SPM Today and Tomorrow

7

Companies are usually founded to participate in the economy as organizations that exist in the long term. In spite of all modernistic focus on the short term, it must be a key objective of any executive management to make the company's success sustainable. Based on this concept of sustainability, this book emphasizes the importance of state-of-the-art software product management for the success of companies that have software(-intensive) products in their portfolio.

In this last chapter, we want to look into the future of SPM (Sect. 7.1), derive conclusions from analyzing the state of practice (Sect. 7.2), and describe how SPM can be applied in different business scenarios (Sect. 7.3). Finally, we present ISPMA, the International Software Product Management Association, and how you can get value from ISPMA (Sect. 7.4) as a software product manager or a company.

7.1 The Future of SPM

Since software is not only becoming more and more pervasive in the form of standard software products, but also as embedded software in other industries' products and services, the value of software as a critical asset is increasingly recognized. This asset plays a major role in the sustainable economic success of the respective companies and therefore needs to be managed in a comprehensive business-driven way, which is exactly what Software Product Management (SPM) is about. With trends like Cloud, Internet of Things, Industry 4.0, fifth-generation telecommunication networks (5G), smart systems like self-driving cars etc., software is becoming the number 1 value driver in more and more industries. Harvard professor Michael Porter analyzed this development in recent articles [PortHepp15, PortHepp14]. We are seeing more and more tightly integrated systems with software, hardware, telecommunications (ICT), etc. that redefine the relationship between human beings and technology.

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With the growing importance of software, we are convinced that the establishment of and focus on software product management will enable the companies in all these industries to cope with future business and technological challenges in a better way. And challenges will abound. Most companies in non-software industries are facing severe cultural and skill issues that make it difficult for them to embrace the opportunities that software can open up for their businesses. Serious change management is required top-down, i.e. from executive management, but also bottom-up. Here software product managers can help as change managers who keep the organization on track towards "software thinking".

Corporate IT organizations have often considered themselves as project-driven service organizations. There is increasing awareness that a corporate IT organization's portfolio of software applications constitute sustainable assets not only for IT, but for the corporation as a whole. So a pure project view is not sufficient. They require a life cycle view that can be institutionalized through the establishment of SPM. In total, these developments broaden the applicability of the concept of SPM across industries significantly.

In Asia and other regions in the world where the software industry has been primarily focused on providing offshore outsourcing services, there is increasing interest in establishing a software product business. Reasons are that offshore outsourcing does not grow as much anymore as it used to, and that in a lot of these regions there is growing demand for localized standard software products and internet services, e.g. in India. Companies who want to address this demand need to establish product organizations including the role of software product manager, and need to change their business model and culture (see Sect. 2.4).

The combination of all the new technologies produces unprecedented amounts of data about customers and things (as in "Internet of Things"). So access to this data, aggregation and interpretation become key capabilities within companies. This creates opportunities for "data products", i.e. offerings by vendors where the main deliverable is data. Such products already exist for certain markets like stock markets or pharmaceutical markets. It is an interesting area for research and consulting how the concept of software product management can be adapted to become applicable to the management of these data products.

A software product management survey conducted by Andrey Maglyas and Samuel Fricker in 2014 produced some results regarding the future of software product management ([MaglFri14], quotes from participants in quotation marks):

All respondents agreed that SPM will play an important role in the future. With advances in technologies and tough competition in the market, empowered, systematic, and consistent SPM is important for software organizations to excel. Overall, based on the answers from the respondents three directions on the future of SPM can be identified:

Increased Awareness and Importance

In many companies SPM is still immature today [MagNiSmo12]. Companies try different approaches to adopt software product management practices in order to deal with constantly changing markets and technology trends, but the definition of

role and responsibilities of product managers is still far from being mature, understood and recognized [MagNiSmo13].

> There will be a better understanding of how important the product manager's contribution is to the success of software-based offerings (especially given that the technical feasibility is becoming less of an issue). Therefore, product managers will be increasingly recognized.

Certification, Standardization, and Education
As one of the respondents said

> It [software product management] will be more formalized, since the right product management is probably the most efficient investment you can make in a product, regardless of its place in the life cycle.

The product manager can be seen as an example of a middle manager who acts as a "linking pin" connecting different parts of the organization [FloyWool94]. In this position, product managers act as interpreters and implementers of the decisions, but also mediate between strategic and operational levels [MagNiSmo13]. This requires a deep understanding of the role and responsibilities of SPM in general and the ability to map this to a company-specific organizational structure and work practices of functional units like marketing, sales, development, and support. As long as product managers learn everything by doing, they frequently miss best practices already known in other companies. Therefore, education in product management will be the next milestone in accepting and spreading the discipline from self-learning to industry-wide practices. Serious certification will certainly help in this process both to encourage personal development and to help companies to identify qualified software product managers.

More Authority
The term "authority" can be interpreted in two different ways:

- Hierarchical authority in a management hierarchy enabling SPMs to implement any decisions they make with their own team reporting to them.
- Personal authority based on personality, experience, recognition and respect.

Product managers usually have no direct subordinates, and this differentiates them from other middle managers. This means that their hierarchical authority is limited and their role may be restricted to the role of advisor only [MagNiSmo13] or "cross functional leadership with no authority." Many of the respondents expect having more authority in the future. If they mean hierarchical authority we interpret this as wishful thinking only and do not see any signals for companies giving more hierarchical authority to product managers in the near future, exceptions granted.
If they mean personal authority we agree with this assessment. The more executive management values the SPM role and communicates the corresponding positioning accordingly, the better are the prerequisites for a well-educated and experienced SPM to achieve a higher level of personal authority. This in turn makes it easier for

an SPM to convince and influence customers, executives, and colleagues in the organization.

For the IT industry, prices have been going down so much that processor and storage capacity and communication bandwidth have already become commodities. Cloud computing is firmly established and shows continuous significant growth rates. In a lot of areas, capacity considerations are no longer the limiting factors that they used to be. This opens the door to a new phase of innovation with software as the key component. After a phase of about 15 years in which innovation was very much driven by the consumer business, innovation areas like Internet of Things, Industry 4.0, Big Data e.a. are driven by the enterprise business side again.

It is increasingly difficult for corporate IT organizations to stay on top of all these changes and innovations. Technology-driven start-ups come up with specialized new business processes and quickly take away market share, e.g. fin-techs in the financial services industry. "Digital Natives", the generation that has been used to PC games and the internet before they could even talk, are entering the workforce. They expect the same IT capabilities at their workplace that they are used to at home. They will not join a company that does not support their work style and life style adequately. Plus a company cannot benefit from their abilities to the full extent if it does not provide the appropriate environment. So the move to "Bring your own device" that a lot of companies have implemented can be seen as a response to this challenge, but it will not be sufficient.

The technological changes will continue to lead to innovative new business models some of which will have significant disruptive power. The role of software product manager will become even more important for continuously bringing together technology and business anew, not only in software vendor companies and corporate IT organizations, but across all industries.

These developments provide hugh opportunities for research. We can only list some topics as examples:

- Analytics for software product management.
- Correlation between a product manager's authority and product success.
- Correlation between software pricing approach and product success.
- Correlation between ecosystem strategy and product success.
- Software category building in different product scenarios and business scenarios.

7.2 The State of Practice

The role of the software product manager is firmly established in North America. One can hardly find any software vendor company that does not employ such a role. In Europe, the majority of software vendor companies have that role as well. Even in Asia/Pacific and other parts of the world, where the role is not commonly established yet, we see examples of strong companies like Samsung or some Chinese companies that have adopted the role. Also, there is a growing trend

towards adoption in corporate IT organizations and companies in non-software industries that produce software-intensive products and services.

While the term "software product manager" is most often used for the role, there are many other terms used as well (see Sect. 2.6). Also, we observe differences in the way the role is defined and lived (see Sect. 2.6), often a consequence of the specific business environment (see Sect. 7.3).

ISPMA Fellow Members Andrey Maglyas and Samuel Fricker conducted a software product management survey in 2014 [MaglFri14]. They collected the following quotes from participants in quotation marks):

Skills and Education

The need for SPM knowledge, but a lack of specialized education was constantly claimed by the respondents, e.g. "Even small software companies can now build business applications just like Oracle, SAP, etc. but typically the smaller companies do not have trained SPM professionals. Therefore the training becomes more important."

The respondents considered global competition, new markets, lowered entry barriers, and increased importance for sustainable strategy as the main drivers for the need of SPM education to acquire and train new skill sets to manage software products. Another lacking skill identified by the respondents is orchestration. Lacking skills product managers are learning by doing which can have a negative effect on the product.

To decrease the number of failures and bad decisions made by immature product management and to make the hiring process easier and more convenient, the respondents have proposed standardization and professionalization as a solution. The standardization should help to improve the "lack of consistency or consensus about product management roles and responsibilities across companies." Product managers have difficulties in finding comprehensive information work guidelines online. Standardization and professionalization may also address that need for knowledge.

As SPM is a multidisciplinary field, companies struggle with defining the skill requirements when appointing new product managers.

> Companies don't know how to hire product managers. They tend to focus on just one facet of a multifaceted job. For example, some will look for domain knowledge while others look for computer science training. I think an educational path would provide some degree of clarity.

Software Product Management Challenges

Lack of education and standardization in SPM are not the only challenges today. Although the respondents reported unclear definition of the role as one of the main challenges, we tend to consider this lack of clarity as a result of other challenges like too many responsibilities and little authority. With too many responsibilities, a product manager can easily keep herself busy with purely tactical activities like endless customer meetings and lose the focus on strategic activities like

roadmapping and product strategy. Another risk of being a "multipurpose person" is receiving more and more requests to fill many tasks ranging from development to user experience design to marketing, sales and support. However, while being in charge of many activities critical to the product success, product managers rarely have authority in practice. They are "often not sufficiently empowered by management and cannot make market-facing decisions or resist development's technically motivated agenda." Such lack of authority is a characteristic that distinguishes technically oriented product managers from more business-oriented product managers or senior product managers [MagNiSmo13].

The other reported challenges were related to general challenges of development and management of software products: customer understanding, rapidly changing environment, prioritization, coordination, and resource management. Regarding resource management, product managers rarely have their own resources and must make a request to higher management every time he or she needs extra resources for the product [MagNiSmo13]. So product managers need to identify resource gaps and predict a shortage of resources in order to request them from higher management in time.

Software Product Management Activities

To bring some insight to SPM in practice, the respondents were asked to name the most important SPM activities to manage a product properly. They mentioned: market analysis, requirements management, communication with stakeholders, customer analysis, roadmapping, orchestration, product life cycle management, product strategy, prioritization, vision, product planning, and product analysis.

All of these 12 activities are explicitly or implicitly contained in the ISPMA SPM Framework as shown in Fig. 7.1.

Most companies focus on a subset of activities prescribed by the framework, primarily in the area of core SPM activities. However, in the area of Product Strategy a number of activities listed in the ISPMA SPM Framework are not covered by a lot of product managers. This is a serious gap that companies need to address if they want to become more successful.

The fact that the survey results show Customer Analysis as a key activity can be interpreted in two ways. One is that knowing the market and what customers are doing with the product is highly important for product managers. The other one is that in some companies SPM tasks are mixed with marketing tasks.

> Having time to actually be a product manager—roles in every company are so different but overall, product managers seem to be the all-in-one job role, putting down fires, solving crisis, running after budgets and resources, which leaves little to no room to actually know what your roadmap should look like.

Therefore, prioritization is not only relevant with regard to product requirements, but also for the self-organization of the SPM.

In general, there is no single magic recipe for the definitions of responsibilities and the organization of software product management. These questions have to be

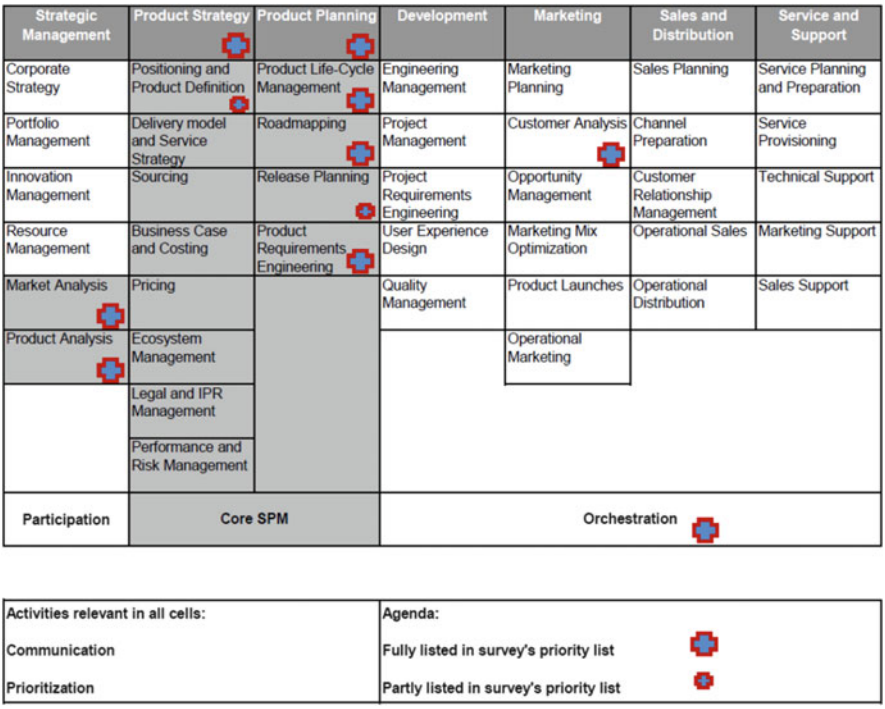

Fig. 7.1 Mapping of survey results into ISPMA SPM Framework

answered dependent on the objectives of the company, the products to be managed, the existing organizational structure and the company's culture. We argue that Software Product Management has the responsibility for the sustainable success of a product in the market. Success depends on allowing the software product managers to focus on the important items and not be overwhelmed by the urgent day-to-day necessities.

7.3 SPM in Different Business Scenarios

The concept of software product management described in this book and in ISPMA's syllabi is business-context-agnostic and therefore applies to a wide range of industries. However, there are some specific considerations in certain business contexts as described in the previous two sections of this chapter. These business scenarios are considered:

- Standard software products.
- Software in software-intensive technical services (e.g. internet platforms or SaaS).

- Software in software-intensive systems (embedded software).
- Software in professional (human) services (embedded software).
- Software managed by Corporate IT organizations (for one or multiple internal customers).

7.3.1 Standard Software Products

In this scenario the full contents of the SPM Framework is applicable.

7.3.2 Software in Software-Intensive Technical Services

The amount of software used in services like Software-as-a-Service (SaaS) or for internet platforms like community, communication, shopping, or contents platforms is increasing at a high pace. In all these instances the software contributes a significant part to the value proposition of the entire service. Therefore it ought to be managed from a software product management perspective. Actually, we consider SaaS offerings as software products (see Sect. 2.4). Often, the product manager of the technical service is also responsible for the software product management.

In these environments, agile methodologies are widely used. The relationship between SPM and the Product Owner is described in Sect. 6.2.1.

Most strategy aspects, in particular business aspects, are managed on the service level. Here the full contents of the SPM Framework is applicable. If standard software products from other vendors are used the service provider needs license contracts with licensors of the software which explicitly allow this kind of use. Customers of such a service do not need license contracts, but only service contracts with the service provider.

7.3.3 Software in Software-Intensive Systems (Embedded Software)

The amount of software embedded in hardware components and systems is increasing at a high pace (see Sect. 2.2). Software is turning into the number 1 value driver in more and more industries. Traditionally, hardware manufacturers had a life cycle view on their products that differed significantly from software vendors. With hardware, when the development of a version of a product is finished, the product goes into production. For an extended period of time, there is no further development, but only after sales services that take care of defects in individual product instances, e.g. individual cars. Then after quite some time, a new development project is started for the next version of the hardware product, and the cycle starts anew. If the hardware product includes software components, hardware manufacturers tended to treat this software in the same way as the hardware.

These days, this approach does not work anymore for more and more hardware products, because there is an increasing necessity for frequent software changes. So the life cycles of the software components become more similar to those of standard software products while the life cycles of the hardware components do not change so much. Actually, cost considerations motivate manufacturers to keep the hardware components as stable as possible. So from a product management perspective, hardware and software components need to be managed at two very different speeds (see also [LickKitt16]).

This difference means a significant challenge for a product manager who is responsible for the complete system of hardware and software components. The software components need to be managed from a software product management perspective. If there is a product management team it makes sense to establish dedicated software product managers.

Most strategy aspects, in particular business aspects, are managed on the product level. The software product manager will focus on positioning with regard to the other components of the product; on the scope of the software; on the business aspects directly related to the software part, e.g. business cases and costing; and on make or buy decisions.

7.3.4 Software in Professional (Human) Services (Embedded Software)

As we have pointed out in Sect. 2.4, the business models of a software product business and a professional service business are fundamentally different. In particular, there are limits to the profitability of a professional service business that do not exist for a software product business. That is why professional service providers in all industries are trying to find ways how to improve their profitability by replacing humans through standard software components in their professional service offerings. Sawhney has analyzed this approach in detail [Sawhney16]. He calls the software components products in order to point out that they need to be standardized and managed like software products, but they are not software products according to our definition since they are not sold as standalone products.

The software components need to be managed from a software product management perspective. Depending on the type of service, it may be too big a challenge for the business manager responsible for the service to assume the software product management tasks as well. We recommend a dedicated software product manager who works in tight cooperation with the service business manager.

Most strategy aspects, in particular business aspects, are managed on the service level. The software product manager will focus on positioning with regard to the other components of the service; on the scope of the software; on the business aspects directly related to the software part, e.g. business cases and costing; and on make or buy decisions.

7.3.5 Software Managed by Corporate IT Organizations

A growing number of corporate IT organizations in all industries is adopting the concept of software product management. The software components, in particular applications, in an enterprise architecture tend to have very long life cycles which require a strategic view and continuity in management. Both cannot be ensured in a pure project organization. Some corporate IT organizations have been transformed into profit centers and may have multiple customers inside and outside of the corporation for the same software components which makes their business model more similar to a software vendor.

In corporate IT organizations, the role of software product manager sometimes has different names, e.g. application manager or (application) service manager (see Sect. 2.6). Strategy aspects need to be managed in close cooperation with the companies, business units or departments in the corporation that are the customers of the software product. A most important aspect is the positioning of the software product in the enterprise architecture of the corporation over time. The relevance of the business aspects depends on how the business relationship between the corporate IT organization and the companies, business units or departments in the corporation is designed. If the corporate IT organization is run as a cost center its focus will be on business cases, budgets and costing, while the overall business responsibility is on the business side. The more the corporate IT organization is run as a business unit of its own, the more relevant the other business aspects become.

The relevant ecosystem is usually restricted to the technology side, i.e. software and other technology providers and software development partners. Since a corporate IT organization usually has the responsibility for Operations, i.e. the run-time production environment, risk management has the added focus on operational risks. While contractual issues between the corporate IT organization and the companies, business units or departments in the corporation that are the customers of the software product are typically not relevant on a product level, contracts with software providers need special attention. Dependent on the industry the corporation, company or business unit is doing business in there may be specific legal or regulatory requirements.

Product planning needs to be managed in close cooperation between the corporate IT organization and the companies, business units or departments in the corporation that are the customers of the software product. The business side of the enterprise architecture, in particular business process models and data models, play an important role with regard to requirements and integration aspects. In product life cycle management, profit considerations and market share are typically not relevant unless the IT organization is run as a profit center and/or the corporation allows its business units to work with external competitors.

The relevance of the strategic management aspects depends on how the business relationship between the corporate IT organization and the companies, business units or departments in the corporation is designed. If the corporate IT organization is run as a cost center its focus will be on innovation management and resource

management. The more the corporate IT organization is run as a business unit of its own, the more relevant the other strategic management aspects become.

On the orchestration side, marketing and sales are usually not relevant unless the corporation allows its business units to work with external competitors. An exception is customer relationship management with the company-internal departments and users as customers. Services usually include Operations, i.e. the run-time production environment which is governed by the IT service management processes. The product manager is in a monitoring role and may be directly involved in critical situations.

7.4 ISPMA

The International Software Product Management Association (ISPMA, www.ispma.org) is an open non-profit association of experts, companies, research institutes, and practitioners with the goal to foster software product management excellence across industries. ISPMA was started in 2009 and legally founded in 2011. As of November 2016, it has more than 800 members worldwide. Hans-Bernd Kittlaus is ISPMA's current chairman, Samuel Fricker is ISPMA's former chairman. Both have been founding board members of ISPMA since ISPMA's inception.

ISPMA aims at establishing software product management as a discipline of its own in both academia and industry, and disseminates and maintains a Curriculum and a Certifiable Body of Knowledge (SPMBoK). The SPMBoK is documented in syllabi that are the basis for training courses and certification exams:

- Foundation Level.
- Excellence Level: Product Strategy.
- Excellence Level: Product Planning.
- Excellence Level: Strategic Management.
- Excellence Level: Orchestration.

The foundation level is targetted at participants with up to 5 years of practical experience in the software area. They ought to have a fundamental understanding of the software business, but the training requires no specific technical or commercial competencies. The excellence level modules are targetted at product managers who already have the ISPMA Foundation Level Certificate or comparable SPM experience of at least 3 years.

ISPMA's results are applicable to the software industry, to vendors of software-intensive products and technical and human services in other industries (embedded software), and to corporate IT organizations in all industries.

The syllabi are available for free on the ISPMA web site. Training courses can be offered by commercial training providers and universities after approval by ISPMA. Certification exams are conducted by independent certification agencies that issue the certificates on behalf of ISPMA.

ISPMA also provides a platform for communication and exchange between its members, be it on conferences, in workshops and working groups, or on the internet.

There are different membership types:

- Fellow Member: Distinguished expert from industry or academia that is elected by the existing fellow members. Fellow members are committed to contribute to ISPMA work results and represent ISPMA.
- Certified Member: Practitioner or academic member who has at least one of ISPMA's certificates.
- Subscribing Member: People from industry and academia who are interested in SPM.
- Company Member: Company or academic institution which is committed to excellence in SPM and wants to support ISPMA. Company members nominate delegates who have the rights of fellow members.

ISPMA provides a lot of value to the SPM community, participants in trainings and certification exams, and companies and academic institutions interested in SPM that is unique in comparison to all the other players in product management education:

- Focus on software only.
- Tight cooperation between experts from industry and academia for continuous updates and improvements of the SPMBoK based on the latest developments in business, technology and methodology.
- Non-profit organization.
- Strict separation between
  - ISPMA as developer of curriculum, syllabi and exams (non-profit).
  - Training provider and trainers (commercial or academic).
  - Certification agencies.
- High quality of SPMBOK.
- High confidentiality of exam contents.
- High value of certificates (due to the separation described above).
- Free availability of syllabi.
- Frequent information on latest developments in SPM.
- Open platform for networking, exchange and cooperation.

With these elements, ISPMA is helping individuals to learn about SPM or improve their SPM skills. ISPMA also helps companies that want to establish or improve their SPM organizations. And ISPMA creates a basis for training providers and trainers who want to offer SPM trainings. All of these groups are welcome to become personal and company members of ISPMA.