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Gitte Tjørnehøj  
Aalborg University, GTJ@DSP.AAU.DK

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# The role of the IT-Project Manager in Organizations that Balance Agile and Traditional Software Development

Gitte Tjørnehøj

Aalborg University, Fibigerstræde 3, Aalborg, Denmark  
GTJ@DSP.AAU.DK

**Abstract.** Systems development practice is undergoing major transformation, as many companies try to improve their practice to become more flexible, adaptable and agile. However, research provides convincing evidence that it may be difficult to become agile or even just to integrate agile processes in existing companies that are dominated by traditional practice. A recent literature study concludes that most literature and practice advice to reconcile the traditional approaches with agility. The complexity added by having and combining two “worlds” thwarts the job of IT project managers and change their role. Understanding these changes and the new role is the focal point of this work. Through a focused literature review, types of balancing are found, and motives, opportunities and challenges of balancing are mapped. Based on this work a framework of IT project managers’ role in organizations that balance agile and traditional approaches is suggested.

**Keywords:** Balancing Agile and Traditional Systems Development, Project Based Balancing, Methodological Balancing, Organizational Balancing, IT-Project Manager.

## 1 Introduction

Systems development practice is under transformation to meet the new demands caused by the increasing embedding of information systems in business, government and society. Rapid growth in use areas, new technologies and challenges of technical integration, customer knowledge and expectations has created a rapidly changing and very demanding market for software firms. Pampered customers want high quality, inexpensive, useful and integrated software for everything, and they want it now. This

together with an expanding global software market puts the firms under pressure to increase their adaptability, flexibility and not least speed to market [1]. Many newly formed firms are “born-agile, while the established firms often struggle to match the market.

The traditional challenges of software development e.g. complexity and quality has been handled through standardization of processes for professional software practices. CMMI [2], [3], [4] and the Rational Unified Process [5] are examples of these approaches that are commonly called traditional, plan-driven or disciplined. Most professional software firms have, until the recent agile wave, organized their systems development practice in according with these principles. The principles go well with a centralized, top down managed and rather bureaucratic company culture that can be argued to fit best in “the late industrial age” [6]. Thus for many firms these approaches have ceased to work and they need to overcome the new challenges by new means.

However, a recent literature study by [7] on the software development models of today concludes that most of the literature and practice advice to reconcile the traditional approaches with agility. Agile methods promise exactly what the firms wish for flexible, efficient and effective systems development [8], [9], still parts of the disciplined traditional software development is reported to be beneficial in today's practice. Balancing is now the new trend of systems development, also for the born-agile firms in what Baskerville et al. denotes a “post-agility” area [1]. Introducing agile methods in traditional practices or vice versa is a difficult mission [1], [10]. The complexities at all levels and in all relations increase as two disparate worlds of assumptions, methods, practices and tools needs to be handled, integrated and understood by all involved. This will cause difficulties, and some key people need to serve as boundary spanners [1].

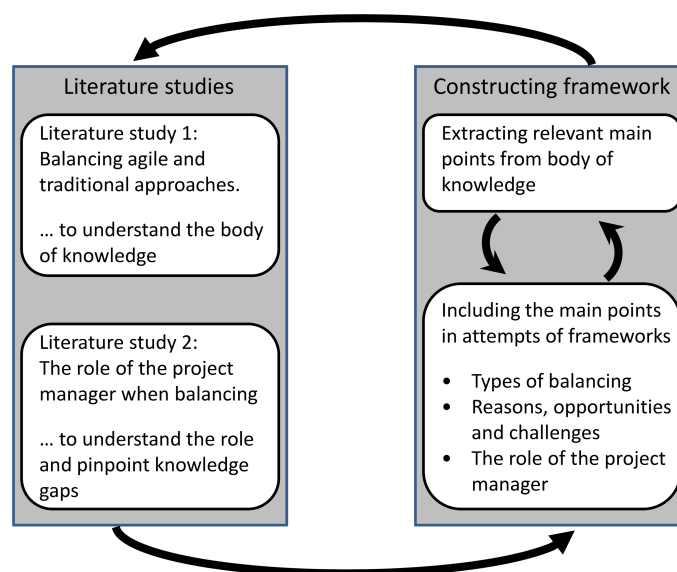
This paper focuses on the role of the project manager in this, as he will be likely to carry this boundary spanner responsibility, playing key roles at both organizational and project level. Also he often holds resources and influences to be an active player in the organizational changes and practice improvements that balancing will entail.

This may very well complicate the job of the project manager even more coping with two distinct “worlds” meeting and probably grating against each other. Thus we investigate the research question “What is the role of the IT project manager in organizations balancing agile and traditional software development?” by reviewing the literature of the field on balancing agile and traditional approaches while focusing on the role of the project manager. Based on this we construct a theoretically argued framework incorporating the structures, challenges and roles in this phenomena.

This paper is structured as follows. Section two describes the research approach. The literature study is reported in section three and four, while section five present and argue the framework of the new project manager role. Section six discusses further research and concludes the paper.

## 2 The Research Approach

The study aims at gaining insight into the role of the project manager from the existing literature. The result of the study is a framework illustrating the project manager's role as a central player in balancing agility and traditional approaches. The long term goal is to test and further develop this theoretically based framework through empirical studies. This study has been an iterative process, shifting back and forth between searching and reading literature and attempts to express the findings framework constructs. In this paper the two are described separately and only the results of the iterative process are presented.



**Fig. 1.** Shows the iterative process shifting back and forth between literature studies and construction of the framework.

Two literature studies were done, one focusing on balancing, and one adding the focus of project management. The studies followed the structured approach recommended in Webster and Watson [11]. Both literature studies were carried out in all journals on Web of Science<sup>1</sup> as a first attempt showed few hits searching The AIS Basket of Eight<sup>2</sup> top-journals. The search terms of the literature studies focused on the field of balancing, avoiding papers promoting either of the methods. In the second study the terms was combined with “project management” to extract contributions on this topic in the field. Table 1 display the search terms, table 2 the explicit criteria for extracting relevant papers from the hits, *while appendix 1 accounts for the results. XX*

<sup>1</sup> [http://apps.webofknowledge.com/WOS\\_GeneralSearch\\_input.do?product=WOS&SID=T1Tc-wFPONcMDYJtax7a&search\\_mode=GeneralSearch](http://apps.webofknowledge.com/WOS_GeneralSearch_input.do?product=WOS&SID=T1Tc-wFPONcMDYJtax7a&search_mode=GeneralSearch)

<sup>2</sup> <http://aisnet.org/?page=SeniorScholarBasket&hhSearchTerms=%22basket%22>

**Table 1.** Overview of the search criteria used in the literature studies.

“Balanc*” AND “Agil*” AND “Tradi*”
“Agil*” AND “Tradi*” AND “Systems Development”
“Agil*” AND “Ambidexterity”
“Balanc*” AND “Agil*” AND “Plan driven”
“Agil*” AND “Tradi*” AND “Paradig*”
“Agil*” AND “CMMI”
“Agil*” AND “Disciplin*” AND “Balanc*”

**Table 2.** Relevance criteria for the papers of the literature studies.

Literature study 1 and 2:
1. Is the paper Information Systems-related?
2. Does it address both agile and traditional approaches?
3. Is it focusing on balancing (as in opposition to promoting one or the other)
Added in literature study 2:
4. Is it focusing on project management or the role of the project manager?

The search was concluded through a backward and a forward search with the outset in all the chosen papers.

The development of the framework ran through three iterations over the literature each guided by a distinct inquiry question: 1) How can balancing be done? 2) Why balance at all? and 3) How does balancing influence the role of the project manager? Looking for the answer to especially the last questions involving the project manager was not straight forward as the literature on balancing undervalues this topic. The resulting framework may serve as theoretical lens for further studies of the topic to gather empirical evidence.

### 3 Types of Balancing

This section answers the above stated enquiry question “How balancing can be done?” Generally the literature promotes the possibility of balancing agile and traditional approaches to benefit both process and quality of the products. We found that the literature can be categorized into three types of contributions based on the organizational level or aspects of balancing they target; Project-based, methodological, and organizational balancing.

The project-based balancing covers tailor balancing based on analyzing project characteristics. The methodological balancing contains literature that combines specific methods agile and traditional methods into new methods. The shared characteristic of the contributions on organizational balancing is seeing balancing in organizational context. Except from that the contributions in this group points in many directions e.g. standardized processes, development of conflicting sub-cultures or organizational effects of balancing.

**Table 3.** The table summarizes the three types of balancing and their subthemes, displaying the underlying references.

<b>Types of Balancing</b>		Sub-themes present in the literature
<b>Project based</b>	Boehm 2002 [12] Boehm and Turner 2003a [10], 2003b [13], 2003c [14], 2005 [15] Galal-Edeen et al. 2007 [16] Port and Bui 2009 [17] Vinekar et al. 2006 [18]	<u>Evaluating the individual project</u> Evaluation of the project conditions and resources decides if agile, traditional or combined approaches should be utilized.
		<u>Risk driven approach</u> Tailored approaches based on risk evaluations of the individual project.
		<u>Ambidexterity</u> Divide the organization into agile and traditional sections that can appropriate tasks.
<b>Methodological</b>	Jakobsen and Johnson 2008 [19] Lepmets and Nael 2010 [20] Lukasiewicz and Miler 2012 [21] Marcal et al. 2007 [22] Nawrocki et al. 2006 [23] Pikkarainen 2009 [24]	<u>Design of new hybrid method</u> Designing new hybrid methods drawing on specific practices from specific agile and traditional methods striving for simplicity. CMMI Plays a major role in this type as a generic expression of traditional practices across specific methods thus contributions on mapping agile methods to CMMI, on arguing how CMMI can enhance agility and on integrating light-weight CMMI into agile methods was found.
<b>Organizational</b>	Baskerville et al. 2011 [1] Karlstrom and Runeson 2005 [25] Little 2005 [26] Lycett et al. 2003 [27] Venugopal 2005 [28]	<u>Focusing on organizational changes</u> Organizations need to be willing to adapt and ready to drive the needed organizational changes.
		<u>Minimal structure</u> The organization should describe a standard of minimal structures through described processes and artefacts.

### 3.1 Project-based Balancing

The contributions addressing project based balancing go about the topic in general terms e.g. plan-driven traditional, agile. They generally “focus less on methods - more on people” [10]. The two major sub-themes are risk-driven approaches and ambidexterity respectively. Boehm and Turner are pioneers in the risk-driven approach [10], [13], [14], [15]. They suggest that both agile and traditional approaches have their home grounds on which the approaches are most likely to succeed. But since systems development projects are rarely positioned on either home ground [16], one evaluates

the size, criticality, dynamism, personnel, and culture of a specific project in accordance with the description of the home grounds in order to tailor appropriate approaches. If the project characteristics are far from either home ground a combination of methods is recommended [13], [17]. The concept of home grounds is and has been playing an important role in the discourse on balancing in the field.

Galal-Edeen et al. [16] presents challenges of the balancing process and suggests that balancing can start from the idea of home grounds or can follow ambidexterity as in an organization capable of exploiting existing knowledge while also exploring new possibilities. Vinekar et al. [18] find that agility is necessary for an organization to adapt to their changing environments, while stability is necessary in order to optimize the organization, thus they also suggests balancing based on ambidexterity, but through division of work appropriate for respectively agile and traditional units. The division will be based on evaluation of project, organizational and customer conditions. A weakness is the difficulties achieving sufficient cross unit communication and coordination and the assumption that work can actually be divided into agile and not agile work.

### 3.2 Methodological balancing

Methodological balancing target integration of specific practices from specific methods into new balanced methods. E.g. XPrince [23] that combines XP [29], Prince2 [30] and RUP [5]. Contributors argue that only necessary elements of the involved methods should be integrate when striving towards minimal methodological structure [19], [22], [23]. This literature address integrating agility into traditional practices [19], [18], [21], [22] since “the rapid pace of change in information technology has caused increasing frustration to the heavyweight plans, specifications, and other documentation imposed by contractual inertia and maturity model compliance criteria” [22].

Many contributions focus on integrating CMMI and agile methods. Some map agile practices to CMMI, others describe how CMMI enhance agile processes or how light weight CMMI can be integrated into agile methods. Marcal et al. [22] compare Scrum practices to the project management KPA of CMMI to find that traditional project management can benefit from Scrum practices but also that Scrum does not cover the full KPA. Lukasiewicz & Miler [21] map 123 scrum practices to similar practices of CMMI supporting optimal balancing. Jakobsen and Johnson [19] p.213 describes how CMMI can complement the core software development activities providing planning-, termination- and delivery techniques. Lepmets & Nael [20] focuses on how project management practices from CMMI can increase performance and estimation in agile milieus. Pikkarainen [24] also suggests integrating a light weight CMMI with agile methods finding the prime challenge to be that processes at organizational level does not support agile processes and that the customer and management avoids being involved in the agile processes.

### 3.3 Organizational Balancing

The shared assumption in the contributions on organizational balancing is that balancing is dependent on an organization capable of handling the ambiguity between agility and traditional approaches. Different approaches to achieve [25], [26], [27] and theories providing understanding of [23], [24] this balancing is presented. More of the contributions describe how balancing affects the organizations and their division of work, so when organizations embark on balancing, they need understand that it is an organizational change process [23], [25], [26], [27].

Lycett et al. [27] cultural differences and reluctant management is challenging and creates organizational tension when agility is introduced into traditional organizations. They suggest developing a situated process framework at the organizational level and followed by explicit tailoring at project level to reach “barely sufficient” approaches. Also Little [26] strive for “barely sufficient” approaches tailored from defined core practices to fit the project.

Baskerville et al. [1] gives a historical overview of the field in order to suggest the present to be a post-agility era. They conclude that balancing agile and traditional methods is necessary, and that the limited scope of Scrum [31] will require reintroducing the traditional project manager role. Karlström and Runeson [25] focus on the project manager role in both agile and traditional methods and they evaluate balancing based in a stage-gate model. They find the agile aspects to optimize daily planning, and the traditional to secure a long-term overview.

## 4 Motives, Opportunities and Challenges of Balancing

This section answer the above stated enquiry question “Why balance at all?” Across All the contributions discuss the topics of motives, opportunities and challenges of balancing widely. Understanding the motives for, the possible benefits of and the challenges of balancing is clearly important in order to understand the phenomenon of balancing.

### 4.1 Motives for balancing

The main motive for balancing mentioned is that neither agile nor traditional approaches are complete solutions [7], [10], [12], [14], [15], [16], [17], [18], [19], [21], [22], [23], [27]. Balancing provides the basis for pragmatic handling of a wide range of challenges, since both agile and traditional methods have their separate strengths. It is argued that “every successful venture in a changing world requires both agility and discipline” [23]. Requirements, technology and law are examples of change drivers that demand more flexibility, than traditional methods have [17]. On the other hand need for predictability of cost, schedules and quality as well as scaling and handling of operation and maintenance demands discipline.



**Table 4.** The table displays identified motives, documented by lists of references.

<b>Motives</b>	
<p><i>Neither agile nor traditional approaches are complete.</i></p> <p>In their pure forms none of the approaches can overcome all challenges and all have both strengths and weaknesses. The traditional approaches are good for some things that agile methods are not and vice versa.</p>	<p>Boehm and Turner 2003a; 2003c; 2005 [10], [14], [15] Galal-Edeen et al. 2007 [16] Jakobsen and Johnson 2008 [19] Lukasiewicz and Miler 2012 [21] Lycett et al. 2003 [27] Magdaleno et al. 2012 [7] Marcal et al. 2007 [22] Nawrocki et al. 2006 [23] Port and Bui 2009 [17] Vinekar et al. 2006 [18]</p>
<p><i>“every successful venture in a changing world requires both agility and discipline”[12], [23].</i></p> <p>Ever changing environments and customers demand for quick benefit realization calls for agility. However the need for predictability of cost, schedules and quality as well as scaling and handling of operation and maintenance demands discipline.</p>	<p>Boehm 2002 [12] Boehm and Turner 2003a [10] Lepmets and Nael 2010 [20] Lycett et al. 2003 [27] Nawrocki et al. 2006 [23] Pikkarainen 2009 [24] Port and Bui 2009 [17] Vinekar et al. 2006 [18]</p>

## 4.2 Opportunities from balancing

Balancing can drive process optimization, increase flexibility and reduce cost by pragmatic utilization of aspect of traditional methods, combined with the flexibility and low overhead cost of agility [14], [16], [17], [18]. Through balancing, superfluous processes can be diminished [26] and thus the processes optimized [20]. Project failures can decrease [28] and quality can improve [7].

Vinekar et al. [18] states that “there is a need to maintain dual structures that accommodate both approaches because they each have their benefits and practical considerations may preclude the simple replacement of one by the other”. So when traditional methods focus on standardization and continuous improvement of processes, while agile methods focus on flexibility and on minimizing management waste-time, one should combine appropriate elements to increased performance e.g faster processes, shorter time to market, better product quality and more accurate estimates [16], [17], [18], [19], [20], [23]. For example learning cycles of exploring, evaluation and retrospectives can utilize both the traditional optimizing and the agile exploration [20], [27].

One axiom of agility the close customer contact is often beneficial when balancing [1], but agility also tend to improve visibility and team-communication [24]. The traditional virtue of documentation can increase scalability and reliability of the solu-

tion [9], and decreases cost [21]. The frequent customer contact balanced with the constant focus on long-term goals and visions, prevents unfulfilled expectations that often result in project failure [28]. Scaling agile projects demand more discipline, and adding the strategic focus of the traditional approaches will help avoiding unidentified risks and obstacles [19].

**Table 5.** The table displays identified opportunities, documented by the references.

<b>Opportunities</b>	
<p><i>Balancing can drive process optimization, increase flexibility and reduce cost.</i></p> <p>Pragmatic utilization of the optimizing aspect of the traditional methods combined with the flexibility and low overhead cost of agility, leads to increased project performance through quicker processes, shorter time to market and reduced cost. Continuous organizational knowledge sharing and retrospectives can increase the quality of estimation (more precise).</p>	<p>Boehm and Turner 2003c [14] Galal-Edeen et al. 2007 [16] Lepmets and Nael 2010 [20] Lycett et al. 2003 [27] Marcal et al. 2007 [22] Port and Bui 2009 [17] Vinekar et al. 2006 [18]</p>
<p><i>Balancing leads to better customer relation/ contact and provides visibility of the solutions.</i></p> <p>The agile focus on frequent customer contact balanced with the traditional focus on documentation will lead to better team communication and flexibility, and at the same time provide visibility, scalability and reliability of the solution. The frequent customer contact balanced with the constant focus on long-term goals and visions prevents unfulfilled expectations that often result in project failure.</p>	<p>Baskerville et al. 2011 [1] Beck and Boehm 2003[9] Jakobsen and Johnson 2008 [19] Lukasiewicz and Miler 2012 [21] Magdaleno et al. 2012 [7] Pikkarainen 2009 [24] Venugopal 2005 [28]</p>

### 4.3 Challenges of balancing

That methods are important, but handling people, values, communication and expectations are the key is the basic message [10]. Coordination and communication are core challenges [7], [15], [16], [1], [27], especially when handling the contradictory work processes of the two approaches daily [13]. One example is an organization used to hierarchical control that struggles to adapt to the values of agile development e.g. self-organizing teams, shared decision making and inclusion of external stakeholders [16]. That communication and coordination is organized differently in the two approaches and pose severe management challenges when balancing is needed [13].

In line with this, many contributions emphasize the organizational culture as key of balancing [7], [16], [18], [21], [25]. An inappropriate organizational culture can be an obstacle for balancing [7], for example in an ambidextrous organization having di-

verging cultures in the units [16]. Lycett et al. [27] stress the importance of mediating the frictions cause by diversity, and highlights the importance of shared goal setting. Nursing people during a change process towards balancing is crucial [15]. Especially engaging everybody can be challenging but is necessary [18] because all involved need to change their own work practices in accordance with the new balanced practice. This is challenging because the roles of the approaches are very dissimilar and, particularly difficult for management that have to transform from controller to facilitator [18], [1].

Boehm and Turner [15] mention the challenge of balancing to be avoiding “development process conflicts” that can ruin the agility and undermine the already achieved optimization. It is crucial to balance to exploit the strengths of the methods and minimize the weaknesses [14], [22] in order to accommodate project characteristics [17].

**Table 6.** The table displays identified challenges, documented by the references.

<b>Challenges</b>	
<p><i>Coordination and communication</i></p> <p>The challenges is to balance between the agile focus on frequent, face to face communication and coordination and the traditional focus on minimizing the need for this through planing and contracts.</p>	<p>Baskerville et al. 2011 [1] Boehm and Turner 2003a [10], 2005 [15] Galal-Edeen et al. 2007 [16] Lycett et al. 2003 [27] Magdaleno et al. 2012 [7] Vinekar et al. 2006 [18]</p>
<p><i>Organizational cultures</i></p> <p>Resulting from balancing fractions of agility and traditional thinking and ditto culture can form. To ease this and avoid problems, the people aspect should be handled at all levels of the organization, especially focusing on attitude and competences.</p>	<p>Galal-Edeen et al. 2007 [16] Karlstrom and Runeson 2005 [25] Lukasiewicz and Miler 2012 [21] Lycett et al. 2003 [27] Magdaleno et al. 2012 [7] Vinekar et al. 2006 [18]</p>
<p>Exploiting the strength of the methods and avoiding their weak points</p> <p>It is crucial to avoid “development process conflicts” [10], [12], [13] . It is only too easy to ruin the agility or loose already achieved optimizations.</p>	<p>Baskerville et al. 2011[1] Boehm and Turner 2003c [14], 2005 [15] Marcal et al. 2007 [22] Nawrocki et al. 2006 [23] Port and Bui 2009 [17] Vinekar et al. 2006 [18]</p>

## 5 The Role of the Project Manager in Balancing

Based on the above thorough analysis of the literature all clues on the possible role of the project manager were extracted from the contributions and interpreted in relation to each other to construct the framework, presented below. None of the contributions focus on project management role, but aspects of/on the role is frequently mentioned. Because the sporadic nature of the findings about the project managers role in balancing, we have supplemented with basic knowledge on agile and traditional methods in order to construct a coherent framework.

In an organization of balancing, a project manager needs to master both agile and traditional project management as both can be part of their work. However the literature reveals that more project manager capabilities are required as balancing brings additional task. What tasks and which capabilities is the theme of the framework. (See figure 2).

### 5.1 The Role of the Project Manager

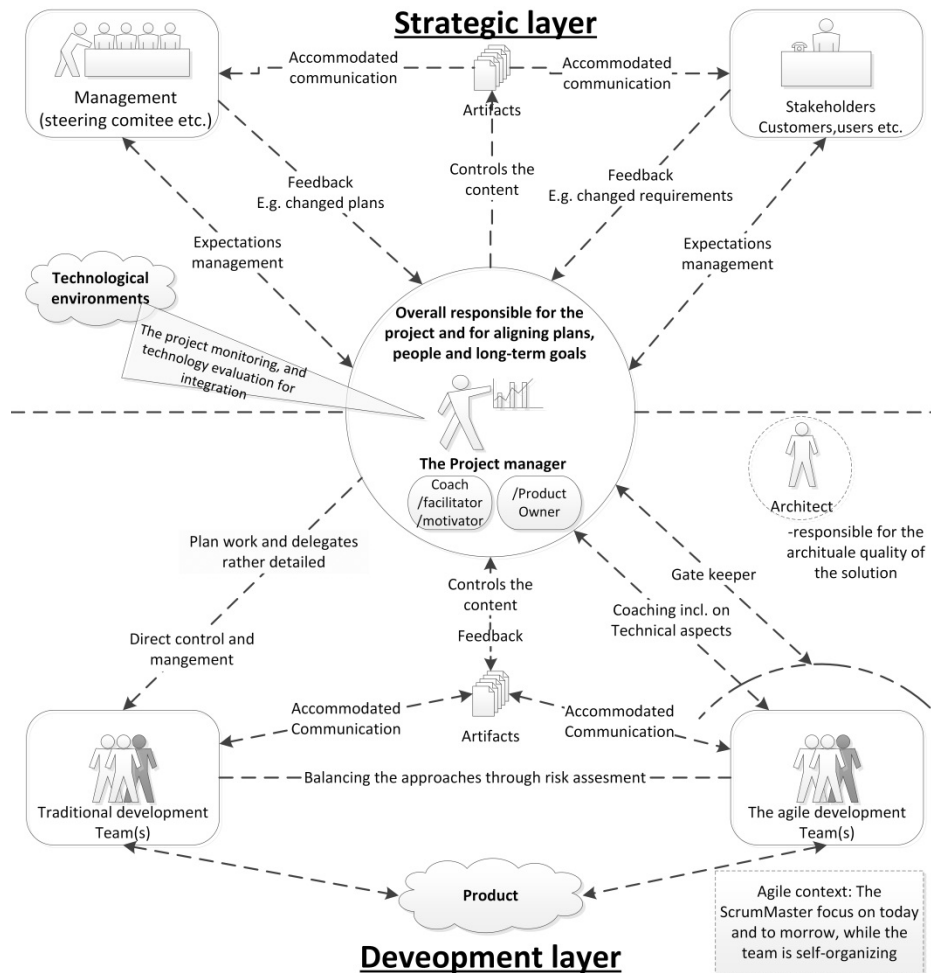
The project manager role is described in the literature as a link between traditional elements such as plans, documents, customers and business management and the agile development team. In many case-studies the core development tasks is agile, while the traditional elements connect to the long-term, strategic plans, documentation and the need for controlling and monitoring, in order to ensure quality. To capture this, the project manager in the framework play the role as a link between a strategic- layer and a development layer in the organization.

The project manager is generally portrayed as an individual overall responsible for alignment of plans, people and long term goals and at the same time capable of some of the actual project work. He is mentioned as the facilitator, coach or motivator, managing the work, while leaving plenty of room for creativity [15], [22], [1]. This double role of the project manager is mirrored in the framework in his connection to the development layer.

Nawrocki et al. [23] divides the coach role from XP [29] into architect managing the technical aspects of the solution and project manager having the overall strategic responsibility. Thus in some cases the project manager is responsible towards the strategic layer while the architect is his counterpart in the development layer. In other cases according to Jakobsen and Johnson [19] it is appropriate for one be both project manager and product-owner. This introduces a separate architect-role and adds product-owner as a possible role for the project manager.

Karlström and Runeson [25] accentuates that the project manager should link customers and developers by “translating” the communication back and forth and by promoting the solution to the customers. Thus the project manager in the framework links the stakeholders and upper management in the strategic layer to the development layer, the teams and the architect.

The project manager as a link is supported by Baskerville et al. [1] who suggests that he can utilize different artefacts such as road-maps, product backlogs, burn down



**Fig. 2.** The framework depicts the role of the project manager in organizations balancing agile and traditional approaches as described in the literature pr. se.

charts and impediment lists as boundary objects to inform the surroundings of project progress in accordance to plans etc.

Also, this can indirectly serve as control of the development work. In other words artefacts in control of the project manager will help him to interact purposefully with the different stakeholders. That is, the project manager receives information from one stakeholder (for example the customer) translates or interprets the information and expresses it to other stakeholders (could be the developers) through the artefacts. The key is that he is in control of the artefacts and their content. Thus artefacts have been given a central mediating role for communication in the framework.

The project manager is expected to handle the dualism of on one hand keeping track of goals, plans and progress and connect to stakeholders while on the other hand coaching and shielding the development team. Baskerville et.al [1] argues that when balancing a key figure need to fill the role as boundary spanner between the day-to-day systems development in the team, and the customers and management as their worlds are distinct.

In the strategic layer important actors are the management (e.g. the steering committee and upper management) and stakeholders (e.g. customers and users), while in the development layer the project manager potentially deals with both traditional and agile development teams. If project-balancing he may daily have to handle cultural and practical clashes within the team because of distinctiveness of the approaches.

Boehm and Turner [14] also grants the project manager responsibility for monitoring the progress of the project, but add monitoring new technological opportunities. This architectural responsibility thus is by some contributors seen as an integrated part of the project manager role.

In the traditional role of the project manager dealing with project progress having responsibility for budgets, plan, and quality, their most important task in the strategic layer is stakeholder-expectations-management [10], towards both the management and the customer. According to Boehm and Turner [14] and Nawrocki et al. [23] the project manager need establish the frames for the project, generating artefacts that express the overall plan for benefit realization and risk and stakeholder analyzes to accommodate the communication with the actors of the layer. Hereto comes that the project manager must develop an agreed upon vision for the project, and communicate it to all the stakeholders, both inside and outside the systems development project.

Finally but notably, the project manager will be expected accommodate the actual balancing by evaluating the project characteristics as the starting point for composing an appropriate balanced approach, drawing elements from agile and traditional methods [16], [32]. Dependent on the result of this balancing, the role of the project manager differs. If the traditional elements dominate, he will plan and delegate work rather detailed, as the team will have specialists preferring individual work [18]. If the project is mostly agile, with decentralized and flexible structure, smaller teams of generalists will collaborate closely with stakeholders and each other to create a solution [18] and the project manager will be gatekeeper, coach and technical sparring partner [15]. He is still responsible for the overall plans, staffing, progress and quality [1], but mainly coaching the team, and taking part in technical and other systems development decisions [23]. E.g. these two responsibilities are attributed to the Scrum-Master in the agile method Scrum [31].

## **6 Discussion and Conclusion**

The resulting framework illustrates a project manager role linking the full systems development project together and mediating the contact between the strategic level and the development level. This is well-known. In most literature on traditional pro-

ject management, the project manager is linking the steering-committee, the upper management and the project as a member of the committee and reporting to management. Also the customer communication is attributed to the project manager, however in bigger projects often delegated. So the structural aspect of the strategic level is unchanged in this model. Still the literature emphasizes an increased need for “translation” between the actors, as the introduced distance between the worlds require more information to be translated and collaboration to be mediated. Thus the project manager has to invest more effort in these demanding activities. One example is that he needs to know both approaches and feel at home in both cultures to span the gap. As advised by Baskerville et al. [1] a skilled use of artefacts as boundary objects can be helpful in that work.

According to the literature, balancing often involves integrating agility at the development level, substituting or supplementing existing traditional practices. The framework aims to embrace all options. The changes in the project manager’s role consequently depend on the balancing decisions. If an organization utilize all of the above mentioned strategies or even mixes them, the complexity increases dramatically, and so do the challenges for the project manager. Depending on which kind of team the project manager work with, he need to take on very different styles of management, ranging from coaching, to control and delegation in details. Often a project manager’s success is attributed to personal skills, but the new challenges of mastering both styles switching fluently is a significant change in the project manager role. Not only must the project manager master both worlds and their combinations, but he must also be able to link the worlds, through mediation, facilitation and translation. Some research even suggests that the project manager should decide the balancing. The new situation is for sure much more complex and the role more difficult than in traditional project management. The changes go deep into to the personal skills – or even the personality of the project manager.

The literature of balancing systems development approaches appropriately only briefly mentions the role of the project manager. In this paper the project manager has been given center stage, through an attempt to collect and connect bits and pieces from the above literature. The result is expressed in the framework as best possible. However the literature descriptions of practice are inconclusive, so the changes in the project management role and their implication may not be researched sufficiently. Even though the framework rests on relatively weak theoretical grounding, we argue that it can form a platform for further research of this crucial role in systems development, as it collects and relates all important concepts used in the field so far.

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