a web-based system to reinforce relationship values through real-time information on operations and processes. In a sense, this means closing in on basic process-consulting activities.

The visualization of intangible values during the delivery stage is a critical, yet often neglected, activity. For companies with long product lifecycles and long-term contracts, the ability to visualize values in the context of customer use is particularly vital.

1.5 Future Trends

With product/service-systems becoming technologically more complex, the ability to not only visualize externally towards customers and key stakeholders but also internal visualization becomes more critical. Therefore, a promising avenue for future research, in collaboration with industry, is to develop value visualization techniques and strategies for the development and management of large technical systems (cf. Hobday et al. 2005). The catastrophic opening of London Heathrow Airport's brand new Terminal 5 in early 2008, and the many failures of ICT implementation across industries, indicate the importance of clear internal visualization for complex systems. As more software is integrated into new PSS offerings, reliability becomes increasingly important (Nightingale et al. 2003), which further suggests the need to be able to visualize value in an uncomplicated manner. Furthermore, collaborative projects with marketing scholars, manufacturing firms and organizations for applied research (such as Fraunhofer-Gesellschaft in Germany) possess major potential for visualization innovations, and can therefore increase the potential for manufacturers to remain competitive.

Finally, visualization seems to have become a key capability for winning new PSS contracts as well as retaining existing customers. Therefore, it is a strategic resource that managers need to pay attention to and continuously develop in order to successfully compete with integrated offerings (Kindström 2009). Future studies should analyze not only ways to visualize the value of specific integrated offerings, but also ways to visualize the firm's dynamic capabilities, such as systems integration competence.

1.6 Conclusion

This chapter contributes a number of insights managers need to be aware of. Firstly, if moving towards PSS offerings with a high service content, companies cannot merely extrapolate the traditional visualization strategies used for product based offerings. Furthermore, managers not only need to formulate new visualization strategies, but they must also understand the new underlying values, notably the relationship oriented and outcome based aspects that build up the customer perceived value of the new PSS offerings.

Secondly, suppliers must adapt to the fact that most customers are still very much within a product-oriented domain, and must not venture too far in their visualizations. Otherwise, they run the risk of alienating customers instead of enticing them. While important internally, this awareness is more pronounced towards external customers.

Thirdly, by taking the entire offering development process as the starting point, it becomes clear that several visualization strategies are necessary and also that the focus of visualization changes throughout the process. An implication of this is that it is not enough to rely on just one specific visualization strategy for success-

ful PSS development and sales, but rather, companies must address several strategies in order to maximize the chances of success. Particularly, managers need to pay attention to the sequence of visualization strategies and also to whom (i.e. what actors) they should use what strategy. It is also interesting to note that the focus shifts not only between the different stages but also within each stage.

A trend seen in the industries studied is that using value visualization as a strategy to communicate intangible benefits and create mental models (in the mind of the customer) is of great use, especially to convey relationship-based values early on in the different stages. Value visualization clearly helps to get the attention of customers, and to inspire them. However, since many buyers focus on low-priced offerings and product-based values (Anderson et al. 2000), tangible elements need to be included also, most notably hard facts and value demonstrators. In this way, visualization strategies should influence the development of products as well as services and integrated systems.

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