

HOW DO THE DUE TO THE PANDEMIC REVISED FRAME CONDITIONS INFLUENCE THE PROJECT MANAGEMENT?

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Abstract

Projects serve the innovation of the company and need to operate within a framework set by the company. Besides cultural, economic, and organizational frame conditions, the technical conditions play a part to keep within the financial and temporal frames. In times of crisis – for example, a pandemic – additional conditions become relevant or change their meaning: Political instructions disrupt the established and scheduled aspects of infrastructure. Therefore, project managers (PM) will have to reorganize the teamwork and employ long-distance communal work structures. The whole project team needs information on and help with the use of IT, especially what IT should be used for and which laws and guidelines must be followed. In this paper, we will consider what kinds of faculties will have to be developed by each co-worker when considering their changed working conditions, and how this can be achieved. We will discuss what the PM needs to achieve this and what kind of additional competence training in this field is necessary. If additional changes in the company's strategy are also to be applied momentarily, if projects are canceled or ongoing projects reduced in scope, these and other disruptive influences on the current teamwork have to be reduced. We will delineate what the PM has to work on to reduce the negative effects on the motivation of team members. The possibilities for creative work in the home office shall be examined by researching published works, technical and human preconditions be analyzed. Checklists for criteria be compiled by using Methods of requirement engineering, in accordance with which acting individually as a PM or reacting to unusual circumstances shall be easier. It will become evident in as much the role of the PM will change during a pandemic and with whom they will have to engage additionally. So the contents of this paper describe the workflow of a project for a PM and the roles involved in this workflow, the conditions to be noticed by the PM during normal times as well as the conditions a PM needs to consider when facing special situations. The findings are the tasks and conditions a PM may encounter during a pandemic. Additionally, new roles like an event manager, IT-Controller, IT Support Manager are introduced since the PM will have to deal with them to be able to take care of the team members from a distance and achieve all goals.

Keywords

Distance working, IT-Controlling, digital coaching, Technology management.

Introduction

Projects are divided into internally and externally aimed, according to their kind of added value for the company. Externally aimed projects serve the purpose of creating a new service or product or revise an existing one. Internally aimed projects target established structures. In the case of a pandemic, extant ways of communication, coordination, and collaboration need to be reconsidered, to enable distance working. Critical thought and creativity should not be oppressed here. Acting on pure intuition may put the positive outcome of any project in jeopardy. But how should the framework be designed, so that everybody knows which options can and should be used? Because the project manager (PM) not only has to implement this design but also for example ensure distance communication, support distance learning, or IT-support for distance

workspaces, we will exactly know which tasks of the PM will be influenced by the changes and which new tasks will be created. In addition to changed tasks, the PM has new or more intensive players to work with, such as IT Support, computer scientist, IT-Manager. If the PM knows about the new tasks, newly demanded knowledge, and new conditions he can prepare more thoroughly and adjust to new situations more quickly. Before we can start the discussion on motivated changes, we first have to carefully examine the tasks and conditions which influence the PM's work today. After this analysis, we will have to analyze the expected changes in the new situation: Pandemic. Also, the relevance and influence of these changes in the work environment will be taken into regard. We will summarize the changed conditions and related roles and tasks concerning the workflow of the PM in the end.

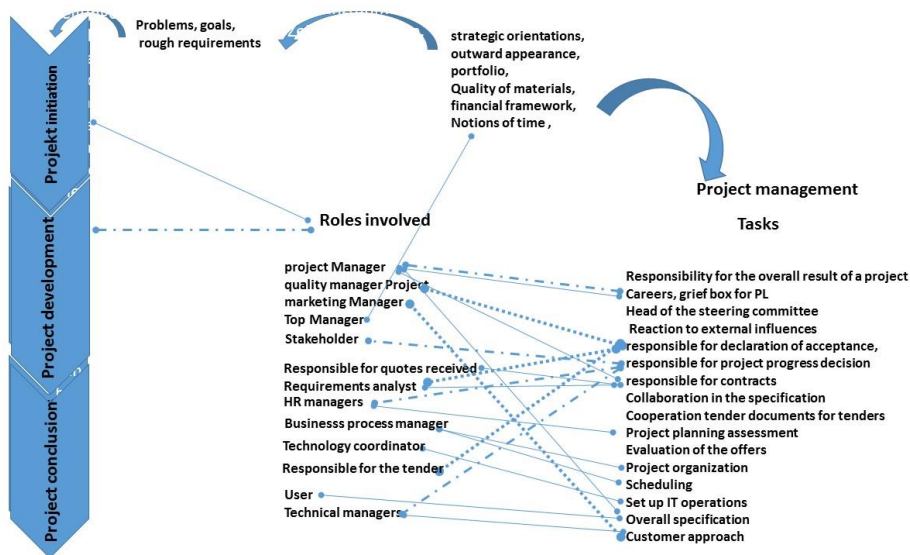
Methodical approach

To answer the aforementioned questions, we will proceed in the following way: Using the standard V-XT-model concerning the tasks of a PM, the design of project procedures following the Jacobson-technique and BPM, as well as findings from the field of multi-project management in organizational frameworks we will begin by describing the current state of a project process. The strategic framework is governed by guidelines or the culture in a company, as will be described schematically. The technical concept, as it is used for example in German hospitals, serves as a foundation for the employed IT. We will discuss certain provisions from the worker's protection law for a general description of the workspace. Through requirement-engineering methods, we will analyze the new demands towards the PM in a pandemic. We will test in a synthesis phase whether the gained knowledge will be applicable in the new situation. The new insights will be used to compile a checklist for the PM. It shall serve as an orientation for the PM, whenever a project needs to be initiated, lead, or concluded from a distance.

The current state of a project process framework

The composition of a project's management is multi-layered. As has been shown (BRD,2004), 34 roles are described, all of them working in the different phases of a project. This paper will focus on the role of the PM, their interactions in the phases of initiation, development, and conclusion, and what they need to pay attention to. "The PM is responsible for the overall result of the project and is – in contrast to the project leader (PL) – not immediately involved in the everyday business but serves as an adviser to the PL and takes care of problems and complications. Depending on their personality and position within the line organization, the PM is able to remove obstacles for the project and cover the PL's back." (BRD, 2004, p.22ff]. Furthermore, the tasks and powers of a PM are described as them leading the steering committee. They also set the organizational frame and react – or at least influence the reaction – towards external influences (resources, marketing, specifications). Their competences are not limited to the application and area of effect of the project, but also extend to experiences in project work, leadership qualities, knowledge concerning the companies' organization and structure, as well as skills in organization and delegation. The PM is responsible for the declaration of acceptance, decisions regarding project progress, and contracts. They coauthor the specifications sheet, answer calls for bids, assess project planning, and

offers. Cooperation between different roles depending on the project phase is a necessary aspect of project management.



Figures.1 Workflow of a project for a PM in UML-notation

Figure1 shows the actual state-workflow of a project in UML-notation, beginning with the initiation, to the execution and conclusion. The tasks of the PM and other actors involved are attributed to the appropriate project segment. Problems, goals, and rudimentary demands of the final product are already in play in phase1. During the phase, attention needs to be paid to the company's specifications, which can take the form of strategic alinements, public image, the portfolio, the quality of used material, financial frameworks, timetables, but also legal, technical, methodical, and organizational conditions. This way, the PM cooperates with the person in charge of answering calls for bids, the PL, and the requirements engineer. The project organization is also laid out in this initial phase by the PM. They are supported by the business process manager in optimizing procedures and by the technology coordinator in establishing the necessary IT-structures. Deployment of staff is coordinated with the appropriate person responsible. Before the contract is closed, the PM delineates the total system specification with the PL, potential users, department managers, the QA-commissioner, and the requirements engineer. In Phase2, the PM functions as the leader of the steering committee, co-working with all stakeholders on decision points during the development of the project. The stakeholders are, among others, the worker's representation as well as department and staff managers. Issues are resolved concertedly by PM and PL. In Phase3, customer circles are approached in project marketing. The technological conditions play a part of paramount importance nowadays. This includes available software systems, the target machine's hardware components, and organizational conditions, called Orgware. When considering software systems, it is important to analyze which systems are necessary and whether they will be developed originally or bought from others. The hardware aspect includes the

technical specifications of a computer or a network and the acquisition of end devices. The users are prepared for an optimal application of the system. The Orgware comprises IT-supported organizational conditions. The approval of the project displays a joint effort including the person in charge of answering bids, the won-orders commissioner, and the QA-commissioner. But what are the precise conditions? We will take a look at the following.

Corporate culture – a strategic condition in phases 1-3

The corporate culture is comprised of the shared values, beliefs, and attitudes of the employees in a company concerning its main goals, given by a Business dictionary. This includes Reaper's beliefs in (Reaper, 2019, p.40) concerning time, the world in general, other people, the nature of humans, and the relationships between people. It serves as an orientation for anyone in the company and helps model the likely behavior towards important actors, such as customers, coworkers, suppliers, but also informs the evaluation of achievements and whether a certain innovation is desired. Cost-orientation means, that unpromising deals are avoided and that the focus lies on financial responsibility. Communication-orientation highlights the communicative style within a company, for example, the effectiveness of the complaint management or the informative, well-arranged, and appealing design of the company homepage. Corporate-orientation describes the general aim of the company concerning its micro- and macroeconomic environment. This includes a functioning QA-system (checklists, standards, corporate design). Technology-orientation determines how vast and modern the orientation towards production technology and process engineering should be. The corporate culture needs to fit the strategic goals of the company. It helps the PM in keeping the team's focus on the strategic goals. It should be lived and shown by example. This way, conflicts and unhelpful discussions between roles in the project can be avoided.

Portfolio- an additional strategic condition in phases 1 and 2

Before a project is initiated, its fit with the company's portfolio needs to be verified. The PM needs to know the objective of the project. This means, according to (Gabriel & Beier., 2003, fig.24,) whether it will lead to changes in the competitive field and how this relates to the needed resources. One criterion for evaluation with an internal project is the penetration of the company, which means whether or not it is relevant for every branch and level or just one or two departments. The actual and desired states will be compared; the difference determines the importance of the project. These values set the priority in discussions on stringency and continuation regarding multi-project-management.

Time condition – checklists and templates in phases 1-3

Parameters for projects are often standardized checklists known for example from the V-XT-model or IEEE1471 standard. These not only set the mandatory tasks but also give a set of expected outcomes. The advantage here is that no element will be forgotten, that comparisons are possible, that recognition effects make multiple use checklists very effective and the high usability, leading to less time spent with explanations and higher efficiency.

Staff conditions in phases 1-2

Human resources are expensive and rare. To employ these limited resources effectively, tools from multi-project-management can be used. Is a PM taking care of several projects simultaneously, they will seek to heighten efficiency and efficacy by applying methods and standards, structured procedures, and planning, steering, and control tools? In the paper created from Bircks and Kuhn 2009 about the structuring of multi-project management (MPM) for integration and functionality in a company, several of these tools are mentioned, for example in the form of additional committees, enabling the completion of further tasks while keeping the temporal, financial and other resources in check. The PM can, for example, use a standardized reporting process for controlling the progress of individual projects during phase 2. Another instrument is the prioritizing of projects to meet deadlines. It is hereby important to verify the coworkers' competence in fulfilling the tasks.

Guiding concept as a means of orientation during -an additional strategic condition phases 1-2

A guiding concept helps the planning of projects based on the strategic goals of the company (Gräber et al., 2003). Beginning with the vision, corporate culture, and main strategy, all decisions, as well as the executing roles, are described. Tools, standards, methods, and techniques are suggested in the form of guidelines and possible alternatives. The organizational structure is a subject of the framework, just as special structure, externalized quality control (auditing), a security concept for the IT, and the basic support of informational flow. Also, a case of emergency concept and the management of changes are described. In addition, methods concerning the analysis of weak points and needs for action, estimation procedures enabling effective time and cost scheduling are suggested.

Economic conditions – phase 1

Felbermayr describes 2019 the different economic conditions for innovation and projects depending on the location. This may be a decisive factor for the feasibility of certain projects. Because of this, the PM needs to look into the tax situation, the infrastructure, the job market, public support options, the regulatory framework, energy and nature protection fees, and environmental specifications. The incurring costs need to be part of the PM's planning, to secure financial stability. Either one's methods and experiences or specialized experts are employed to achieve a cost estimate. The Delphi-method is one of the best known in this field.

Professional and personal conditions in phases 1-2

Willpower, faculty and ability, and a dose of creativity are preconditions for the execution of tasks. Competence in the field of question and relevant methods are necessary for those tasks to be handled. As seen in (Practice Guide of BRD) well developed social and communicative competencies such as the ability to cooperate, to resolve conflicts, to integrate oneself, to work in teams are paramount as factors of success for the leadership and the joint work in the project". The PM needs to take care of staff development with these goals in mind. Special language skills also ensure precise and fast communication concerning professional matters and should therefore be

improved, especially among new coworkers. Wikis are often used for this. The extant knowledge and special competencies need to be kept up to date by the leadership as well as team members through seminars. Usually, actual situations are enacted in certain specified workshops, including suggestions for immediate implementation. Seminars on commonly used methods and techniques in a company are not to be forgotten, not in the least since they have to be used in the company for certification purposes.

Organizational conditions in phase 1

When determining the organization and planning of a project, staff leaders, the project team and the contact persons of all interested parties are to be named and team members' timetables to be scheduled. According to the Practice Guide of BRD page 28, the resource planning will tell whether or not the schedule is manageable with the allocated resources. Should the project be unfeasible under current conditions, the steering committee will need to be informed and rectification to be administered. „When designing a project organization, tasks, competencies and responsibilities should be allocated to the team members. The roles and scopes of action as well as the availability of the participants in the project are defined here.“ Modalities of proxy assignments are also set and vacation days are planned. The PM also needs to establish a welcoming atmosphere and an environment where team members feel comfortable, can express their creativity, connect with others, overcome their fears and stay up to date on the company's notions.

Legal conditions in phases 1-3

One important aspect of workplace design are legal requirements (Workplaces regulation) such as pixel illumination, air column, usable space, ergonomic terms like temperature, and seat height. Additional conditions are to be found with the federal ministry for work and social issues BMAS on the topics of workers' rights, minimum wage, and job protection. Also part of the legal framework are the basic rules for orderly accounting (GoB). According to Debitoor Accounting dictionary, in addition to the GoB the basic guidelines for the proper safekeeping of books, manuscripts and files in electronic form (GoBD) are relevant since they specify the GoB regarding electronic accounting.

Ethical conditions phases 1-3

Following the description by Gersdorff (2012), it is impossible to achieve goals in quickly changing situations without a framework. They work as guiding lights when making decisions and the security of doing the right thing.“ Respect and appreciation towards each need to be maintained, otherwise, the project's success comes in jeopardy. „Lack of respect will lead unerringly to a lack of trust and so to conflict and failure in meeting goals. (Time, budget & scope)“. Furthermore, it is explained that „honesty is indispensable in project management“. „Honest criticism needs to be given and accepted Honesty also implies to communicate openly where the project is concerned.“ But an honest description of the project is futile if not all relevant information is openly accessible and decisions are comprehensible.

Technological conditions in phases 1-3

According to V-Modell XT, technological conditions form extant development environments and platforms. Also belonging to this aspect are required (technological) standards and guidelines or parameters concerning the usage of ready-to-use compartments (complete software systems, components, modules, intelligent mem-sensors). During the execution phase, workflow management systems are used to improve process effectiveness. These IT-tools are selected, tested, installed, and taught by centrally organized professionals. They look after the maintainability of the systems, legal requirements concerning data protection, data security, select fitting hardware or software for the employment of tools, and ascertain usability. Spreadsheet analysis programs for cost calculation and scheduling software for project planning are also explicitly described in a publication from BGW about project management

Summary

The different conditions were introduced in this segment.

Figure 2 shows which conditions need to be handled in the different phases by the PM. Also listed are necessary actions and decisions with their probable effects.

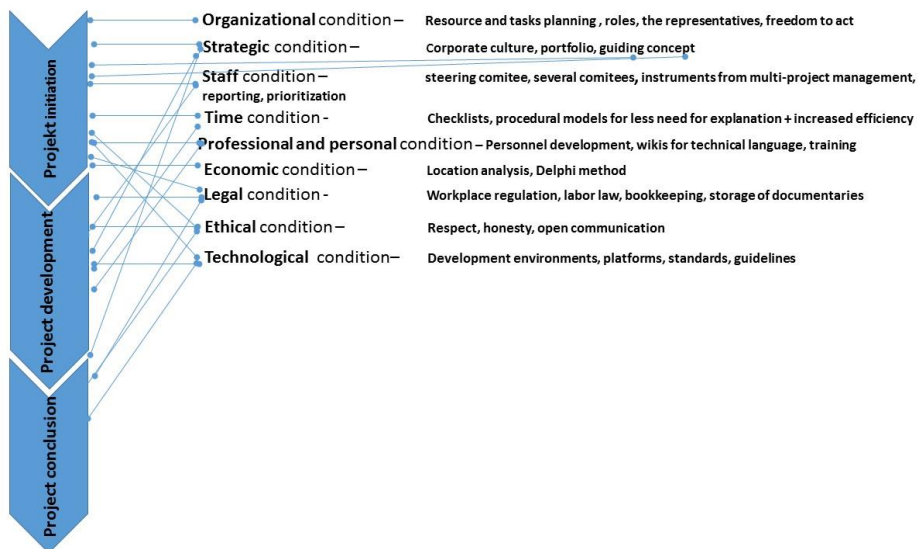


Figure 2. Conditions to be noted by PM in normal times

Discussion on changed conditions due to a pandemic

At first, we will need to consider the kinds of changes regarding project management due to a pandemic, before being able to analyze the previously discussed conditions for possible changes.

Challenges for Home Office work

In a pandemic, people may be ordered by the government to work from their own homes. Nobody can work from their home office without IT-support. Therefore, coworkers on a project need to take care of their workspace design. The opportunities mentioned in the V-XT Modell (more efficient procedures) and risks (lack of acceptance

with users) have to be considered in a vast application. Coworkers may also be involved in housework or child-rearing and be distracted. These issues will have to be addressed and diminished. Ideas for how to engage younger and elderly family members are needed to solve this problem. Self-reliant work is especially important under these circumstances and needs to be stimulated. In short, we are dealing with an unusual situation, which sets its working conditions. Special attention needs to be paid to the required responsibility and trust. The individual may also never feel overburdened or abandoned. Hence overcoming the distance needs to be considered in the discussion concerning the home office. The necessary IT-infrastructure will unfailingly lead to debates on the legal conditions for IT (compliance) and IT-controlling. The PM serving as a digital coach will now carry additional responsibilities, such as leading by example and delegating duties and charges.

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Consequences of distance working on project development

Along with handling their new tasks in managing the social situations and mental well-being of their coworkers, PMs also have to quickly ascertain a functioning IT-structure. Home offices need to be connected and everyone needs to be able to participate in video conferences, learning software, and general work tools through laptops and smartphones. Access to email- and other accounts is to be secured. The PM has an overview of all necessities and can set functional parameters. But who is responsible for training, reducing frustrations when faced with self-inflicted mistakes or connection issues? Who will now take care of the legal and technological frameworks that have to be considered with the new IT-setup?

Distance working

The internet is the main necessity for distance working, as a network, a source of information, and the basis for voice over IP conversations. To be able to use a web-based e-learning-software, one even needs a continuous internet connection. As David J. Skyrme described in 1993 „it is increasingly evident that a corporate culture is necessary for effective work.“ To cut down on the rank growth of diverse tools with incompatible interfaces and chaotic legal intersections, the adherence to clear guidelines and laws must be communicated explicitly. User groups are supported differently depending on their geopolitical situation. Less pollution from unnecessary journeys can be seen as one positive effect. In distance, cooperation has to be facilitated by the PL and PM through measures promoting self-reliant work.

Self-reliant work

A certain latitude in making decisions, acting, handling the budget, and choosing appropriate methods is just as important as informational logistics. But the will to act needs to be there, too. To facilitate self-reliant work, the trust between PM, PL, and coworkers should be groomed like a steadily growing plant. The managers themselves

have to align their actions with ethical tenets: PM and PL lead by example. Their bearing should be governed by honesty, fairness, integrity, and benevolence. They have the moral duty to help, support, and encourage their coworkers. Responsibility means considering the consequences of one's actions on others. To really feel engaged with their goals, the actors need to own the consequences of their actions.

Legal conditions

Working time regulations and job protection laws are delimited in their applicability. Instead, workspace communication law, telecommunication law, laws concerning data protection, and security now become increasingly important. For example, coworkers are now required as well to save their data in daily/weekly/monthly intervals.

IT-Compliance is according to Klotz 2009 in Facets of IT-compliance, in IT-Service Management, 4. Jg., vol. 9, p.5-8 „a segment of compliance on the general company level, that addresses all legal and other regulatory parameters regarding the use of IT in business. As described in [RaSp09] „restrictive laws, guidelines, contracts and norms have risen in the last couple of years. This leads to an increased risk of non-transparency when dealing with national and international demands towards IT-compliance. Companies are therefore subjected to a higher risk of breaking rules and need to employ a systematic approach with IT-compliance. The Federal Data Protection Act (BDSG) deals with the collection, treatment, and use of any natural person's data. The goal is to prevent illegitimate use of personalized data. It establishes specific parameters concerning the organization and technology. Additional rules, norms, and standards concerning the PM can be found in the terms of use of IT-based accounting systems, for example concerning data access rights and the verifiability of digital files. The GDPdU regulates the safekeeping of digital business files. The IT Infrastructure Library (ITIL) is an internationally accepted standard for implementing IT service management and contains a collection of proven Best Practices. ISO 20000 is a norm for IT service management and defines an array of demands towards the planning, producing, steering, and improvement of IT-services, that are employed for the support of business processes. ISO 27001 is an internationally accepted norm for IT-security and contains requirements for the production, planning, initiation, sustainment, control, maintenance and improvement of informational security. To ascertain verifiably that compliance demands are met, targeted management of the IT-compliance is necessary.“ IT-Controlling has the function of facilitating an effective and efficient informational provision, according to Binder et al. (2019). The IT-portfolio-controlling handles the strategic planning of the IT-environment and its development. The IT-project-controlling transfers the information needed for the planning and execution of the project to the project management.

Distance Learning

Knowledge has an expiration date and must be renewed again and again. Distance Learning offers a solution to this. “Distance learning is a way of learning remotely without being in regular face-to-face contact with a teacher in the classroom” (Midgley own translation).

As delineated in (Resalat, 2020, own translation) “the main advantage of distance learning that it allows you to fit your learning around your work and home life. You can

usually also set your own pace of study. It is your decision as to when and where you learn. Loneliness and feelings of isolation should be avoided however by frequent online contact with tutors and taking part in virtual forums, virtual help groups, and discussion rooms."

Technology management

The use of IT-tools requires not simply a background in functional but also non-functional demands, such as data protection and security. The legal demands have to be met too. This necessitates specific knowledge in the fields of software engineering, network engineering, and coding. Next to hardware and software, the data transfer rate and availability are important. Login credentials need to be tested methodically and regularly. In most cases, a central selection of IT-tools is advisable. Individual projects may only use special tools on a short-term basis, with an emphasis on self-reliance.

Summary

This segment explained how the aspects described in segment 1 need to be revised in the new situation and what kinds of additional aspects need to be considered. Figure 3 is comprised of the same way as in Figure 2.

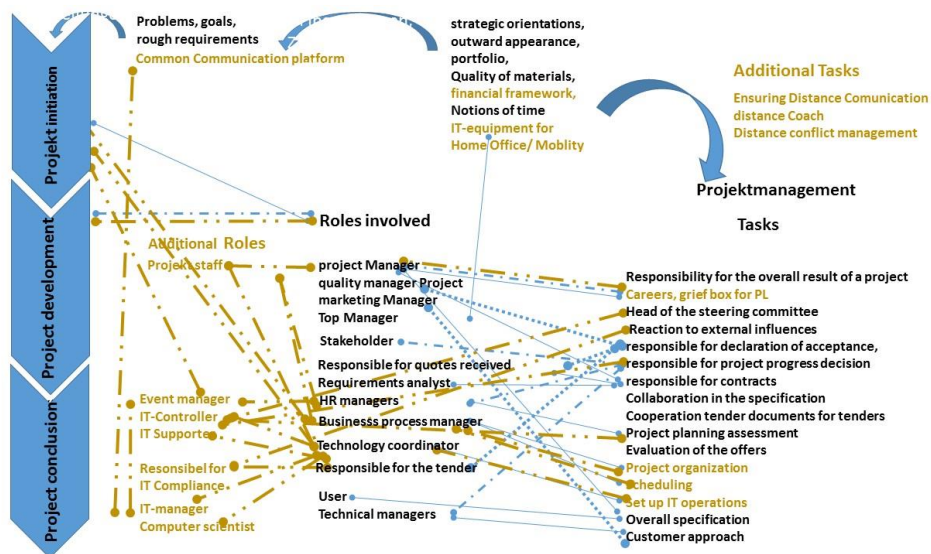


Figure 3. Conditions a PM needs to consider in special situations

Checklist for a PM during a pandemic

The checklist should alleviate certain decisions that may arise due to changes in a pandemic. To be able to react to changing situations, we consider under the aspects of ability and willingness of working in distance and the communication flow over IP with the help of IT as being relevant.



Figure 4. Checklist for a PM during a pandemic

Figure 4 depicts the tasks and conditions a PM may encounter during a pandemic. As you can see in comparison to Figure 2, many more conditions have to be taken into account. Each condition has extended, as has its area of influence. One of the new roles (in addition to the IT-area) is that of the event manager, who will stabilize people culturally and socially.

Conclusions

The organizational structures are subject to changes in the application of employment law, the much-needed offer of training classes, the focus on cultural and technological frameworks, to improve the behavior of co-workers and facilitate distance communication. IT-application is made possible by the proper selection, installation, and testing of tools. Legal considerations are also important. Internal marketing supports the co-workers through event management, psychological care, and virtual replacements for child and elder care. The distance worker needs to be integrated into a larger program of business-IT-human and organizational strategy management. The PM has to recognize and amend social tensions and fears as a digital coach.

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