What project management really is about: alternative perspectives on the role and practice of project management

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Abstract: Projects play key roles in most modern industries and firms. The management of these economic activities, project management, is continuously developed and today considered to be at the center of competitive advantage. Much classic research on project management has, however, focused on the planning and scheduling activities of project management. Traditional writings within the area even seem to treat project management as a discipline of planning or an application of systems analysis. Much of this work, however, falls short on empirical grounds and has not studied project management practice in any further detail. This paper, on the other hand, takes its starting point in two in-depth case studies and one ethnography of the management of product development projects. Based on these empirical observations, we elaborate on a framework for the analysis of project management work where two perspectives are put at the fore; knowledge perspective and time perspective. From these perspectives, we discuss different roles that project management has in a product development context.

Keywords: project management; project managers; project organisation; knowledge perspective; time perspective.


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1 The importance of project management

Several empirical studies have documented the extension in the use of project-based forms of organising. Recent evidence is, for instance, found in the international survey reported in Organisation Science by Whittington et al. [1]. The increasing ‘projectification’ of industries has led to some fundamental changes in the way firms organise product and process development [2]. For a number of reasons, projects have become important mechanisms in many firms’ strategic and operative technology
management. A product and system development project is a typical example. Due to
time-based competition and speedy technological progress, managing such a project
poses a multitude of challenges. For instance, in the automotive and telecommunications
industries, a project is a complex endeavour involving hundreds of engineers and a
number of sub-projects. The requirements of both meeting the overall deadline and
integrating the various knowledge bases involved stand at the fore of project
management.

In many engineering-intensive industries, products tend to form complex systems [3].
Different authors have suggested alternative solutions for resolving the organisational
problems caused by such complexities. Scholars in project management seem to advocate
a planning-oriented approach for solving these complexities, e.g. Burke [4]. Some
researchers in product development promote ‘modularisation’ as a strategy for handling
such complexities [5], whereas others recognise the limitations related to
wide-ranging modularisation in product development contexts [2]. An alternative
approach would be the use of methods such as design structure matrices or stand-alone
cross-functional teams in order to decompose the complex system into separable tasks
and teams [6]. Notwithstanding the contributions of such a priori efforts, the role and
practice of project management during the course of the project is considered to be of
great importance [see e.g. 7 and 8]. Present theory has, however, not explicitly studied
these important matters for contemporary organisations and technology management.
As put by Shenhar and Dvir [9, p.607] the ‘wide deployment of projects in organisations
today, has not been accompanied /…/ by a parallel development in project management
theory’ and ‘as an organisational concept, project management is quite new and probably
not well-understood’.

A number of overviews have documented the strong planning and systems
approach-orientation of project management research [e.g. 10, 11]. The project
management literature generally focuses on planning activities, introducing work
breakdown structures, Gantt-schedules, etc., very much in line with a rationalistic view
on organising [4, 12, 13]. Such a view, however, according to Lindkvist, Söderlund and
Tell [14], presupposes that a project is highly analysable. Hence, given that many projects
are devices to facilitate and manage (knowledge) integration in firms, more sophisticated
and elaborated solutions are required. Integration is thus not handled through the
exclusive use of advanced plans but on principles that are characterised by a higher
degree of coupling due to the above mentioned reciprocal interdependence inherent in
most complex product development projects [cf. 15, 16]. In understanding the role and
practice of project management, we suggest taking these insights as a basis for our
research and focus on how project management handles reciprocal interdependence and
knowledge integration.

We address the problems that face project management and how the problems are
handled and solved. We argue that in-depth studies are required to improve our
knowledge about project management in complex product development. A number of
researchers have pointed to the need for in-depth studies in order to increase our
understanding of the role and practice of project management [see e.g. 17, 2, 18]. To our
knowledge, no study has taken the starting point in project management practice, and
described fundamental questions, such as what do project managers do and what is
project management about. In this paper, we will, based on case-study findings and
interviews with senior project managers, suggest an explorative framework for
understanding the role and work of project management. In addition to our case-study
What project management really is about

findings, we will draw on a recent ethnography of project management in the automotive industry.

This article is structured in the following way. In the next section, we describe the methodology applied in the present study. After that, we present the two main case studies and discuss the main empirical patterns emerging from our research. The final part of the paper introduces the two perspectives in our framework: knowledge perspective and time perspective. In our discussion of these perspectives, we also point out the key roles of project management. The paper ends with the main conclusions of our study.

2 Research methodology

The core of this paper is based on case studies of two development projects in different Swedish firms; Ericsson Radio and Volvo Car Corporation respectively. Both projects were of high strategic importance and were perhaps the two most important development projects carried out in the two firms during the 1990s. The first case study was of a project that meant Ericsson Radio’s breakthrough in Japan. In 1992 Ericsson succeeded in winning a prestigious contract with Tokyo Digital Phone to develop and install a cellular telephone system in the Tokyo metropolitan area. The system was to be fully operative in 1994. The project forced management to reconsider their traditional way of working with projects and to implement a new one instead—labeled ‘the fountain model’—with greater reliance on concurrent work and inter-functional coordination and interaction. As a result, they managed to shorten development time quite considerably and deliver the system on time. Important issues for the management of the project were the use of deadlines and milestones along with increased overlap and interaction between different functional units.

The second case study is about the development of the car model Volvo S70, which was launched in the late 1990s. The project was a great challenge to the project management team in terms of meeting the overall deadline and handling the fast production ramp-up according to the high quality standards. The project led management to try new forms of integration of functional units. The two cases are different in many aspects, for instance, in industry context, in customer base, in technologies applied, etc. However, they are also similar in several respects, for instance, both projects were considered to be highly successful, both projects had a high strategic importance and the projects show significant resemblance in terms of how they were organised and managed.

Generally, our studies were guided by an ambition to combine the ideas of grounded theory [19] with the ideas of reflexive interpretation as discussed by Alvesson & Sköldberg [20]. The studies started as single case studies where we focused on describing the project process chronologically. We wanted to obtain a ‘rich story’ about the context, background and organisation process of both projects in line with the suggestions by Eisenhardt [21]. Based on the rich stories of the projects, two overall themes for our analysis emerged and for each of the themes we created a categorisation of the roles played by project management. Theses roles will be further introduced and discussed in the analysis section.

The key informants in each of the case studies were the project managers. In the Ericsson case we conducted 32 interviews, averaging two hours each. In the Volvo case
we did 16 interviews, averaging three hours. In the Volvo case we interviewed two members of the top management team, three line managers, two project managers, four sub-project managers, one technical specialist and two team leaders. Every interview was tape recorded and transcribed by the principal researcher. Furthermore, the information from Volvo has later been complemented with new interviews with other project managers and with the ethnography of Annica Bragd [22]. This ethnography documents the project management team’s work during one of the most recent development projects.

2.1 Case I: the Ericsson case

The project was carried out under severe time constraints, which forced management to reconsider their traditional way of working. They went from a ‘waterfall model’ to a ‘fountain model’, downplaying entry-criteria in order to start work with different phases as early as possible and to integrate the knowledge from downstream activities with upstream activities.

The image of the fountain was one of water streaming simultaneously from many sources. Generally such a model may be conceived of as one relying on work in a more concurrent fashion. As applied within Ericsson, the main difference between the models was in the way downstream teams were involved early in the project process. In fact, the basic idea behind the fountain model was to have much of the development and design work driven by downstream phases. In order to have all parts of the project start early, entry criteria were heavily downplayed. Another notable trait was the emphasis on feedback information, generated by frequent milestones and practical tests of sub-parts on a system-level. The various tests were not only frequent but also carried out in quite public settings. As a consequence, it was made more obvious how delays in one part of the project would affect the work in other parts or the pace of the entire project. Whereas in the waterfall model, delays and mistakes in one functional unit or development stage could be treated largely as their internal responsibility, the fountain model promoted communal responsibilities and a new way to combine knowledge from different local units. In order for the fountain model to work, the project management team pointed to the importance of frequent milestones. It was also underlined that the fountain model would require a more ‘network-like’ organisation, based on inter-functional integration and continuous dialogue.

“The traditional ‘waterfall model’ for the design work cannot be followed. In order to shorten development time the various tests within the objects must be overlapping. This requires tight communication between the sub-parts concerned within each object. Production preparation must, for example, be initiated at the same time as product design. Normally such an activity starts 10–18 months after design has started. The parallel design approach also requires that the integration and verification phases must begin as soon as possible. Normally such an activity begins 18–24 months after start of product design.” (Excerpt from Internal Document)

The fountain model implied that the way failures were viewed had to be different. For example, one of the project leader expressed it in the following way:

“It is most important to realise that it is all a matter of doing right the first time. But it is just as important to realise that it will not work at once. What you need is the courage to fail, and never give up.”
While the responsibility for many project activities and sub-parts of the product was clearly allocated to separate functional teams, the relations between the parts and the teams could not be specified entirely in advance. What kind of problems that would show up when integrating the pieces could not be anticipated. As a way of handling this problem, the metaphor of ‘practicing the processes’ was used as an important guide.

“You have to find out what is easy and what is difficult. Therefore you have to practice the organisation. In one case we did some parts several times over and over again. The people who are supposed to receive what has been designed in an earlier step must understand what they have received. For this reason we made some parts run through the chain just to check they were working. It is all a matter of practicing the processes early. You never hit the target the first time. We had to use very concrete models, work very close to the processes of the organisation – that’s what I call active leadership.” (Project Manager)

The integration of different parts of the projects and the activities of local units required arenas where information could flow between the phases of the project. Management invented integrating mechanisms such as the ‘systems emergency ward’, which was a forum for problem solving and discussions of all kinds of issues in the project. In these meetings, in some periods held almost on a daily basis, every member of the project could put a question on the agenda whenever necessary.

To be able to handle this new way of working, managers and members of the project were certainly busy establishing communication channels and work models that cut across the organisation. One of the project leaders formulated the philosophy in the following terms:

“You have to get people to understand other parts than their own. As an example the designer wants functionality, whereas the production engineer wants a product suitable for production. The test engineer, on his part, wants a product that is easy to test. It is all about getting these people to work together and getting a product that fits everybody.”

The project management team saw it as one of its most important tasks to inform the organisation about the mission of getting Ericsson to Japan. A great number of efforts were thus put into information activities in the project. Also at technical levels, information had to flow rapidly.

“There was a constant need for information throughout the different phases of the project. For us in the project management team it was a matter of organising the information flow to create a fast and flexible project. For example, we used video and telephone conferences, project newsletters and short meetings, which were often held daily. Moreover, the systems emergency ward was a forum where trouble reports were dealt with. In this forum we had some of the most competent Ericsson people within this area. We could therefore respond very quickly and make fast decisions.” (Project Leader)

However, the project managers realised that information flows of various kinds would not be enough. They talked about ‘practicing the organisation’ in order to ‘get people to understand other parts than their own’. They also realised the need for face-to-face gatherings with a practical and concrete focus. When the first radio base stations were manufactured, the project management team organised a ‘quality demonstration’, which is a typical example of how processes were practiced.
“We ordered a radio base station from the warehouse. Everybody thought that it was destined for shipment to Japan. However, we arranged a quality demonstration in Stockholm and invited top management, quality managers, designers, etc. When we did this demonstration, it turned out that the product did not work. There were all kinds of problems, such as mechanical problems, packaging problems, things were missing—that created an enormous attention. I think this was the first time that the designers had seen a complete radio base station.” (Project Leader)

During the Japan project the deadline was very definitive and unambiguous. This provided the organisation as a whole with a very clear goal—a fully operative system by 1 April 1994. The core of the project management team was the project manager, who had experience from the GSM project, and two very experienced project leaders. An important task for the project leaders was to create a strong focus on the final deadline and the milestones along the way.

“If we said that it was to be ready by Friday, we did not accept anything else. If it did not work we hunted the person responsible for the delivery no matter where he was. You have to get people to understand that next week is too late. Trying hard is not enough. It is only success that counts—nothing else.” (Project Leader)

The Japan project was finalised successfully. The system was put into operation on 1st April and the organisation has received recognition for the way the project was managed and the successful outcome. The project has also led to several new organisational practices, which have been adopted and applied in other divisions within Ericsson. The project is still considered to be one of the most successful projects in the history of Ericsson.

2.2 Case II: the Volvo case

In late 1993 the merger plans between Renault and Volvo were finally forgotten about. The failed merger created a few tough years for Volvo Car Corporation. Joint development activities with Renault were terminated and the company had to swiftly launch a new model on its own. The management team and the key engineers and designers discussed several options. The final decision was to prolong the life of the Volvo 850, launching it as an almost new car under a new label, the Volvo S70. The car had to be improved in a multitude of aspects and both interior and exterior designs had to be changed and renewed. A development project was initiated in mid 1994 to develop a car that was ready for market launch in the beginning of 1997. The project forced management to reconsider several of its old ideas of working and organising. For example, a tight deadline and a fast production ramp-up were considerable challenges facing the people in charge of the project. The project was considered to be of great strategic importance for the company and a learning opportunity for future activities, for instance, in terms of production ramp-up and project organisation. The company had to show its ability to stand on its own feet.

“There were a lot of difficult things about this project. We were to terminate the production of the Volvo 850 and only a couple of days later start full production of the Volvo S70. If we wouldn’t make it we’d read about it in the papers and watch it on the TV news. Such a fast production start has never taken place in this company.” (Sub-Project Manager 1)
Due to these reasons, management attention was very high during the course of the project. The project management team also worked intensely with communicating the importance of the overall deadline and the importance of the production start. They wanted a shared view on the project, to develop a project culture, a sense of urgency and improved shared responsibility.

“As a project manager, it’s important to understand that a shared vision and view is key. We’ve got to solve this project. We need to help each other. We need to talk to each other. We need to establish contacts between different parts of the project. For example, it’s not sufficient that the manufacturing people do a good job in order for this project to be successful. Everyone has a part in it, and to get people to understand that was our main responsibility.” (Project Manager, Purchasing)

Focus had to be put on the overall deadline and the milestones along the way.

“Again, and again, it’s this thing with the time plan and to get people to understand that the final deadline was December 10, 1996. It was the Big Bang! At that time everything had to work. All the tests had to be made before that, and all details had to be verified. The final deadline was non-negotiable. It was a fact!” (Project Manager, Purchasing)

In the S70 project, much effort was put into information sharing by establishing various channels of information. Furthermore, the project management team knew that the design of a certain detail was not the complicated issue, instead, they emphasised, ‘the difficult thing was to know what to do’.

“In a project like this, the network of contacts was very important, if not the most important thing. The pure design issues were not very complicated, what was important was to know what to design, and to understand how it would work in the system—those were the tricky issues.” (Technical Project Manager)

Throughout the whole project, the project managers tried to establish a well-functioning cooperation between the participating units within the project. Emphasis was put on the so-called design review meetings and to get well-functioning communication channels on lower levels within the project where manufacturing and design were integrated.

“We had morning prayers every Monday. It was just a one-hour kick-off for the week. It was really good, relaxed and informal without official records. We answered questions like: what was ahead this week? All the sub-project managers participated. But we also had project meetings once a week, and technical meetings each week. We had more frequent meetings than is usual and we tried to keep them on a practical level.” (Technical Project Manager)

Moreover, the role of project management as creators of tension was emphasised by everyone involved in the project.

“It’s important that manufacturing call for information and action in early stages of the project. That creates a kind of tension, which is extremely important in order to get something to happen and for us to try new ways of working.” (Project Manager, Geometry)

The Volvo case points to interesting issues concerning the work of project management and the importance of time limits. One important question for the project managers was to achieve an appropriate target level for the different designers and engineers involved. The technical project manager expressed this particular problem in the following way.
“Designers have the tendency to search for the perfect solution and not always for the solution suitable for the system. They never finish. It’s in the nature of a designer not to complete but instead to keep on working and developing the piece. The role of project management is to set the limits of what is good enough.”

Moreover, during the project process there was a constant dialogue between the different sub-projects and sub-parts of the project and the project management unit. Much attention was directed towards communication and to get upstream units to see the whole picture. As explained by one of the sub-project managers.

“It’s all about organisation and communication and to get people see what’s happening in production. Designers are good at many things but not on aspects related to the production process. Everyone thinks their part is working well but it’s all about verification. This means that we need to constantly discuss possible alternatives of action. For instance, the issues of which parts to change is dependent on the lead-time of each part. Whether a certain part is considered verified is thus very much a question of what other teams have done.”
(Sub-Project Manager 3)

Furthermore, the project leaders emphasised the need and function of such meeting and testing places throughout the life of the project. One of the project leaders described the philosophy in the following way:

“The overall testing activities are excellent opportunities to bring together the various functions, determine the degree of progress and analyse how alternative solutions might interrelate at a certain point in time. These activities are important devices for cross-functional discussion and problem solving. The project management team that uses these activities forcefully will make a better car.” (Sub-Project Manager 2)

The Volvo S70 project was completed on time and was considered a successful project. The project forced the company to adopt a number of important new ways of organising its projects. The general reason for the good result was, according to the project management team, the many try-outs and test activities carried out and the way production and design were integrated. In the interviews the project managers pointed to the public settings and ‘practical gatherings’ in moving the project forward. They also pointed to the importance of meeting face-to-face and solve practical problems. One project manager expressed the general idea in the following way:

“Public settings are very important. It is important to feel that you’re part of an organisation and why this project is important. Then it is important because you see the consequences of what you do. We had so-called “supplier gatherings” where we invited the key engineers and key suppliers and worked on a very practical level. We checked and tested if the things were working. This gave attention and was very good for the motivation spirit of the project.”
(Sub-Project Manager 1)

3 Emerging empirical themes

The projects presented above are similar in several respects, but also very different. They are different in terms of industrial context and the type of technologies and products integrated. They, however, show strong resemblance in terms of management and organisation issues. We would argue that the mechanisms and logics observed in these
cases are common also in other modern, complex development projects. The number of knowledge bases integrated seems to be an increasing feature of project management in modern industries [23]. Furthermore, the time pressure also appears to be at the core of many product development contexts [14, 24]. The competition in the industries under study in the present paper, for sure, illustrates the importance of time to market and shortened lead times in development. We argue that these mechanisms are apparent in most similar cases. For instance, the ethnographic study by Bragd [22] points to similar aspects of the role and work of project management. We also believe that the practice of project management as observed in the cases and in other studies [e.g. 22, 25] is very different from what one might believe from reading the literature on the subject. In this section, we will summarise briefly some of the most significant aspects of the role and work of project management.

First, it seems appropriate to describe both projects as carried out in a systemic complex situation. Second, the main question for the projects was not a search for entirely new knowledge, but more of integrating already existing knowledge bases. We also believe that this accounts for many projects in technology and product development organisations. Thus one should not believe that projects in general are about a search for entirely new knowledge. As it seems, many projects would benefit from a coupling logic and a focus on the integration and combination of knowledge between specialists. The study of the role and practice of project management should thus benefit from an analysis based on a knowledge perspective.

It would be plausible to suggest that both projects described above were heavily influenced by tight time constraints [26]. Although, it might be difficult to argue that all projects are as time constrained as the ones under study, we submit that time constraints, and time pressure, are characteristics of normal projects [27]. For instance, in a related study, we concluded that of the 15 projects under study, every project manager stated that the key problem was the lack of time. It is thus something we would generally characterise with project work.

The time constraints forced management to rethink and come up with a number of organisational innovations. This was, for sure, facilitated by management commitment, top management attention and good leadership performed by the project managers. However, in both cases, the project managers acknowledged the immense importance of tight deadlines in order to make things happen and to be able to try out new solutions. In the Ericsson case this led to a new development model, the fountain model. In the Volvo case, this led to a new strategy in terms of production ramp-up and utilisation of a number of practical testing activities, such as the tryouts. We would argue that the focus on time-based controls and deadlines is necessary in order to understand the types of projects studied in this paper. As mentioned earlier, much project management and product development research has given limited attention to time as an independent variable for understanding organisation. In consequence, we argue that more attention has to be given to the role and practice of project management from a time perspective.
4 Project management: two alternative perspectives

We would thus argue that the role and practice of project management might better be understood from two complementary perspectives; the knowledge perspective and the time perspective. In the following we will discuss the theoretical foundations of these two perspectives. They are related, but draw on different streams of literature and in practice refer to different activities and management systems.

4.1 Project management: a knowledge perspective

The knowledge perspective points to the role of project management as integrating various knowledge bases within the firm. The perspective also introduces some ideas about the process of running a project, i.e. to successively build up the knowledge about the integration of the system, the interrelationships between various parts in a development project [cf. 28]. The work of project management from such a perspective seems to deal with the establishment of separation and coupling practices and various types of arenas for promoting such knowledge processes.

By focusing on knowledge processes in project settings we might rely on parts of the literature on the knowledge-based theory of the firm [29]. According to Spender [30] a knowledge-based theory of the firm can be seen as a platform for a new view of the firm as a dynamic, evolving, quasi-autonomous system of both the production and application of knowledge. We would argue that such an image of organising is especially prolific in an analysis of projects. Considering the coordination of the efforts of many specialists, the knowledge-based theory identifies project management’s primary role as integrating the specialist knowledge of individuals into viable outcomes, such as products and services. The prime role of project management in such a perspective would involve the facilitation for this knowledge combination, e.g. by establishing and opening up arenas and creating channels for information and knowledge sharing.

Viewing the project management’s primary task as integrating the specialised knowledge of multiple individuals suggests that even with goal congruence, achieving effective coordination is problematic for organisations. Furthermore, a knowledge-based view of projects suggests a perspective on interdependencies as an element of organisational design and subjected to managerial discretion rather than ‘exogenously’ driven by given task characteristics. A key problem here is thus to device mechanisms for the combination of local units’ or individuals’ specialised knowledge. Accordingly, a significant matter is to realise that ‘process technology’ defines the technical aspects of production and the types of specialised knowledge required for the process, whereas the task division between individuals and local units and the specification of the interfaces between them is a matter of organisational design [31].

In organisation theory it has generally been assumed that certain tasks require more personal and communication-intensive forms of integration. For instance, Galbraith [32] and Perrow [33] stress that high-interaction, non-standardised coordination mechanisms increase with task complexity and task uncertainty. Hutchins has also shown that groups in situations of crisis switch from a ‘routine-mode’ to ‘group problem solving’ [34]. However, knowledge-based literature also emphasises that redundancy is an important issue related to every knowledge process. This implies sharing information that goes beyond the ‘operational requirements’ of participants. In turn, such redundancy creates opportunities for individuals to ‘invade one another’s
What project management really is about [31, p.115]. In understanding project management in complex development projects, we must acknowledge its role for the organisation and facilitation of such knowledge processes.

4.2 Project management: a time perspective

The time perspective emphasises the role of project management as keeping time limits and deadlines. The project management team is given the responsibility of carrying out the task within the deadline. The deadline itself is thus a fundamental organisational rationale for project organising. The role of project management could therefore be to trigger action and implement deadlines in order for the project to progress in a way that makes it possible to reach the overall time limit of the project. Therefore the work of project management should be to create action and to implement deadlines by the use of milestones and other management mechanisms.

A fruitful lens to gain an understanding of the time-related issues of project management is provided by the concept of ‘entrainment’. Entrainment is, to bring into play the writings of Ancona and Chong [35, p.251] ‘the adjustment of the pace or cycle of one activity to match or synchronise with that of another’. The concept hence focuses on the dominant macro cycles that ‘capture’ the pace and cycle of organisational activities. The cycles of, for instance, local participants in a project are captured by a ‘pace’ so the cycles get the same phase, periodicity, or magnitude. A pace is in our case played by the project management team that utilises other sources in order to increase its power (e.g. gaining top management attention, and pointing to the ‘devastating effects’ of a missed deadline). The pace sets a dominant ‘temporal order’ or macro-cycle that serves as a powerful mechanism for coordination of that specific unit or function. This was clearly pointed out by the project managers in Volvo and Ericsson. The (enforced) overall deadline, in these cases, seems to function as an overall pace for the local units involved.

As pointed out in the above cases, the overall deadline together with various public milestones and ‘system-wide arenas’ not only provided the projects with an essential medium for information and interaction, but were also mechanisms for pacing the whole project. Broadly speaking, we might view the project management’s work with overall deadlines and milestones as that of a pace that is enforced by the use of global arenas. Obviously, the pace is also important for the synchronisation and adjustment of ‘local times’ [36]. The overall deadlines were considered to be ‘non-negotiable’ thus, as our previous illustrations indicated, they implemented a ‘global time’ [cf. 35]. The system-wide arenas also seem to be of importance for the system-wide knowledge processes that evolved and developed during the lifecycle of the projects. The argument brought forward here is thus that the system-wide level within a project has to be emphasised in order to understand project organisation in these contexts and additional knowledge processes and time aspects are intimately related and central to such an analysis.

As stated above there are two primary aspects of time that are important for the understanding of complex development. The first is the overall deadline; the other one is the synchronisation of activities within a project. Concerning the first issue, we mainly treat deadlines as important control mechanisms that alter the calculations of actors and function as a trigger for action and rethinking. In both cases, compressed time schedules provided opportunities to introduce new ways of organising which improved the collaborative spirit of the projects.
Apart from this overall project deadline and various milestones related to it, there was also a great number of regular meetings and arenas where specialists from different functional units met. Many of these, such as the quality demonstrations, supplier gatherings and various ‘practical tests’, functioned not only as arenas for solving problems of a communal character but also played an important role in pacing the project within the given time constraints. As shown in the case studies the use of publicly stated promises and shared responsibilities for producing technical solutions encouraged extensive communication among the various functional specialists. Instead of having each functional unit work separately they were forced into ‘global thinking’ and discussions about what was efficient from a system-wide perspective.

5 The roles of project management

In the following section we will briefly summarise the roles played by project management as suggested by the analysis from the two perspectives introduced above.

5.1 The knowledge roles of project management

Based on the case studies, we suggest three primary knowledge roles played by project management. In the following we point to the importance of knowledge integrators, knowledge globalisers and knowledge pacers.

5.1.1 Knowledge integrators: integrating the different knowledge bases

As shown in the case studies and also in previous work on product development, project management has a key function in integrating the various knowledge specialists in the project. In the case-study projects this was done by the use of various types of arenas, meetings and coupling activities. This was also facilitated by the dissolution of entry criteria, something that was particularly stressed in the Ericsson case. This made the interaction between downstream and upstream teams much tighter. Another mechanism that project management applied to stimulate the knowledge integration was various types of analogies and metaphors, for instance the fountain model produced such an analogy that triggered the integration and the ‘invasion’ of functional boundaries.

5.1.2 Knowledge globalisers: stimulating system-wide knowledge processes

The second role that we identified has to do with project management as keeping track and being responsible for the ‘system’ and what they referred to as ‘the whole’. Here project management seems to have utilised similar mechanisms as in the knowledge integrator role, but emphasised the common aspects of the project. The Ericsson project was a typical case of how management installed and built a unique culture that was to be free from the past. Project management also pointed to the importance of ‘verifying solutions from a system-wide perspective’ and that solutions and local units’ performance have to be determined from a holistic perspective. The globalising activities also included putting the project in a wider context, for instance by talking about the ‘strategic importance’ of the project, and its ‘mission impossible’ and ‘win or lose’ character.
What project management really is about

5.1.3 Knowledge pacers: coordinating the activities for efficient knowledge sharing

The third role identified in our empirical material deals with the pacing and synchronisation of the activities in the project. Here planning initially had some importance, for instance in task division. However, during the process of the projects management instead stressed the significance of milestones and tollgates. The milestones and the lead-time for various types of activities also largely determined what was to be considered the ‘true’ and ‘verified’ solutions of the projects. For instance, one project manager stated even though a particular team might have performed according to design standards this team might need to change their work and solutions depending on what other teams have done. Whether a particular team is considered to have performed ‘correctly’ is hence determined in relation to what other teams have done and in view of overall efficiencies. The various types of tryouts, system emergency units, supplier gatherings and quality demonstrations seem to have been extremely important for project management in fulfilling their task as knowledge pacers.

5.2 The time roles of project management

One important role from a time perspective is the project management’s use of deadlines in projects. In the observed cases the tight deadline seemed to have triggered various types of organisational innovations, which stimulated the use of different types of ‘global arenas’. This was, for instance, important in the Ericsson case where project management relied profoundly on the work carried out within the systems emergency unit and a variety of quality demonstrations. In the Volvo case, management activated action, not only through a number of meetings, but also by practical tests such as try-outs and supplier gatherings.

In the following we will suggest three roles that describe the work of project management in the contexts under study. We believe that these three roles give different views on the practice of project management. First, we discuss the role of ‘time pacer’. Second, we introduce the ‘time changer’ and third we elaborate on the role as ‘rhythm creators’.

5.2.1 Time pacers: keeping track of overall progress

The role of time pacers builds on the observation that project management frequently describes its work as keeping the overall deadline. This is they say, ‘the most important thing’, ‘the big bang’ and also in many ways the challenging aspects of the projects under study. Their role seems very much to be a matter of keeping track of overall progress by relying on milestones and deadlines in order to meet the overall deadline. The project managers under study also referred to their work as checking progress and finding out about the problems in meeting the overall deadline, checking the progress of the project etc.

5.2.2 Time changers: changing the time orientation of participants

Time changers is a much more action-oriented role. The project managers often refer to their work as ‘putting pressure on the participants’ and ‘chasing the participants’. Time
pressure seems to be at the core of the challenges of managing these projects. The time pressure itself also seems to have created a feeling that the project management team had a certain speed and that it was able to create action. As Bragd noted, it seemed like ‘the work on the project was constantly performed under pressure’ [22, p.140]. Time was in all cases considered to be at the core of project management. Project managers also seem to have somewhat of a dual relationship towards time. For instance, ‘if the project team asked for more time it would amount to admitting that they did not manage well and that they had weaknesses. To avoid that impression both the project team and the various departments tried to cut down on details’ [22, p.140].

The project managers refer to their task as ‘triggering events’ by constantly inquiring the organisation about the progress of the project. Getting things done was for sure the ultimate task of project management in the above cases. As the project manager in Bragd’s study, said about his job as ‘chasing everything in order to make things happen in the project’ [22, p.71]. This account is very similar to how the managers of the Ericsson project described their role.

5.2.3 Rhythm creators: stimulating a feel of progress and detecting out of rhythm activities

The third role identified from a time perspective has to do with rhythm. In many observations in Bragd’s study and in the projects at Ericsson and Volvo, detecting errors in terms of ‘rhythm’ seemed to have been a very important part of project management practice. Bragd put it in the following way:

“To detect rhythm was an intuitive tool used in meetings by the project team. Sensing the rhythm barely perceptible might mean detecting, for instance, a change of atmosphere, changes of velocity of voice levels, signs of stress, discomfort, etc. This gave impulses and important pieces of information showing whether the product development process kept pace with the overall corporate development.” [22, p.153]

As it seems the project managers were listening to the rhythm of the meeting looking for signs of stress, happiness, aggression and disorder. This was also a very important part of their ‘tacit knowledge’ as project managers. The skilled project manager seemed to have had this feeling for sensing the rhythm of the project and also for sensing whether someone was not playing along.

6 Conclusions

In theories of project management action should be put at the fore. A focus on time and knowledge as suggested in the present paper might get us closer to such an action-oriented understanding of project management practice. As observed in the above cases, planning and scheduling do not seem to be very important for project management. Project management practice is instead more about creating heedful action [37] — action that considers the action of others, the system-wide cooperation and coordination of other players and the efficient use of time, i.e. action that is both knowledgeable and timed. The framework presented here, stresses the role of project management in integrating the various knowledge bases of a project and the need for skilful combinations of knowledge processes. The article pointed to the importance of various types of arenas and meetings
What project management really is about

in order to bring about such knowledge combinations. The study further emphasised the role of project management in stimulating global or system-wide knowledge processes.

We especially pointed to the role of project management in handling the overall progress of the project. There were some primary roles related to time that emerged from our research. The most important ones were related to pacing and rhythm. We stressed the role of project management as creating a pace and trying to, in different ways, change the speed and time orientations of the local units participating in the project. The concept of ‘rhythm’ was suggested in order to grasp the work of project management in detecting problems in the progress or interplay between local players in the project.

This article has criticised much of conventional thinking about project management and looked at what project managers really do, and thus also what project management really is about. We focused on an empirical analysis and tried to identify some core patterns in our case studies and our interviews. We were able to identify a number of such patterns that are very different from the conventional view of project management as planning and scheduling. As it seems, project management is a much more dynamic and energetic practice of management than classical writings on project management can have us believe.

Based on the insights given from each of the suggested perspectives, we were able to elaborate on a number of roles that project management occupies. We argued that the identified roles in various ways further our knowledge about what project management really is about. For instance, the role as knowledge pacers points to the dynamic aspects of establishing arenas, meetings and channels for communication between different parts of the project.

We suggest that more research is needed to further our understanding of the role and practice of project management. The perspectives of knowledge and time are suggested to provide fruitful avenues for future research into this important area. The knowledge and time roles presented and discussed might be further studied and tested in future research.

Acknowledgements

The financial support from Handelsbanken is gratefully acknowledged. The writing of the paper was financed by a grant from VINNOVA. I am grateful for the comments by the anonymous referees and colleagues at the Linköping Project Center, Linköping University.

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What project management really is about


