Guidelines for the Analysis of IT Business Models and Strategic Positioning of IT-Products

Prof. Dr. Georg Herzwurm  
University of Stuttgart  
herzwurm@wi.uni-stuttgart.de

Prof. Dr. Wolfram Pietsch  
Aachen University of Applied Sciences  
pietsch@fh-aachen.de

Abstract

Depending on the perspectives and the stage within the life cycle IT Product are viewed and managed differently. A model is presented that integrates different perspectives and stages serving as an aid for the analysis of business models purposeful and focused positioning of IT-products. Four generic business models are analysed with regard to the product management function in general and the positioning field for IT-products specifically: off-the-shelf, license plus service, project, and system service.

1. Positioning of IT products

In order to manage products properly, business issues and technical issues must be dealt with in an integrative manner – product management has been devised as a marketing discipline for this purpose and there is a large body of knowledge (see e.g. [1;2;3]); nevertheless, the major focus is on tangible mass consumer goods. IT-products are not tangible and they consist of different components: besides software, and hardware, also support, training, installation and other services such as consulting and last not least programming. In order manage IT-products properly, the nature of the product must be understood from a business perspective and a technical perspective as well.

Misinterpretations and misunderstandings regarding to IT-products and its management happen quite often in science and practice. For example, an IT Product in may be reduced by some people within an enterprise to the production of a standard DVD for all customers, or it may be viewed by others as a generic set of IT services that must be custom tailored in order to maximise the value for the user. In order to manage IT-products properly, business issues and technical issues must be dealt with simultaneously.

The integration of business and technical issues has been discussed intensively for individual IT Systems culminating in Carr’s provocative thesis of the “End of Corporate Computing” [4] which supports the importance of comprehensive IT products and its management. There are several works on software product management from a business view (e.g.[5;6]) and others from a engineering perspective (e.g.[7]). But there is no approach that opens the scope beyond software to IT-product management while integrating business and technical issues. This paper proposes a tool supporting the discourse about the scope of IT products in practice and academia integrating different perspectives such as business and technical.

The definition of the scope of products with regard to a specific target market is called product positioning within the marketing literature (see e.g. [1;2]) and is crucial for product management in general and for IT products in specific. The IT Product positioning tool described below provides orientation for the management of IT Products, like a compass does for route navigation: it is called the IT product positioning compass.

The Development department of an enterprise may consider any approved development result, which is delivered to a customer, as the IT product. Marketing may differentiate between software licenses, hardware-component, and additional services such as deployment, maintenance and customising. Both perspectives are plausible and legitimate but they should be integrated for effective and efficient
processes – to achieve this is the intention of the IT product positioning compass.

The Integration of perspectives is crucial for IT product management. Hence the major critical success factor for successful product management in practice is the persuasiveness of the product manager (see e.g. [2]). Therefore, the IT product positioning compass has been devised to strengthen the consensus dimension of requirements engineering [8]; it should support and improve persuasive skills.

2. ‘Directions’ for the Management of IT-products

What are the primary ‘directions’ for such an IT-product positioning compass? From a business perspective, the positioning of products is a marketing issue. The four P’s of marketing (price, place, graduation, product) may be interpreted as general ‘directions’ within marketing worldwide. However, they do not cover IT-related product management aspects and they require some interpretation. The concept of the software life cycle is well established in the IT industry and provides ‘Directions’ for IT Products starting from requirements definition to introduction. The concept of the life cycle will determine the primary dimension of the compass.

There is a multitude of different lifecycle models suitable for different purposes and tailored for different applications. For example, the development of a navigation system must be approached differently than the introduction of a CRM system. There are comprehensive models that may be tailored to different situations, e.g. the German standard ‘V-Modell XT’ [9]. Those models are very complex and may not be reduced to a single dimension for orientation. This is not the only limitation; there are more, that apply to all system life cycle models:

A) Life cycle models focus on the development: IT operation and support are important business fields and must be addressed properly.

b) All Stages of the life cycle must be processed step by step: IT Products may span the whole life cycle or only some specific stages.

C) Life cycle models start IT development from scratch: IT-products mostly start with existing soft and hardware components and must be integrated within an existing infrastructure.

D) The development of different IT-systems may be performed independently: IT Products consist of systems with different life cycles that are heavily intertwined; e.g. the change of an operating system release requires changes in different components and products.

E) Outcomes will be employed in a predefined context: reuse of components is characteristic for IT Products.

Most of the limitations of the life cycle are caused by its procedural interpretation within the systems engineering paradigm. If the stages are not interpreted as steps but as components, then an IT-Product could cover any stage in an individual sequence: IT Products may cover either development or support, or a sequence of both. This interpretation of the life cycle corresponds to the interpretation of the general product life cycle in marketing as a descriptive and not as a normative model.

The stages of a general IT Product life cycle build the primary dimensions of our IT Product positioning compass in order to integrate technical and business perspectives. The stages of the product life cycle are the building blocks for any product. Any IT-Product incorporates development activities within the early stage of the life cycle. In order to be utilised, the IT-Systems must put into operation – two different stages and product types. A Supplier of IT-Products may provide and operate the IT-System or just the software ready for application. Finally there are IT Services and Support that may be part of an IT-Product or may be treated as independent products. The following figure 1 depicts the resulting IT Product positioning compass.

![Figure 1. Directions for the positioning of IT-Products](image-url)
may deliver comprehensive IT-products or may specialise in a specific segment. In either case the route must be planned properly: which directions will be approached and in which sequence? These and other tasks must be carried out in any case; hence, there is no specific segment for them in the IT Product positioning compass.

The compass is a positioning tool; it is not geared for the planning of the process, it does not replace the product development plan or process. During the evolution of a product the space of the IT Product positioning compass will be elaborated several times as depicted in figure 2.

### Figure 2. IT Product Evolution

Product evolution is never a continuous process; there are several entries, branches and dead ends. The IT Product positioning compass provides a simple framework for analysis and serves as a decision aid: which services are provided currently, which services may be or may not be provided? Does the regular license include perfective maintenance or is an upgrade license required? Decisions about the positioning of products, which are often buried in different project or release plans, are arranged within the IT Product positioning compass into a single picture.

### 3. Product Levels

The IT Product positioning compass should improve communication between different roles, i.e. business and technical. One dimension is yet not sufficient for a meaningful positioning. For instance, if database engineers talk with salesmen about maintenance of the product, they may refer to complete different issues. Whereas salesmen are referring to services that are offered to customers, database engineers may address a utility for the reorganisation of data structures. In order to improve product-related communication, it is necessary to clarify the level of the product considering technical and business aspects as well. There are several architectural models that may be employed for this purpose; most of them focus either on the business perspective (e.g. Zachmann’s Framework [10]) or on the technical perspective (e.g. the OSI Reference Model [11]). We propose a simple Model that balances business and technology. However, the model may be augmented or replaced by a different model if available and appropriate.

- **Data**: Some IT-products like off-board navigation systems require raw data that is provided by a specialised supplier such as NAVTECH. Hence, there is product level for Data below the technical platform.
- **Technical Platform**: The technical Platform is one level for the management of IT-products. If the product is an embedded system, the IT-Platform is part of the product; for most Software-Products it is not.
- **Elementary Services**: The building blocks of the product that may not be visible to the user are called elementary services. Elementary services are basic functions that may not be useful without other functions, e.g. a backup-function or SMTP.
- **Business Services**: Complex system functions like E-Mail require the combination and calibration of several basic services (SMTP, POP3, E-Mail-Client). Several Business Services may be composed by the same elementary services, e.g. simple and an expert version of the same virus scanner function. On this level, the technical perspective meets the business perspective; business services must provide a benefit that is comprehensible within the application context.
- **Business Processes**: An IT system consists of several Business Services that support or drive specific business processes. At this level, the overall benefit for the specific process(es), task, roles and deliverables is concerned.
- **Value Creation**: Due to limited resources and attention, not every IT System that may provide benefits, will be developed, provided, utilised and supported. The rationale for decisions about IT-systems is addressed at this level ranging from objective criteria such as cost to subjective influences such as personal relationships.

The IT Product positioning compass combines the directions derived from the product life cycle with the levels pointed out above into a polar coordinate system.
as depicted in figure 3. The resulting framework structures the area of action for the management of IT Products: generation of data, setup of the technical platform, functions, utilisation of data … These tasks require a technical and organizational infrastructure. This infrastructure is a medium but not the target of the IT Product positioning compass. Therefore, is depicted as a secondary dimension. Since the infrastructure integrates the IT Product at different levels, it may be located at the edges’ of the concentric circles within the IT Product positioning compass.

Figure 3. IT Product positioning compass

4. Positioning of IT Products

4.1. Scope and objective

In order to employ the IT Product positioning compass for the analysis of product strategies and purposeful positioning of IT-products, the areas of actions must be identified and arranged within the compass space. The following diagram gives a fictitious example of a medium-size software house with a comprehensive portfolio ranging from Consultation, Programming, Introduction, Operations, Help Desk up to Maintenance.

The depicted fictitious software house is offering almost the complete product spectrum. There are unclear boundaries between product areas and it is questionable, whether all areas will be at the same professional level. This product portfolio looks rather like a fuzzy set of services; product positioning is at most unclear. An unclear positioning of the IT-products makes external and internal Communication difficult. Furthermore, it manifests strategic deficits. In practice such deficits often coincides with intensified operative management and very limited product management.

Figure 4. Fuzzy IT Product Positioning

Product management coordinates and integrates different product-related perspectives, tasks and hierarchical levels in an enterprise [2]; its implementation depends on the specific context. There are several works on specific business models for the software business ranging from an investigation of business culture and critical success factors [12] to an analysis of value chains within the segment of ERP [13]. However, there are no empirical findings available yet on IT Products besides case studies regarding the context of IT Product management. There several conceptual works ranging from a task analysis for software product management [14] to the definition of generic business models for IT-products [15]. The latter appears to be most suitable for structuring the context of IT-Product Management within the two dimensions discussed above. Four generic business models have been identified for IT-Products: Off-the-shelf (License), License plus service, Project and System services. The IT Product positioning compass will be employed to these four models in order to demonstrate its application for the positioning of IT Products and to enquire into the situative differences for IT Product management.

4.2. Business Model ‘Off-the-Shelf’

The business model for off-the-shelf products targets at high-volume business. Only specific IT-Products are suitable for this business model, e. g. consumer products like entertainment devices,
computer games, or specific utility programs, which spread through the web. Some products are bound to a specific hardware but the software is determining its uniqueness. The buyer acquires the right, to use the system on one or more devices – the ‘License’.

High-volume IT-products require a critical mass of customer as starting point for the marketing. In order to sustain in different market fields, the IT-product must have a certain level of technical maturity and it must not require extensive instructions for usage – it should be marketed ‘Off-the-shelf’. In order to achieve high market volume for Off-the-shelf products, the common requirements of the target market are focused, not the specific requirements of single users. Off-the-shelf products are defined by its functions independent from the specific application context. Nevertheless, the potential of the functions to address individual requirements is motivated in terms of general benefits like in the following case: The provision of a dedicated technical interface to PDA’s may enable time-independent work, which is important for field services among others.

The better the functions of the Off-the-shelf product do match the needs and expectations of the target market, the better an IT-Product is positioned. For a small market positioning appears to be easier, but the volume may not be sufficient. The ideal situation is a large homogeneous market and it is one major goal of communication to prepare the market in such a way. For this purpose and many other reasons, Off-the-shelf IT-products should be clearly market-focused and delimited. In general, the transition from development to marketing is critical for product success. Detailed system specifications must be condensed to product definitions that are easy to comprehend, communicable and persistent. There are two specific core competencies: ‘Off-the-Shelf’-marketing and ‘Off-the-Shelf’-development. It seems to be difficult to integrate both competencies within one organisational unit for high-volume IT-Products. In practice, they are often separated as independent units or even between different enterprises. Marketing and Development of Off-the-shelf IT-products are complementary though self-dependent business models. Development ensures technical maturity and marketing the marketability. Both models are depicted in figure 5 within the IT Product positioning compass.

Off-the-shelf product require a long term release planning, in order to synchronise development and marketing activities and to give the user planning reliability - an important characteristic of the service quality. Furthermore, maintenance is not only a component of the license but an important mean for product vitalisation. Development is responsible for execution, marketing must analyse the long term market potential.

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The business model 'License plus service' is a combination of a mass product ('Off-the-shelf') and an individual services ('Project'). Whereas Off-the-shelf IT Products may not be modified for an individual customer besides planned parameterisations, individual Modifications may be part of the business model 'IT License plus Service'. There is a standardised core system that may be considered as the 'Off-the-shelf'-part. This core is modified, extended, connected according to individual needs: e.g. regarding the presentation / interaction, reporting or also adaptation specific local interfaces. Typically there are different types of contracts for Licenses and services.

The extent of modifications and the volume of the required services are critical for this business model. If they exceed a certain amount – not more than three person months is a pragmatic rule of thumb – a project organisation is necessary and it is difficult to keep the IT system and services simple and manageable.

License plus service targets at lower volumes than Off-the-shelf; nevertheless, it is based on economies of scales: There are substantial costs to ensure the technical maturity of the core system must. Hence not the single customer is focused, but a larger market segment. This applies to the IT services as well. Services must not be limited a few specialists, but should be organised as standardised processes. Furthermore, the extent of modifications must be limited in order to reduce complexity. Similar to off-the-shelf products there must be a consolidated product definition, providing the scope of the core system and the limits of the potential functions.

Because of these limitations License plus Service targets primarily at new customers and is very successful in niche markets. Whereas a clear distinction between marketing and development is suitable for the Off-the-shelf-business, both functions must be coupled more closely for License plus Service: The general scope of the core product and individual modifications and must be analysed and managed in an integrative manner by a dedicated product management position.

4.2. Business Model ‘IT Projects’

The business model License plus Service does not allow substantial modifications or migrations of IT-Systems. Any larger set of individual services must be formalised and executed as an IT-Project. But if there is no IT-system available at the beginning, what is the product? Products require a certain level of maturity and market potential. Hence, the execution of products must meet professional standards and must be tailored to a certain scenario – a specific and proven process is the product.

There is a large body of knowledge regarding the maturity of software development processes [16]. However, product management is interpreted moreover as an administrative function and the marketing function is not addressed at all. In order to establish a viable business model for IT projects, not only the definition and execution of project is crucial, but also its marketing. The maturity and the match of the functions must be ensured for Off-the-shelf products. Likewise, the maturity and the match of the process must be ensured for IT Projects that are marketed as products.
The execution of projects is one part of the business model, its foundation the other — both are complementary like those in the Off-the-shelf business model. Figure 7 depicts the positioning of IT-Projects within the IT Product positioning compass.

The scope of IT-Project foundation and execution may vary substantially; indicated by three different segments and one dotted large segment within the figure. IT Project foundation comprises the definition and assessment of processes, the acquisition and qualification of proposals and the administration of resources. Methodically, IT project foundation employs Programme or Portfolio Management techniques and works like a strong IT Project Office: Proposals and projects will be analysed, evaluated, prioritised, initiated, staffed and controlled. Depending upon the target market, personal processes or complex, firmly structured processes will appropriate.

For the marketing of IT-Projects, corporate marketing is highly concerned, since there is no standard system functionality. Firm image, public relation and reference customers are the major levers for project acquisition. Hence Key Account Management and Business Development must be organised properly and coupled closely with, or even performed by project foundation.

### 4.2. Business Model ‘IT System services’

In all business models discussed below, the customer is responsible for the operation of the IT System. Within the business model IT System services operation, administration, comprehensive support and maintenance may be part of the IT Product.

Some niche players have been employing this model successfully since a long time. The advancement of web-technologies is the major force in the advancement of this business model and its technical maturity. The business model emerged lately as Application Service Provision (ASP), ‘on-demand services’ or ‘software-to-rent’ among others. Figure 8 depicts the positioning range for IT system services.

IT System services may be considered as an extension of the business model Off-the-shelf to the comprehensive IT-System scope of IT-Projects. IT-projects focus on development and introduction, support and maintenance are taken over by the user. Like Off-the-shelf products, IT System services may be utilised by the user immediately and the Development of the IT System must be geared to suit the needs of many users. Therefore, the business model for IT System services must be split up in two parts analogous to Off-the-shelf into design and implementation and allocation and operation (see figure 8). Whereas Off-the-shelf omits the provision of data, technical, platform and basic services (see blank core within figure 5), the technical infrastructure is constitutive for IT System services.

![Figure 8. Positioning ‘IT System services’](image)

This business model is comprehensive in terms of technology and challenging with respect to marketing: Off-the-shelf products may be comprehended in terms of functionality, Licence plus services are disseminated thru value-added services and Projects thru personal interaction. But the provision of an IT System may not be experienced and/or measured easily. Availability and Performance are common measures for the achieved quality level (Service Level Agreements), but they are only indirect measures and do not address the development process and technical and process maturity. Substantial tasks such as data protection, network management are not addressed.

In order to analyse the potential and to position IT System service products, technical criteria and market needs must be balanced within the context of a consistent business strategy [17].

### 5. Evaluation

Since product management is an integrative task; hence the major critical success factor for successful product management in practice is the persuasiveness of the product manager (see e.g. [2]). The IT product positioning compass has been devised as an aid for this purpose: it should support and improve persuasive skills. Hence its practical value for IT product managers may indicate validity of the tool if it is analysed properly - this has been the guideline for the
invention and design of the IT product positioning compass.

The authors carry out IT product management trainings for an open audience regularly. The authors learned from these training courses that current methods like the product life cycle, portfolio analysis or road mapping are useful for planning purposes, but do not provide orientation with respect to business and technical issues. The authors have been devising an initial version of the compass and it has been employed in a classroom cases, criticised and improved for the next training. The compass has been developed thus in an evolutionary manner until it has reached a state of maturity that has been perceived by the participants as similar to other tools like portfolio analysis. A survey is planned to investigate the dissemination of the in day to day IT product management work.

6. Conclusion

The elaboration of the IT Product positioning compass to four generic business models has been revealing substantial different prerequisites, challenges and pitfalls for the Management of IT-Products. License plus service is a compromise – neither a custom-made suit nor ready to start. Combinations of the generic business models may be viable, but are not efficient and effective. Different skills, organisation, marketing etc are required for mass products and individual projects. Each business model represents a consistent pattern of strategies and actions. Nevertheless, there could be a coexistence of different models within one enterprise. If Processes and products are clearly separated, the same people could perform task for different product types. However an arbitrary combination may lead to a position ‘stuck in the middle’ in the sense of porter’s generic strategies [18]. Such a position may be accepted as a transition stage or require long-term experience and professionalism.

The IT Product compass is also suitable for the design of marketing and sales strategy, service management and value management. A comprehensive book on the management of software products explaining the IT product compass and other tools in detail will be published by the end of 2008 [19].

References