



Project Management—A Holistic Approach for Managed Services

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Abstract: Telecommunications industry is currently undergoing a rigorous paradigm shift and value migration from equipment sales towards operations related services ([33] and [34]). With project complexity constantly increasing ([35], [36], [37]) the nature of this new contracting and vendor-operator partnership style becomes insufficient ([37], [38], [39]), as the lack of disciplined methodology to quantify the directional view of project management, and implementation management ([40], [41]).

In response, this research explores the holistic degree to which executive sponsor's role and influence in the planning phase of the service project management life-cycle ([42], [43]) contributes to project performance. Many organizations have embraced the concept of formal project management as a critical element of their organization structure to revive work flow process and improve organizational efficiency ([44], [45], [46]). Other organizations have adopted service project management concept as a means to improve customer relationship and reduce cost [88], and integrated to the concept of the "implementation-oriented sales process" which provides a better basis for closing long-term, stable and profitable operations services transactions ([47], [48]).

To construct measures, we proposed the holistic scope and diversified responsibilities of project management practices with the goal to modified skill profile of the individual project management professional, reduce economic losses, improve resource allocations, deliver turnkey infrastructure projects and advance management training ([37], [38], [39], [40], [41], [42]). From a social change perspective, the use of the measurement scales can provide organizations the "managed services", in dealing with long-term, ongoing operations rather than one-time deployment and commissioning, has been neglected until now ([43], [44], [45], [46], [47], [48]).

Keywords: managed services, outsourcing, out-tasking, project management, project organization.

1 Introduction

Project management (PM) concept has been around

as the humanity can trace its existence. Substantial conceptual investigation of the subject has only started during the WWII period. After 1980, publications on the topic abound (see [31] for instance), and today extensive taxonomies of project management research approaches and project management paradigms can be found (e.g. in [3] and [4]). The growing appetite in the market place has created a large demand for better, faster, and more cost-effective projects ([47], [48], [49], [[50]]).

The number of professionally certified project managers is steadily increasing. Membership in the PMI (Project Management Institute), a professional project managers' association that also offers certification, amounted to 220,562 individual members at year-end 2006, a plus of 8.1% compared to December 2005. In 2005, figures had even increased by 39.5%!

Managing knowledge helps companies preserve their competitive advantage, yet many have been slow to develop their own knowledge management systems ([51]). Because, knowledge is a valuable asset, more and more companies are looking for ways to improve and increase their rate of knowledge creation and sharing ([52], [53], [54], [55]). A widely adopted definition states that "project management is the coordination of your work and that of others such that organizational objectives can be achieved while meeting time, budget, and quality standards or expectations" (see [18]). Project management involves tracking a project from its inception to its completion ([19], [52], [53], [54], [55]).

Many academic and practitioners' publications on the topic recognize the frequent occurrence of cost overruns and delivery flaws encountered in today's large-scale infrastructure projects and the importance of a strong-skilled project management (see [16], which discusses this as "the gap between company strategy and individual projects, between setting goals and achieving those goals"). The typical recommendation is the introduction of a professional project management, or an increase in skill level of the existing project management, especially through a more structured methodology or toolkit (see [16], [18], [20]; see [15] for a comprehensive layout of project planning – "Who? What? Where? When? And How?" – including role descriptions for owner, project manager, and project planner/scheduler; a "best

practice” approach is described in [13]). Practitioners’ papers such as [10] aim at modular, “toolkit”-like implementation of the project management processes and integration in the enterprise’s IT landscape.

Most focus concepts proposed by individual authors are mere refinements or “re-brandings” of these mainstream considerations (e.g. the concept of “interactive planning” proposed by [17], or the concept of “value management” for projects by [9]).

Both pioneering and current papers recognize that project management is best accomplished in the early stage of a project ([20], [31]), and shortcomings in the planning process are generally identified as main cause of problems during implementation ([15], [17], [20]).

Occasionally, methods and tools from neighboring business administration disciplines with a longer academic history are successfully applied to project management: from controlling ([14]); from strategic management (e.g. the balanced scorecard – see [19], which interprets projects as “mini-organizations that require the same clarification and benchmarks of the parent organization”); from corporate finance (discounted cash flow analysis, portfolio theory, risk management – see [2] and [8]); from the transactions cost theory (principal-agent theory – issues of “uncertainty” and “trust” discussed by [11]; a “make-or-buy” approach is investigated in [14]; [29] addresses the topic from a “degree of vertical integration” point of view); and from quality management (e.g. the “continuous improvement process”).

In addition to the three traditional project management criteria mentioned already – time, budget, and quality – many current papers recognize “people” or “team” as a fourth critical success factor, and consider human resource management, team building and leadership quality a crucial element of project management ([5], [6], [7], [27], [29]).

The concept of “team buy-in”, open communication and respect is also detailed in [16], which views these group-internal topics as natural extensions of the necessity of a harmonious relationship between project owner and project team. Similar propositions can be found in [18] and [24].

Methodology and people approaches are often considered together, such as in the concept of induction and training presented by [23].

[30] raises the issue of organizational learning in project management, and proposes a concept of learning cycles which occur both intra- and inter-project-wise ([34], [42], [43], [50], [51]).

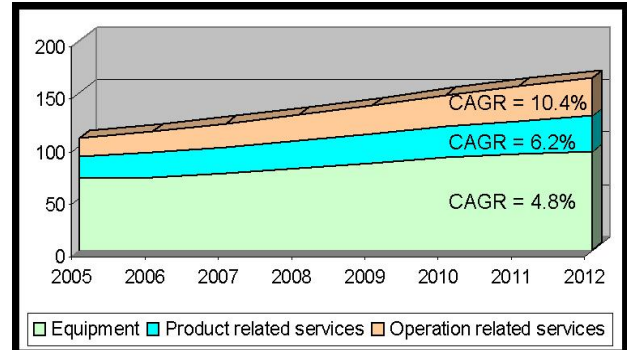
People relationships do not only matter between project owner and project team, and within the project team itself, but also between the project and external stakeholders ([34], [56], [57]). The dependency of project management on such external influences are discussed by [25], which arguments that stakeholders can have both a positive and negative impact on the single project, but that general adoption of the stakeholder ([34], [58] approach

to project management will contribute to the long-term survival and success of the project organization ([50], [51]). [12] provides a case study on this topic, and discusses it by using the framework of stakeholder theory [58].

Project management research is mostly qualitative. The fewer quantitative research papers that can be found usually focus on optimal resource allocation ([21], [22]).

Some approaches of enlarging the scope of project management beyond traditional boundaries exist ([2], [27]), but they are mainly aimed at the management of development projects (here many publications deal with IT/software projects).

Altogether, project management appears to be well covered in the areas of production and hardware- or equipment-driven delivery and in the domains of innovation management and research-and-development-driven projects (new product design). However, the field of long-term, operations-related, “value added” services loosely tied to infrastructure sales remains poorly covered by research. As future growth is gradually shifting from equipment supply to these “managed services” (see fig. 1), the industry is facing severe challenges from the currently prevailing, one-way delivery oriented project management paradigm that has proven effective in an installation-and- commissioning environment of turnkey services [50], but turns out to be insufficient to establish profitable, ongoing operations services partnerships between vendors and operators ([37], [38], [39]).



Source: Siemens

Fig.1 Telecommunications suppliers’ market forecast (in bn Euro)

In this paper we propose an innovative, “holistic” approach to services project management, ([34], [50], [51]). We advocate the involvement of project managers in the early stages of the project, which in our view is initiated during the sales process (acquisition, bidding, contract negotiation and closure) ([34], [42], [50]). The idea of the “implementation-oriented sales process” sounds very promising to us, because evidence exists that learning cycles ([42], [43]) should be implemented not only intra-project, but also inter-project, and only the delivery project managers are in a position to provide this feedback to services product line management and sales. The new approach is posing additional requirements on

the personality and skill set of the project manager, which we will also discuss ([59], [60], [61], [62]).

2 Challenges of services project management

The role of project management was originally created out of the need to install an investment-good type of product (developed and built in-house) at the customer's site. The profession of project management, though, is still not clearly defined under an internationally standardized educational or career model, and the designation "project manager" is currently neither a formal nor a "trademarked" degree. Some organizations like the PMI (Project Management Institute) and the IPMA (International Project Management Association) have been implementing models for a project management certification, driven by their own perceptions and values. Both organizations are trying hard to establish a standard – by different levels or tiers – for a project management professional profile (such as junior and senior project manager, general project manager, project director, etc.). The mastering and implementation of certain techniques and methodologies constitutes the basis for the certification.

By looking into current product development, project complexity has been steadily increasing over the years [64]. Whereas in the past hardware-driven solutions have been deployed, today a project manager is facing a variety of challenges: The products are becoming modular, containing software applications and firmware portions [65]. Those parts can be customized, and customers are aggressively demanding such kind of customization according to their own view on functionality [66]. The diversification and the need for a unique value proposition against competition is driving the customers towards individualism [67], which then is reflected in the customization requirements forwarded to the supplier ([68], [69]. Often a specific software package from a specialized company needs to be integrated, as in-house development is no longer competitive. Development of hardware and software may be outsourced to different development and competence centers throughout the world. Flexibility becomes a key asset ([70], [71]).

As a conclusion, the installation of mere hardware "boxes" on the customer site is gradually becoming obsolete, while solution provisioning is the offering being increasingly asked for [72]. Besides the customization of features and functionalities of the proposed solutions, also content variety is becoming a challenge to the suppliers' processes. Multi-vendor environments have to be considered, and the share of "third party" equipment and solutions is increasing steadily [73]. The equipment itself is purchased from a source either defined as "adequate", or as the customer's preferred source. Whoever offers a best-in-class product, will be considered as supplier of this portion [74]. This leads to a high degree of specialization, vertical disintegration, and consolidation of the supply markets for the individual portions,

comparable to the personal computer industry, where the businesses offering central processing units, peripheral equipment, operating systems, and personal productivity packages, each developed into duopolies or oligopolies with a couple of dominant players [73]. This scenario could be furthered into a pure external supplier model [77]. The in-house activities are then limited to solution management, system integration, and implementation in the field ([55], [58]). These activities require a methodologically highly skilled service department, and dedicated experience with the technology involved. The implementation of a standalone solution is the first challenge [62], followed by the after sales support. When you look at various software suppliers' update cycles [40], you will understand that it is a real challenge to maintain a large-scale system running [43], and to deliver a continuous "technology refresh". Once an individual system is being software-upgraded, the whole solution needs to be checked for interfacing and end-to-end operational functionality [42].

Project management needs to take those trends into account. The working profile of a senior project manager has changed dramatically [55]. As in the past the professional needed to interface only with internal development and sales departments, he nowadays needs to take much more into account several sub-suppliers and subcontractors ([56], [57]). He needs to take care about the customer's requirements and the integration of dedicated features into the customized solution ([50], [51]. Sometimes a feature needs to be implemented into one system component, and to be supported by other pieces of equipment of the solution. In this case often the equipment providers involved have not taken this fact into consideration when bidding for their share of the project. Then the project manager has to find a common understanding with various equipment developers and needs to ensure that the software features are implemented and operational as specified in the customer contract. This requires an early involvement and a steady control of the proposed solution by the project manager [50]. Without proper empowerment, the project manager will not be able to influence the suppliers [56]. The suppliers will deliver their individual contributions within their preferred time schedule and insist on getting acceptance of their standalone equipment [40]. The overall solution is thus not in the suppliers' focus. In this case the project manager needs to request change orders to implement the required features in the system, and he will incur additional expenses. The equipment supplier will claim additional payments not only for the adaptation of the system ([56], [57], [76]). Other sources for additional costs are delayed acceptance of the overall system solution, additional time for acceptance testing, support for system integration, extended warranty period, guarantee for the lifetime support over a certain time, etc ([40], [42], [43]). As all those issues were covered by the same incumbent company in the past, usually a cost effective solution could be found. Due to the involvement

of a major share of “third party” suppliers, the definition of a cost efficient solution becomes much more difficult in the new environment. The individual suppliers have their own, often conflicting interests, and usually they aim at generating high revenues for equipment support during the after sales phase ([46], [47]).

An early involvement of a person having the knowledge and experience of dealing with such circumstances could mitigate the risks of a system solution. All costs described above are called “non-conformance costs”. The crucial task of minimizing the non-conformance costs requires the integration of a project manager in the early phases of the sales process, precisely in the bid phase ([40], [42], [43]).

3 Project management in the sales process

(1) Early Phase

While the major portion of project lifetime costs are incurred in the later stages of the project, they are to a large extent determined already by the decisions taken during the early phases of the sales process, when the account manager defines his account and country strategies [78]. In this phase, the “investment” into the professional preparation of a bid can avoid much higher additional costs in the long run. (The same holds true for upside potentials as well, as we will demonstrate later) [79].

In this phase, we recommend the involvement of the project manager to support the sales team in understanding the market, the customer, and the business environment. A technical feasibility study and adaptation to the local requirements shall be requested as an essential component in defining an adequate proposal strategy [80].

(2) Offer Phase

A project manager is ideally suited to close the feedback loop back from delivery to offering, and to implement the inter-project learning cycle ([40], [42]) already mentioned. Furthermore, developing the technical part of the proposal is no longer a purely internal task. The overall solution needs to be taken into consideration, including other suppliers and environmental aspects [81]. We believe that it is a good practice to involve an implementation specialist, namely the project manager, to ensure a proper setup, and to mitigate the risks for future contract management; to understand the opportunities and threats from future claim management; and to judge the upside potential of a transaction resulting from change management. These three topics shall be explained in more detail.

Contract management is a continuous process, which starts with an evaluation and risk assessment of the customer inquiry and is carried on until the end of the contract, meaning fulfilment of all contractual requirements (warranty period, latent defect period) [82].

Claim management means the sum of all measures and instruments used in prosecuting own claims or in the defence against unjust claims from third parties. Claim

management is a subset of the contract management process. A claim in general is a request for compensation as a result of a difference between anticipated and actual evolution of the project, arising out of a change to the contractual agreement ([85], [86]).

Change management describes the systematic use of the mechanisms within a contract to manage a change within the already existing parameters of the contract (e.g. supplementary orders, changes in scope, in service level agreements, etc.) [86].

To give an idea about the financial impacts of contract management, fig. 2 illustrates the volume of potential claims vs. the order value of selected power plant projects by Siemens group.

Project data			Major suppliers	
Nam	Order value	MW	Irrclai potential	Irrclai count
HUN	€168,452,000	342	€0	0
SEA2	€162,912,000	386	€3,692,480	163
PRP	€266,089,000	540	€8,183,965	126
KUO	€273,728,000	458	€3,692,480	160
TE	€379,709,000	716	€1,862,706	20
SLP	€274,890,000	500	€11,081,397	246
Total	€1,525,780,000	2,942	€28,513,028	715

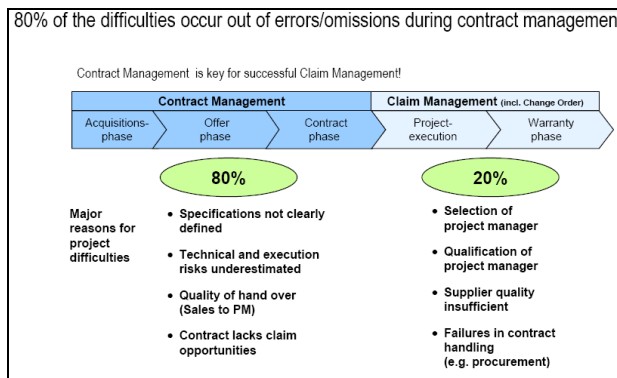
(Source: Siemens)

Fig.2 Claim potential vs. project order volume for selected power plant projects

By having an intimate knowledge of the customer’s view and local circumstances, much of the uncertainty of the project risk can be eliminated, and upside opportunities can be seized. Often a (dedicated) risk manager is only focusing on the features and weaknesses of the equipment itself. In this case, contract management during implementation will not be properly leveraged. The contract manager shall rather rely on the project manager and document all work performed against the contractual agreement, to visualize and charge all additional efforts or services performed outside the original scope. As we see, the basis for later claims is already set during the offer and contract phases.

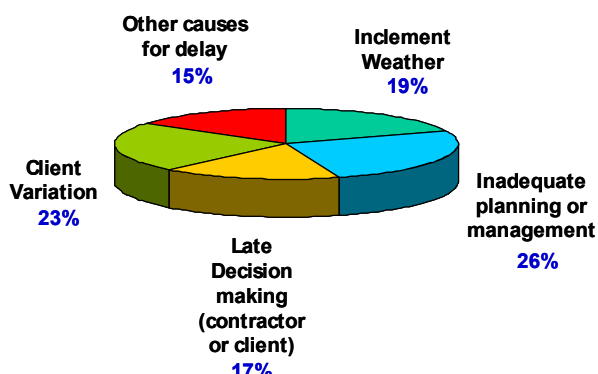
In this context, non-conformance costs [88] are a result not only of poor risk assessment, but also of a scoping exercise not properly completed: Often the scope of work is not defined clearly enough, so that activities causing expenses have to be performed without providing any possibility for claims (see fig. 3).

Revisiting power plant projects at Siemens group, another assessment shows the causes for delays (see fig. 4), and therefore potential for customers’ or third party claims during the implementation phase (and a downside to the supplier’s business case).



(Source: Siemens)

Fig.3 Timing and impact of project measures



(Source: Siemens)

Fig.4 Reasons for project delays for selected power plant projects

(3) Negotiation Phase

Usually, the project manager is nominated during the negotiation phase. He needs to get “up and running” within a short time, and shall assume full responsibility towards the customer for all the agreements incorporated in the bid. It is obvious that he only has limited possibilities, if he was not involved earlier.

As the negotiations and the contractual definitions are the basis for the project implementation, these inputs are essential to define a realistic project frame. Project content, resources and timeline are the key elements for the project manager’s discussions.

(4) Contract Closing Phase

The participation of the project manager in the contract negotiations should guarantee a smooth handover for all implementation-relevant items, so that a favorable project start can be expected.

The next step consists in the setup of the project team, according to the contractual obligations. A blueprint for a project organization helps the project manager in reducing the setup time, and to establish a project organization on a highly professional level. Each role in the organization needs to be defined and described, even when one person can assume more than one role.

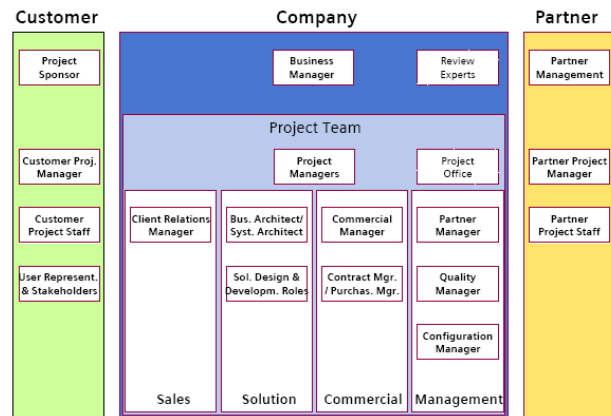


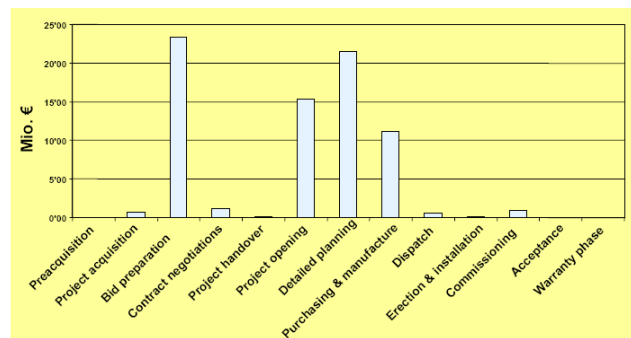
Fig.5 A project organization blueprint

(5) A Summary on Project Delivery Problems

Main reasons for project delivery problems include: Underestimating technical complexity, selling immature products and services, insufficient depth of calculation, unclear specifications, unrealistic milestones with penalties attached, unfavorable contract conditions, and insufficient back-to-back agreements with partners ([56], [85], [86]). Many of these problems can be avoided or mitigated through the early involvement of the project manager ([40], [52], [53], [85], [88]).

Investigations within Siemens’ Energy Supply unit have shown 4 key sources for additional costs during the project live cycle (see fig. 6):

- ① Poor Bid preparation and offer quality.
- ② Unprofessional project handover and project start.
- ③ Late changes in solution design due to contract changes.
- ④ Additional efforts for equipment adaptations/ production.



(Source: Siemens)

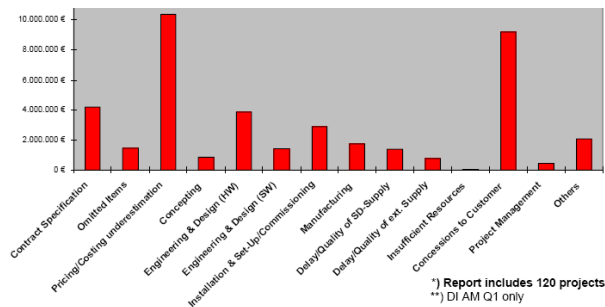
Fig.6 Key sources of additional project costs

Within the service delivery phase, 3 main clusters of non-conformance costs have been identified by analyzing 100 projects within Siemens’ Communications department (see fig. 7):

- ① Item costs have been underestimated due to a lack of fundamental information.

② Concessions have been made to the customer due to an unclear definition of the scope of work.

③ The contract specifications have been modified and fulfillment costs have increased unexpectedly.



(Source: Siemens)

Fig.7 Clusters of non-conformance costs during delivery phase

4 Conclusion

Overall, the validation and extension of an early involvement of the project manager can dramatically improve project performance for projects with a significant and complex services portion. The project complexity and system integration performance measurements from this study provide a tool for project management practitioners and educators that have the potential to change resource allocation for projects and minimize economic losses for all managed services and operations projects. This study's findings points towards an early participation in the involvement of the project manager in all phases of the services project's life cycle.

While it is well known that the majority of non-conformance costs are pre-determined during the pre-execution phases, the right consequences have not been taken yet: the adoption of a holistic approach on project management, where the project manager becomes expert and advisor to the sales and negotiation teams. This enriched spectrum of duties will impose high requirements on the skill set of the project manager. However, the project management professional is the key component for closing the current gap in the feedback loop.

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