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# Remote Working Challenges in Project Management

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<p>The objective of the thesis was to improve consultant market potential by finding out which set of skills is needed in working as a consultant in a remote environment as remote work has become more or less a standard in the IT industry. This thesis focuses on the project management area in remote working.</p> <p>Qualitative research methods were used for conducting this thesis focusing specifically on project communication and team dynamics to support the project manager's skillsets and keep companies competitive in the market in the Covid-2019 environment.</p> <p>The theoretical framework of the thesis concentrated on the topics of project management. The practical part relied on the interviews with experienced project managers. The study revealed that project management as such remains more or less the same in the remote working conditions, with the scope, schedule, and budget management within the project management fundamental practices remaining the basis of any successful project. The main differences found were around communication and team dynamics.</p> <p>The study demonstrated that project managers and companies can have significant benefits by utilizing professional competencies especially in their project communication up to date to match the market needs. Furthermore, the study confirmed the need for constantly follow up and get feedback on the remote working practices.</p>	
Keywords	Project management, remote working, Covid-2019, IT consultancy business

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## 1. Introduction

The remote work revolution was accelerated in 2020 by a severe coronavirus outbreak. The global pandemic has forced companies to adapt their digital footprint rapidly and bring the digital toolset up to date to accommodate their virtual workforce. In a survey conducted by the Gartner Group in 2020, 73% of the companies reported plans to adopt more remote work after the pandemic. (Needley 2021) Facebook, for example, has reported adapting half of the workforce remote in the next ten years. J.P. Morgan Chase is considering a permanent remote workforce based on a significant increase in productivity. UBS already expect one-third of the workforce to work remotely. Coinbase, a cryptocurrency exchange company, declared that it would become a fully remote company estimating up to 60% of the workforce working remotely. Tata Consultancy expects 75% of the workforce to work remotely by 2025. Twitter and Slack have given their workforce to work remotely indefinitely. There is no doubt that companies see benefits in remote work in reducing real estate costs and removing continental barriers.

This thesis focuses on the development of remote working tools and methods for IT project management. The world is rushing towards remote ways of working, so different tools and methods are needed. Implementing efficient remote working culture for project management is essential for businesses to survive and for project management consultants to run the projects in the new environment.

Remote work brings new challenges to already challenging IT projects, such as communication, which is the most valuable skill for a project manager to run a successful project. Building an efficient team while people working individually in different locations can be more challenging. There needs to be some compensation for replacing the unofficial and non-verbal communication to keep the team working as one efficient entity to the goals set for the project.

Current tools available have developed a lot towards enabling efficient communication and connecting. Using the tools becomes even more critical as the tools are the only communication channels for remote workers. It is essential to select the correct tool for different purposes. Information overload by email, meetings and social media is a valid risk that needs to be controlled.

Nevertheless, today's situation is that remote working is mandatory in many companies due to the Covid-19 pandemic. Based on the feedback from different consultants, companies, and recent publications, remote working will most likely be a continuing way of work in some form.

### 1.1. Business Challenge

The business problem is that the Remote work environment for IT Consultants in Finland is changing. With the rapid change in online working, the skills and ways of working are changing, and therefore a new set of skills is required.

Being efficient in remote project management is an essential part of keeping the project scope schedule and budget. Running successful projects requires remote working tools and skills in the new environment.

### 1.2. Business Challenge, Objective and Outcome

The objective of this Thesis is *to improve consultant market potential by finding out which set of skills are essential in working as a consultant in a remote environment and creating recommendations and guidelines on working remotely as a project management consultant.*

The outcome of the thesis is a set of recommendations and guidelines for remote work as a project management consultant.

### 1.3. Background

The author works as a freelance project manager in several assignments from different companies. Freelance project managers are experienced and certified project managers selected for assignments based on specific skills and experience in project management. Companies seek to fill in lack of experience or skills inside their organisation with external consultants. So the skill set of a project manager is the value and selection criteria for the assignments. It is essential to adapt fast to ever-changing requirements for project management to be up to date with the market requirements. A remote work skillset is essential in the current environment to bring customer's value that they are looking for when utilising external consultants.

#### 1.4. Thesis Outline

This Thesis is written in seven sections. Section 1 is the introduction. Section 2 explains the research approach and why qualitative case study methodology was selected for the research design. In this section, data collection and analysis is explained in detail from the data collection to the initial proposal building.

Section 3 describes the current state analysis for remote project management. In this section, first, some general background for project management is explained. Different areas of project management were analysed for remote work. The current state analysis is based on the collected data in the interviews. Project management is analysed as a professional field, and two problem areas related to remote work are identified.

Section 4 captures literature and best practices on the focus areas identified in the current state analysis in Section 3. A variety of sources was used in this section, ranging from academic publications to consultant articles online. In this section, the focus is on resolving the challenges identified in the current state analysis.

In section 5, the initial proposal is built based on the current state analysis and literature review on the selected focus areas. Section 6 validates the proposal and identifies further development of the proposal. The final proposal is also described in this section. Section 7 concludes the thesis into executive summary and closing words.

In order to have a clear focus and scope, this thesis focuses on remote work challenges on project management of IT projects in Finland.

## 2. Method and Material

This section describes the research approach, research design, and data collection and analysis methods used in this Thesis.

### 2.1. Research Approach

A *qualitative case study* is a research methodology that focuses on the analysis of multiple data sources and issues from different perspectives. It also allows multiple facets of the phenomena to be revealed and understood. (Baxter & Jack 2008)

Qualitative research requires knowledge of the research subject from the researcher. The method has great value when research can address questions of relevance to the research subject, which are difficult to answer by using quantitative methods. Qualitative research aims to create an in-depth understanding of the research subject based on people's experiences, perspectives and histories. Qualitative research involves non-numerical data in the analysis phase, such as interviews and documentation analysis.

In this study, qualitative case study methods was seen as the best method to conduct the interviews and data analysis for this study. In this study, the research and building of a proposal were carried out in co-operation with consultants from IT consultant companies. This study will answer why ways of working are changing, and remote way of working is becoming a standard and how remote working should be set up and done. This study focuses on the project management aspect of remote working.

In this study, the proposal and suggested methods and tools are tied to the data analysis from the interviews and discussions. Qualitative case study methods help build the baselines for semi-structured interviews using questionnaires. The results inform the existing knowledge and best practice search in the next step. A conceptual framework is supporting the proposal making process. The study is eventually concluded by getting feedback from the relevant stakeholders and developing it before the final release.



## 2.2. Research Design

Figure 1 below shows the research design of this study.

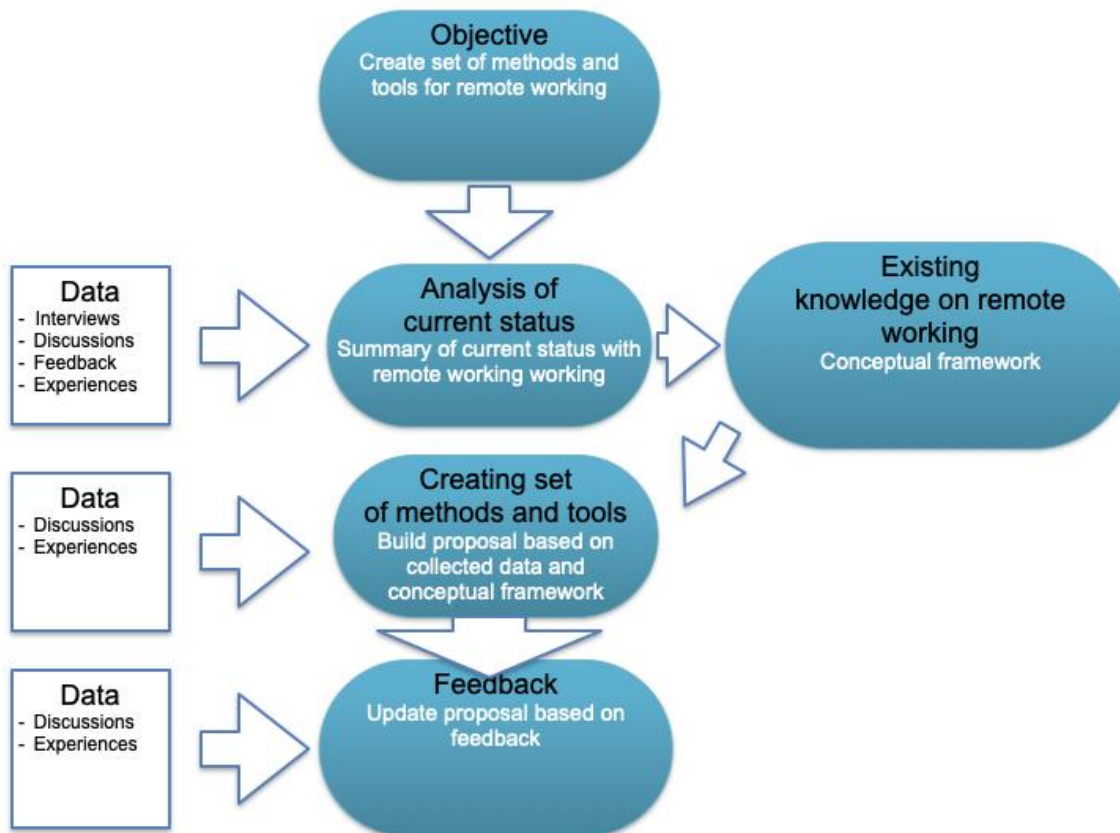


Figure 1. Research design of the study.

As shown in Figure 1, the study starts with setting the objective. In the next step, CSA was conducted by collecting research data. The results inform the existing knowledge and best practice search in the next step. Then the initial proposal was built based on the results from the previous steps - the results from the current state analysis and relevant suggestions from literature, as well as discussed with relevant stakeholders to get development ideas furthermore. In the final step, the proposal was validated by seeking feedback from experts on the proposed recommendations.

### 2.3. Data Collection and Analysis

This study uses a variety of data sources, and data was collected in several collection rounds. Data was collected from several people working in IT industry in Finland. People were selected based on their experience in the consultant market.

Table 1 shows details of Data collections 1-3 used in this study.

	Participants / role	Data type	Topic, description	Date, length	Documented as
<b>Data 1, for the Current state analysis (Section 3 or 4)</b>					
1	Respondent 1: Consultant company, Sales responsible	Online meeting	Company remote working impact on project management consulting	Apr 2020, 1 hour	Meeting notes
2	Respondent 2: Consultant company, Sales responsible	Online meeting	Company remote working impact on project management consulting	Apr 2020, 1 hour	Meeting notes
3	Respondent 3: Project management consultant	Online meeting	Experiences on remote working	May 2020, 1 hour	Meeting notes
4	Respondent 4: Project management consultant	Online meeting	Experiences on remote working	May 2020, 1 hour	Meeting notes
5	Respondent 5: Consultant company Director and Sales responsible	Online meeting	Company remote working impact on project management consulting and business	May 2020, 1 hour	Meeting notes
<b>Data 2, for Proposal building (Section 5)</b>					
8	Manager, Customer	Discussion	Proposal building, discussion on how remote work has impacted ways of working in company	Feb 2021, 2 hours	Meeting notes
<b>Data 3, from Validation (Section 6)</b>					
9	Manager, Customer	Discussion	Proposal validation and further improvement suggestions	Apr 2021, 1 hour	Meeting notes

As seen from Table 1, data for this Thesis was collected in three rounds. The first round, collecting Data 1, was conducted for the current state analysis and was conducted in the form of semi-structured interviews and open discussions. The interviews and discussions were conducted with consultant company representatives who are in contact with customer companies and view the demand in the market. Data collection also included interviews with consultants and their views about remote working in their current assignments.

In the next round, Data 2 was collected to gather suggestions as an open discussion about how remote working has impacted the way of working in the company in the areas related to project management. This data included insights on the demand for the skillsets, the ways of working, for example, how new comers induction has changed, and also how actual work has been impacted.

In the third round, Data 3 was collected when conducting validation of the initial proposal. Data 3 included feedback for the proposal from the manager from a consultant company.

In this study, the interviews made the primary method of data collection. The interviews were conducted as semi-structured and included elements of open discussion, organized in the form of online meetings, with specific questions created in advance. Meeting notes were taken. All textual data were analysed for the current state analysis using Theme/content analysis methods.

The findings from the current state analysis are described in Section 3 below.

### 3. Existing Knowledge and Best Practice on the Basic Concepts of Project Management

As project management has many different elements, first, the basic concepts and some background information related to project management in IT is explained in Section 3.

#### 3.1. Key Concepts of Project Management

A project is defined as a temporary activity designed to create a unique product, service, or result (Project Management Institute 2017). Every project has a definite beginning and a definite end. Projects are not ongoing efforts or company's regulate operational activities.

Projects are often very complex entities, built from numerous parallel or overlapping phases and tasks. Therefore, Project management is harnessing knowledge, skills, tools and techniques to complete project activities and achieve project results.

The key role in project management is the Project manager, who is the driver of the project. The role includes activities from planning, execution and closure of the project. Key skills, based on research are leadership, communication, planning, execution and problem solving. (Crawford, Lynn 2000) Based on research, competence and skillset of a project manager is vital element of project success. Competent project manager is motivated to drive the project goals and same time build the team to achieve its best. Professional communication and team empowerment are success factors for a project.

Each project has several main constraints. The most basic constraints are the scope, schedule and budget. These limitations are referred to as "the project management triangle". For successful projects, project managers must consider a balance between scope, schedule and budget. These are often competing for goals, and typically, there needs to be some buffer in one corner of the triangle. The scope defines what work will be done or what is the expected as outcome for the project sponsor. The schedule defines the timeline for the project and how long the resources needed for the project are allocated. The budget defines the investment needed to complete the project activities. (Schwalbe K. 2009.) Figure 2 below shows the "iron triangle" with the three main project constrains.

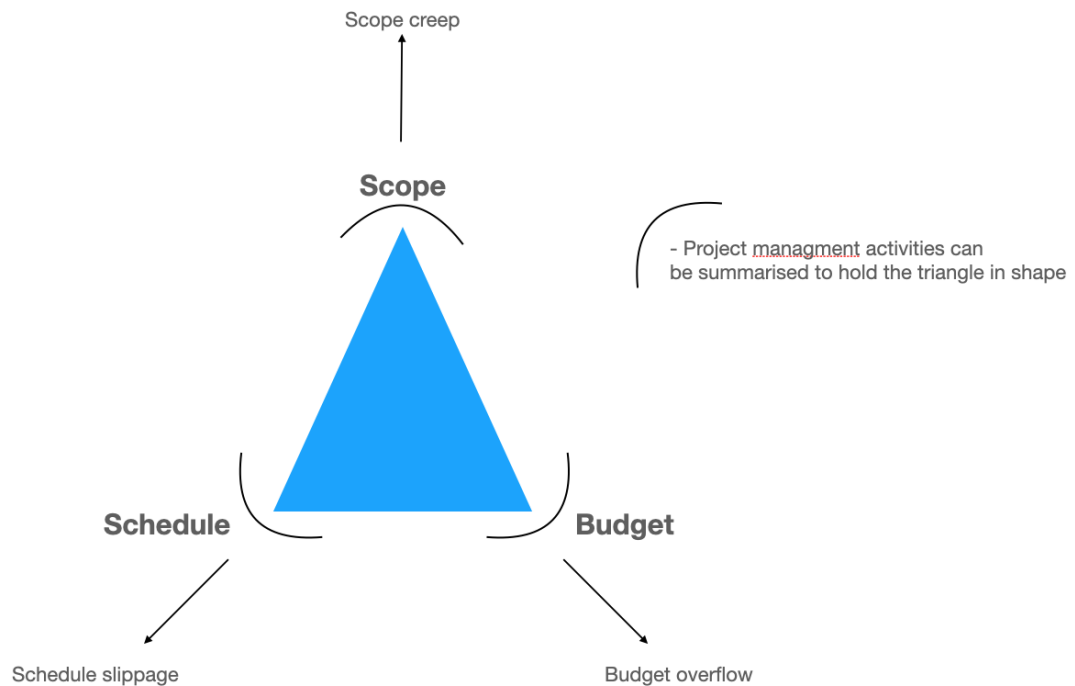


Figure 2. Project management “iron triangle” with the risks and mitigation activities.

As seen from Figure 2, the first contain the project scope. The project scope is the content of the project, a list of work items that need to be completed to finalise the project. The project scope is defined in the planning phase, its progress monitored and managed in execution phase, and accepted in the acceptance or closure phase. There can be different deliverables, based on the project. The Work breakdown structure is used to list and mark the dependencies on each work item.

Scope management is the area in project management that is focused on managing the scope. Scope management of a project can be done in several ways, there are many tools available which have developed a lot during the years. If it is a tool or verbal status, team or the individual provides the status of the work item. Different companies have different tools and methods.

The project schedule includes a start date and finish date for each activity in the work breakdown structure. Schedule tracking and communication the deadlines of different work items in the work breakdown structure plays important role when setting the expectations on the results from project team.

The project budget defines the estimated costs of individual activities or work packages into an authorised baseline. It will determine the cost baseline against which the project performance will be measured, monitored and controlled. The cost baseline makes the basis for comparison with actual results. (PMBOK 5.0 2014: Section 7.3)

Sometimes more constraints are added to the project. The most popular, fourth dimension is quality that describes the quality of the product or service to match the customer expectations. (Schwalbe K. 2009) Altogether, as many as six constraints can be defined, as shown in Figure 3 below.

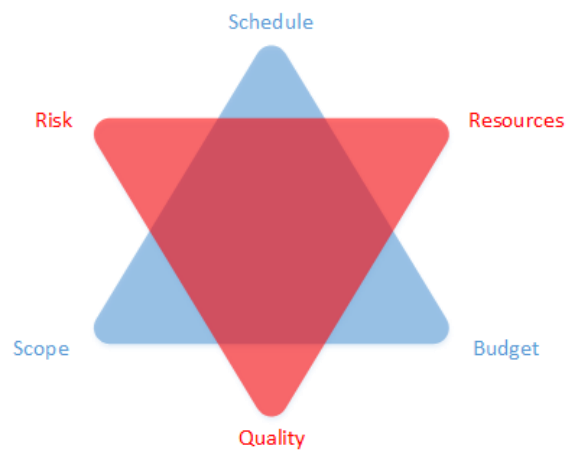


Figure 3. “Six constraints” showing basic interdependencies in project management (PMBOK 2017).

As shown in Figure 3, which are also called interdependencies, show how constraints work in project management. For example, if Schedule is shortened, then Budget is increased (to add additional Resources). If Budget cannot be increased, then Scope or targeted Quality should be reduced. If not enough measures are taken, then Risks increase, etc. (PMBOK 2017.)

Although six constraints can be identified in project management, further in this study, the focus is placed on analyzing the “triple constraints”.

### 3.2. Other Knowledge Areas in Project Management

*Project communication* makes another critical knowledge area in project management. Its main document is the project communication plan that links the information and the people on the areas that are needed for successful completion of the project.

Communication is one of the most important areas to manage on any project. For example, it's very important that every project team member knows what the project status & schedule is. Project team should also have ways to communicate deviations and blocking issues. Fluent communication within project team is enabler for successful project.

*Project stakeholders* are people and organisations that are “actively involved in the project, or whose interests may be affected as a result of project execution or project completion” (Project Management Institute 2004). Stakeholder management plays the most important role in project management. Different stakeholders have different expectations on the project results and steering. It is important to align these expectations so that the project objective is clear and steering is done based on common model and expectations. Result of poor stakeholder management leads often to scope creep and inefficiency in project steering. Managing expectations is a key driver for successful project management.

*Quality management* is recognizing and following quality requirements, reviewing the results of quality control activities and using quality measurements to control quality, recommending project scope changes if needed. Quality should be controlled and guaranteed. There are different options on how to measure quality, companies need to have continuous improvement on quality to create competitive advantage. Main goal of Quality management is to ensure a quality end-product. Project can be delivered within budget and schedule, but project cannot be successful if quality is poor. With quality management project managers can ensure a successful project and increase in level of customer satisfaction. (PMBOK 2004)

*Resource management* is where project managers spend most of their time. Resource management consists of planning, estimating, acquiring, developing the team, managing and controlling the resources. First step is to define resource requirements and identifying type and quantity of the resources that are required to complete project objectives. Resources can have grade or skill level, like experience level of people or sizing of hardware. Estimating the resources needed includes also cost, schedule, quality and availability. After planning the resources must be acquired. The project schedule defines when the resources are needed. Based on this resources are acquired. Once the project team is defined their knowledge needs to be verified and most of the projects need additional knowledge to complete the project deliverables. The project team is one of the most important components of project success or even organisations

success. Project issues need to be tackled with appropriate people and project work needs to be actively managed by project manager. The project resources need to be controlled and efficient use actively ensured. (PMBOK 2004)

*Risk management* is often neglected. Project management focuses heavily on cost, schedule and budget. It is important to identify and monitor the main risks that can cause project deviations. Risk management consists of planning, identifying, analysing, mitigating and monitoring risks. Initial step of planning the risk management includes itemising the risk categories (resources, procurement etc.), definition of risk probabilities and impact. A comprehensive list of potential risks to project's cost, schedule or any other success factor is the key to risk management. Risk analysis defines the probability of a risk and impact on the project's schedule and budget. Risk mitigation includes the steps to lower the risk probability and actions a risk is realised. Risks are monitored actively throughout the project and risk probabilities and impacts are updated. (PMBOK 2004)

*Project Procurement Management* is needed when a project requires some form of external purchasing in order to meet project's goals. Contractors can be used to fulfil the lack of experience of a project team. Successful sub-contracting includes Requests for Proposals and contracts. Project Procurement Management is based on planning, conducting and controlling procurements. Project planning phase includes the planning of procurements needs. Preferred vendors are contacted and asked for quotation of price. Project management plan is updated with the new budget and schedule information including work from the vendor. (PMBOK 2004)

Summing up, the main knowledge areas in project management can be described as by PMI, project Management Institute:



Project Management Process Groups						
		Initiating	Planning	Executing	Monitoring & Controlling	Closing
Knowledge Areas	Project Integration Management	4.1 Develop Project Charter	4.2 Develop Project Management Plan	4.3 Direct and Manage Project Work 4.4 Manage Project Knowledge	4.5 Monitor and Control Project Work 4.6 Perform Integrated Change Control	4.7 Close Project or Phase
	Project Scope Management		5.1 Plan Scope Management 5.2 Collect Requirements 5.3 Define Scope 5.4 Create WBS		5.5 Validate Scope 5.6 Control Scope	
	Project Schedule Management		6.1 Plan Schedule Management 6.2 Define Activities 6.3 Sequence Activities 6.4 Estimate Activity Durations 6.5 Develop Schedule		6.6 Control Schedule	
	Project Cost Management		7.1 Plan Cost Management 7.2 Estimate Costs 7.3 Determine Budget		7.4 Control Costs	
	Project Quality Management		8.1 Plan Quality Management	8.2 Manage Quality	8.3 Control Quality	
	Project Resource Management		9.1 Plan Resource Management 9.2 Estimate Activity Resources	9.3 Acquire Resources 9.4 Develop Team 9.5 Manage Team	9.6 Control Resources	
	Project Communication Management		10.1 Plan Communications Management	10.2 Manage Communications	10.3 Monitor Communications	
	Project Risk Management		11.1 Plan Risk Management 11.2 Identify Risks 11.3 Perform Qualitative Risk Analysis 11.4 Perform Quantitative Risk Analysis 11.5 Plan Risk Responses	11.6 Implement Risk Responses	11.7 Monitor Risks	
	Project Procurement Management		12.1 Plan Procurement Management	12.2 Conduct Procurements	12.3 Control Procurements	
	Project Stakeholder Management	13.1 Identify Stakeholders	13.2 Plan Stakeholder Engagement	13.3 Manage Stakeholder Engagement	13.4 Monitor Stakeholder Engagement	

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Figure 4. Main knowledge areas in Project management (based on: PMBOK 2017).

As seen from Figure 4, PMBOK (6th edition, 2017) identifies ten Knowledge areas and five phases in traditional project management.

Importantly, project management in the field of IT has its distinct specifics which is discussed in the next section.

### 3.3. Background on IT Project Management

A project that deals with IT infrastructure, information systems or computers are called an information technology (IT) project. Examples of IT projects include software development, website development, mobile application development, network configuration & deployment, software roll-out, database management etc. (Projectmanager.com 2021)

IT Project Management (ITPM) is the planning, scheduling, execution and reporting of IT projects. IT projects are unique, or most of all, other industry projects have some level of IT component. IT projects tend to be very wide in scope, so IT project managers need to manage risk, integrations, software updates, scope creep and other deviations that risk the project execution as planned. IT projects require more than the standard project management tools and skills to complete. IT projects can be based on the six phases, which are described in the following chapters.

*Initiation* is the first phase of an IT project. This is where the project objective is identified. The project proposal is built, including a business plan that meets the needs of the project. A feasibility study can be conducted to verify the business plan.

*The definition phase* can be started after the project proposal has been approved. In this phase, the objectives of the project are finalised and requirements identified. High-level project scope is defined, and the project plan is created with budget and resources planned.

*The design phase* of an IT project finds the best solution for achieving project goals. This could include creating multiple designs and prototypes to find the best possible solution. When the design has been chosen, specifications of requirements for the development team are created and shared.

*The development phase* is when the resources like the development team are assigned with tasks and tools are selected. Technicalities are outlined, and hardware resources like computers, servers etc., are requested. The project plan is updated to have as straightforward as possible plan for the implementation phase.

*The implementation* phase is often the longest part of the IT project. The project manager monitors the progress and controls scope, schedule and risk. In this phase, the project deliverables are created.

*Follow up* phase is the last phase after implementation is completed. The final project is delivered, and work after the project, like software maintenance, is started. This can include setting up support teams, training customers to use software and so on. This phase ends the IT project.

An IT project manager is responsible for executing IT projects on time and budget. IT project managers are expected to know about computers, operating systems, computer networks, software and service desk support operations. These skills are required to communicate with technical experts and other stakeholders fluently. A specific skill of an IT project manager is the ability to explain complex technical issues in a simple way. The skillset of an IT project manager is unique as they focus on the IT needs of an organisation.

IT Project Management Methodologies can be characterised in traditional and non-traditional methods. The traditional method is called the waterfall method, which breaks down the tasks into a sequential linear project phase. There is a dependency of each phase on the previous phase delivery. The Challenge of this methodology is the high need for planning and vulnerability to changes that are most likely to come and eventually fail the project. Agile methodology is a more iterative approach where smaller deliverables are delivered through the project to gather continuous feedback and adapt to changes.

The hybrid methodology is the most popular methodology, which combines waterfall and agile to create a more flexible and still structured approach more suitable for IT Projects. Many companies try to take "the best of both worlds" approach when executing their IT projects.

### 3.4. Remote and Virtual Work in IT Project Management

Organisations that have international virtual teams and are able to utilise the workforce efficiently have global access to human resources that allow them to compete globally. (Brewer 2015)

Virtual teams use remote communication tools and remote ways of working. Team could be distributed over several continents and timezones, which brings additional challenges to project management. Remote working in such scale as what we have seen now has not been there before.

IT-projects have been led with teams located at same location or with distributed teams, so that individual teams are located in same location, but the project is global. Some companies allow people work from home, but mostly there is face to face collaboration at least in some level. Due to COVID-19 restrictions in collaboration basically all companies have been forced to move to remote way of working if possible. This environment creates new challenges for project management as each individual member of the project team is located in different location.

In a virtual project team there is at least one member of the team working remote from others. Globalisation, outsourcing and utilizing use of the most experienced people wherever they are based or flexible working has caused virtual projects to be on the rise. A Project manager needs to have skills to deliver projects virtually. (Pullan, Prokopi 2016)

Based on Dr Penny Pullan's survey (Pullan, Prokopi 2016), the main challenge of virtual work is to engage remote participants. Other challenges identified were missing out on dynamics and nuances of a conversation, working across time zones, working across different cultures and building trust. The critical issue for project leaders, based on the survey, was monitoring work done, a different understanding of the same term, conflict management, not being able to spend time with the team as if the team was co-located, using technology.

The survey also conducted a questionnaire where people were asked what made virtual teams work together more productively. In this free form questionnaire, the most popular answer was to meet people face-to-face either at the start of the project, once a year or more regularly. Other common suggestions included regular communication, clear roles and responsibilities, meetings with agendas, transparent methods for work, shared vision

and outcome, open team culture with each team member able to ask help from others, use of video over audio etc.

Successful teams engage the team members and collaborate with true to one another. The team works together to achieve common goals and outcomes. Virtual teams allow the utilisation of people with the best skills and talent in specific areas independent of the location. Virtual teams also enable the use of partners and freelancers more efficiently. Culture, language, organization, generations and time zones affect building trust and can create challenges in a remote work environment. Some best practices are described in the following paragraphs.

*Virtual meetings* are the core of effective virtual teams. Having regular contact with the remote team will help the team to feel part of the team, but effective and engaging meetings need more. Straightforward ways of working need to be agreed upon from the start of the project. Typically these include muting if in a noisy environment, polling people to make sure that everyone gets to say their opinion on the meeting subject. This helps to get the team to focus on the meeting agenda and not mentally drop out of the meeting.

A *communication plan* in a virtual environment is created to match the individual needs of team members. The communication plan should also include how team members interact with each other during the project. The technology used to share the relevant information and have efficient collaboration should also be planned. Continuous feedback and monitoring enable improvement of communication through the project.

*One-to-one interaction* is essential to create interaction with individual team members. Taking time to listen to people's concerns and questions helps individual team members to overcome their obstacles during the project. One-to-one interaction helps to build trust both ways and helps people to prioritize their work and engage with the project. Appreciation and team engagement are essential parts of project leadership.

*Developing virtual working skills* enables project success and gives team members valuable skills in upcoming projects. The project manager should know the current skillset of a project team and actively support people with their development to utilise the best potential of each team member.

Summing up, although the above discussed basic project elements, such as scope, schedule and budget management remain the same, yet remote work brings many new elements to IT project management. These elements are discussed in Section 4 based on the results and key findings from the current state analysis and Data collection round 1.

## 4. Current State Analysis of Remote Work in IT Project Management during Covid-2019 Pandemic

This section describes the results of the current state analysis that investigated the ways of working onsite and remotely. The current state analysis is based on the interviews done in data collections round 1.

### 4.1. Overview of the Current State Analysis Stage

This section describes the results of the current state analysis for different areas of project management while working remotely or onsite at same location. The current state analysis was based on the interviews with the representatives of IT consultancies and discussed working practices and challenges during the Covid-2019 pandemic in the areas related to IT project management.

The current state analysis was conducted in three steps. First, the analysis focused on describing the analyzed area in IT Project Management in remote work. Second, the analysis presented the findings, and third, the findings are condensed into the strengths and weaknesses, as well as selected focus areas for improvement.

All people interviewed were remote working at the moment of interviews. Different topics were discussed in more detail depending on the person interviewed. However, the results from the interviews and discussion focus on two main directions in IT project management - managing the “triple constraints” (scope, schedule and budget) and “other knowledge areas in project management”. Importantly, the results of interviews and discussions on the second direction unanimously pointed to specific challenges in remote work related to “team dynamics” and “communications”. Therefore, these two areas were analyzed in more detail below.

The current state analysis starts with the insights on the “triangle constraints” in remote work in IT project management in conditions of Covid-2019 pandemic.

### 4.2. Description of the Analyzed Area in IT Project Management

The following areas in IT Project management were analyzed, as described below.

#### 4.2.1. Scope

Scope management was discussed with project manager consultants during the interviews. These discussions included the general topics and remote work impact around scope management in their assignments.

Scope management is an essential part of the success of any project. Initially, the scope needs to be defined, communicated and restricted. Risk and unclear areas need to be identified. Having a clear and well-defined scope is essential, but also it is essential to list the items that are not in the scope of the project. Scope management is a critical factor in any successful project.

While having the team not being initially able to sit down and discuss the details of project implementation, this brings new challenges to set the scope enough to execute. This increases the importance of documentation and scope visibility. It is an excellent practice to have structured requirements and scope that can be communicated to different stakeholders.

In the execution phase, it is essential to see where the project tasks are and the completion status for each work package. Following up on the progress and keeping the scope need to be robust activity and not overwhelm the project team with unnecessary status reporting.

Scope creep is defined by PMI as activity of “adding features and functionality (project scope) without addressing the effects on time, costs, and resources, or without customer approval” (PMI, 2008, p 440). However, this is a more or less regular activity in a project, if there is a business reason and proper change management processes are in place. Though more often scope creep happens more or less uncontrolled and is causing the addition to the scope, which would need more resources simultaneously.

Eventually, the project comes to a situation where the project scope is done, and the project can be closed. Without proper scope management and change management, processes will be overrun in a project, and it is unclear if a project is completed or not.

While remote working with the team project manager needs to have tools and processes to be on top of scope and status. It is also important to remember not to overwhelm each project team member with unnecessary status reporting.



Increased need for documentation was brought up in the interviews; remote work seems to increase documentation as the communication channels are limited to the tools available.

#### 4.2.2. Schedule

Schedule management discussions were done with project management consultants during the interviews. Discussions included general topics and remote work impact around schedule management in their assignments.

Planning the project timeline is one of the critical elements of success for any project. There can be dependencies related to the project blocked by the project results delayed. Making a realistic time plan for a project is demanding work, and there should be a relevant planning process in place in the beginning, to make it happen.

During a project, following the timeline and communicating it to the project team is one of the critical responsibilities for the project manager. It is essential for the project's success that all team members know deadlines and can communicate any possible deviations to the project manager.

There should be a solid time plan up to date for anyone in the project team to access. One of the most common ways to present scope and schedule is a Gant chart, identifying and marking the dependencies.

According to *Respondent 1* there was not too much changes to project schedule management after becoming a fully remote team. Company was utilizing tools for remote work and some part of the work has been done remotely for some time. In general the schedule of the projects was limited to prioritized development and customers seem to postpone the projects with less priority scope.

*Respondent 4* confirmed in the interview that company has had the tools for effective schedule management virtually for some time and no impact was seen.

Most of the interviewed people felt sufficient tools available for schedule management, though communication is an issue.

#### 4.2.3. Budget

Budget management was discussed mainly with project manager consultants during the interviews, discussions included general topics and remote work impact around scope management in their assignments.

Budget planning is another part of a project initiation and planning process. Finding a realistic budget needs multidimensional understanding of the resource capabilities and project dependencies. Creating a realistic budget can take some time, though it is good to have multiple reviews and analysis in the initiation phase in order to avoid any surprises which there most probably will be.

Budget follow up is typically done via tool and keeping budget follow up is project managers responsibility.

Most of the interviewed people mentioned that working remotely does not bring too much new elements to the budget management process, though it can create some new and remove some, for example travel etc. as project team is working remotely online.

According to *Respondent 2*, remote work causes the reduction of the travel costs in project budgets as there is no need to travel when full team is working remotely.

It became clear from an interview with *Respondent 1* that most probably many companies have tightened up their cost budgets and this shows as declining amount of assignments for IT Project managers. Reduction in travel costs was seen as a positive side of remote work.

Travel costs were mentioned in some of the interviews as decreased cost. Consultant company representatives mentioned that hourly rates can have an impact as customer's see the remote work as a benefit that could reduce hourly prices.

### 4.3. Description of Other Selected Knowledge Areas

The current state analysis also gathered insights on the other Knowledge Areas in IT projects management. The most significant and interesting results relates to two areas - Team management and Communication. They are discussed below.

#### 4.3.1. Team dynamics

Team dynamics was brought up by all the interviewees when discussing remote work. Many concerns and questions were around team dynamics and how the team works in the new setup.

A project has a project team, typically from different departments or areas of competence. Team members can be familiar with working with each other or new to each other. A team will divide into sub-teams based on the size of the team. Creating an efficient and cooperative motivated project team is seen as an essential part of project success by the interviewees.

While working in same location all team members get to know and meet each other and it is easy for people to get introduced to their new project team. While working remotely this becomes much more challenging as there is probably not so many possibilities to meet and get to know your colleagues. New members can also be added during the project and they need to have proper induction to the tasks and project status as well as their project team members.

It was mentioned in interviews that efficient project teams work very well together and nobody works alone. There should be the same approach while working remotely, though this can be a bit more challenging, specially at first as this is new situation and requires much more from the individual to be active.

According to *Respondent 1* there is increasing need for remote and virtual working skills in the current assignments and also in the future assignments. The virtual and remote working skills will be more valuable for project management in the future. Conflict management skills are also seen important.

Interview with *Respondent 3* revealed some good practices for remote work. These included setting up sub teams and having people doing pair programming with "nobody works alone" principle seems to also work very well in a remote environment.

Dividing project team into smaller sub teams was seen as a good idea in remote setup. Going forward having people working as pairs will also create more interaction and feeling of belonging to team and increase communication.

#### 4.3.2. Communication

Communication was discussed with all interviewees. Discussions included general topics and remote work impact around communication management, both in projects and communication as a whole.

According to project management consultants interview results, the key area for project manager is the communication, this includes communication towards project team and stakeholders, including management etc. There should be proper project communication plan done in the beginning and kept up to date during the project.

All the interview results show that tools available support very well remote way of working and there are many options based on company's needs. Typical situation is that there is overlapping tools and many tools for remote communication.

According to *Respondent 5* there is increased demand for people with good communication skills in the market. It is visible that all assignments have remote work as a basis and customers expect fluent communication skills in English in most of the upcoming assignments.

According to *Respondent 1* there is more need for communication and team management while working remotely. It became clear in the interview that there are some communication issues causing conflicts and communication and conflict management had become more increasingly part of daily work.

Interview results of managers show that typically in projects there is too little communication which causes misunderstandings and miscommunication. There can be

also too much communication and specially with regular meetings there should be really good preparation, purpose and planning before sending out the invitation to team.

What project manager should have is a balance of regular meetings, informative messages and smaller hands on design meetings. Also full transparency and accessibility is promoting easy communication flows while working remotely.

A customer manager mentioned that there are concerns around innovation and how to replace the white boards at the office in the virtual work. A lot of innovation and technical planning happens when group of technical experts gather around a whiteboard and start drawing their ideas on the board. Having white boarding remotely was seen as a next step for the company to investigate.

#### 4.3. Key Findings from the Current State Analysis

The findings from the current state analysis in relation to the “iron triangle” and team management and communication are discussed below. This section ends with the summary of strengths and weaknesses in these areas and selected focus areas for improvement.

##### 4.3.1. Scope

Scope management in remote environment can be challenging and sharing the plans, status and progress should be in focus. Each team and individual should know in some level the full project scope and specially own areas scope must be clear and traceable.

Based on the interviews there seems to be the proper tools in place for scope management. While working remotely, documentation of the scope becomes even more important than when working in same location. Project managers are expected to show a structured scope management competence and use the tool available for remote work in a specific company.

There was no specific requirements for project management consultants identified in the interviews around scope management.

#### 4.3.2. Schedule

In remote environment it is important to have a clear baseline for schedule so that teams know the deadlines and what needs to be completed by what timeline.

Discussions related to the schedule management in projects did not bring any major elements related to the projects, though some companies might delay the start of non critical projects some time due to other challenges related to current environment.

#### 4.3.3. Budget

Budget planning should involve remote working related costs / savings. Generally based on the discussions remote work could reduce hourly rates as more consultants become available and companies feel the remote work hourly prices could be lower than before. Not all customers have communicated this, but some.

Managers told that their companies have allowed purchases related to home office furniture and tools. Some companies have let people to take their office equipment temporarily to home for remote work.

#### 4.3.4. Team dynamics

Team dynamics and co-operation is probably the most impacted area while remote working. Project manager should make sure that no one is left alone and team is still working together rather than individuals contributing single tasks.

Based on the interviews, introducing new team members should be planned more in detail and structured as there is no add hoc, so called "coffee break" communication or at least there is less of it.

Some companies had planned more pairing and mentoring in order to continue working as an efficient team.

#### 4.3.5. Communication

Communication was mentioned by all interviewed people in the data collection. There seems to be tools in place to make video calls, meetings, audio and collaboration.

Challenges described are around how the tools are used. There are some overlapping communication, several social media tools, overwhelming meeting practises as amount increases in lack of face to face collaboration.

Remote communication was identified as key competence and some good practises were identified in the interviews. Also long term impact on lack of face to face communication remains to be seen.

#### 4.3.6. Strengths and Weaknesses of Remote Working in IT Project Management

Having an efficient remote workforce can be considered a strength as there are no limitations on location and time consumed in travel. Time going to work can be utilised more efficiently as there is no need to change location. The workday can start earlier and also divide to match people's schedules. Flexibility can create a more motivated and balanced workforce.

Some interviewed people mentioned that forcing ways of working to be structured and documented can also be considered as a strength as there is not so much room for hidden communication, and documentation needs to be up to date more or less at all times.

Based on the interviews, weaknesses of remote work are more or less related to team co-operation and individuals. Some individuals or part of the team who are used to work with each other probably can execute as planned, and location does not so much matter. There is still quite a significant risk of some hidden communication is missed, and some individual issues are not solved or cause delays.

Interview result show that also well-being of the people is a concern. On the other hand flexibility brings some balance to personal and work. Some people see lack of human interactions as a risk for the people well being in the long run. Companies have started many activities around people well being and main trend is to try to mimic the office like environment.

Table 2 below shows the needed skills for communication and team dynamics in a remote work environment.

Table 1. Skills currently missing or needed to be further developed in IT project management, based on CSA results.

Communication	Team dynamics
1. Communication planning	1. Conflict management
2. Technical skills	2. Influencing
3. Interpersonal skills	3. Motivation
4. Feedback	4. Negotiation
5. Documentation	5. Team building
6. Presentation	
7. Meeting management	

Thus, this thesis will focus on two main weaknesses and solutions to those selected for further exploration and creating the improvement proposal:

- Communication
- Team dynamics.

As project fundamentals remain the same, there is quite a difference in communication and team dynamics while having team working fully remote. Results of the current state



analysis show that communication and team dynamics are main impacted areas of project management in a remote work environment.

Literature and best practices how to address the identified weaknesses are discussed in Section 5 below.

## 5. Existing Knowledge on Communication & Team Dynamics for Remote Work IT Project Management

This section describes the skillset important for effective communication and team dynamics in IT project management for effective remote work. This section addresses the weaknesses identified in remote IT project management in Section 4. This section selects best practice and suggestions for the skillset from the existing knowledge and literature.

### 5.1. Communication

According to the Project Management Institute, over 80% percent of project manager's job relates to communication. (Michael Campbell 2009). Also, number one factor identified for project failure is communication. While projects which had strong communication and good plan to share information are typically more successful.

*Communication* is all about perceptions, much of our understanding comes from perceptions, every time you communicate with people, your project team, stakeholders or anyone else you need to think their perspective. Consider how people's perspectives affect the understanding. Analysing your audience before communicating anything is a good practice. What is the information that people need to know? What feeling or attitude does the message I send communicate in? Based on the answer, you need to alter the tone. You need to select the best medium to deliver the message. Who delivers the information? How the message will be delivered? In an example case, there was a basic flaw that project manager had fallen to a habit of communicating with email only. As email is often ignored most of the information was lost. To recover a solid communication plan was built.

There are different needs for communication in the project. Some communication is better face to face and some can be done asynchronously via email etc. Replacing the face to face communication in online world is the challenge that needs to be tackled. (McKinsey 2021. *Reimagining the post pandemic workforce*)

Technology has advanced a lot over the years. Still, nothing can entirely replace face-to-face interactions. Replacing face-to-face communication is because so much communication is nonverbal and because communication involves misleading,

potentially argumentative, or difficult subjects. Face-to-face communication is more rich, informal and creates emotional connection. Trust, collaboration, innovation and culture create basis for project communication, and these are most likely created successfully in face-to-face interaction.

The media richness theory defines the "richness" of the message aligned with the medium's capabilities. Selecting a communication medium for a specific message is based on reducing equivocality or possible misinterpretations. The equivocal message is unclear and challenging for the receiver to decode. For example, a simple meeting invitation message is straightforward to communicate with a short email. However, a more detailed message about a person's work career and performance would be better to communicate with face-to-face communication. (Wikipedia 2021)

Communication via email and text can sometimes be better than online meeting for example. Email gives people time to process information and think responses after they have had some thought on the subject. When developing trust or discussing difficult work topics, like promotions, salary increases or performance review it is good idea to prefer face-to-face communication. Next best choice is to use videoconferencing, which gives some nonverbal information in addition to audio.

Even if work can technically be done entirely virtually, it is good practise to meet everyone in person, if possible at least one or two times a year. Trust-based relationships develop and deepen when meeting people in person. This is challenging in remote work environment. (Wikipedia 2021)

*Communication* skills in IT project management are almost as critical as technical work done in a project. Having proper communication to keep stakeholders up to date with the project status and objectives ensures no unmanaged expectations during the project. The project manager needs to communicate the unexpected events, but ongoing regular, well-planned communication with stakeholders and the project team ensures engagement from the stakeholders and the project team. Project communication management includes planning, managing and monitoring the communication. (PMBOK 2004)

*Communication planning* starts with deciding your objectives and finding out what is the purpose of your communication. In a remote work environment, this also includes the tools used for communication. Define the audience and list the project stakeholders.

Stakeholder list includes team, sponsors, customers and other key people interested in the project results or impact. For each type of communication there should be message defined. Project key communication includes scope, schedule, budget, objectives, risks and deliverables. Medium to deliver different message can vary from email to online meeting in a remote environment. Communication timeline or frequency defines when and how often the message will be delivered. The project communication plan summarizes all information related to communication, including the message, audience, description of the message to be sent, medium and timeline. A project communication plan is created in co-operation with project stakeholders and it is important to get feedback on the communication preferences of each stakeholder. For a project manager, good communication often starts with listening. Taking all the aspects of communication into account and capturing details in communication planning is important for successful communication in a project.

*Managing project communication* is the next step after creating a communication plan and getting approval. Project managers skill to communicate and ensure that plan is executed accordingly is vital for successful communication within a project. Project communication management includes collecting and analysing data, creating the messages, distribution of communication, storage of communicated message, retrieval of documents or files and disposal of the materials after the project.

*Monitoring* project communication involves monitoring and controlling the communication through the project. Communication monitoring ensures that correct information reaches the correct audience as intended. Project communication monitoring is included in the project plan.

This includes ensuring that communication went out as planned, communication was received by proper stakeholders, messages were understood and relevant feedback was provided to relevant project members. Type of monitoring should be part of the project communication plan.

The communication skillset of a project manager includes presentation skills, professional writing skills, ability to listen and ask questions, expectation management, motivation skills, conflict management skills and the ability to summarize complex topics based on the audience.

## 5.2. Team Dynamics

Team efficiency and success depends on the role, behaviour, performance, trust and attitude of the team members in a form of innovation and execution of plans in the project. Building an efficient team is an asset of the organisation. An organisation's success is not depending on the vision or the marketing of the products. It's an effort and efficiency to the team that determine success or failure of the team. (Hiriyappa 2018).

In a well performing team, people have worked with common goal and trust, listening the member views and opinions and have established mutual respect. Team members share the information and knowledge relevant to the project openly and support each others in finding solutions to issues. Responsibility is taken and given as well as work is done efficiently. Management encourages the members to discuss and suggest ideas in meetings. Team leader encourages the members to discuss and suggest ideas in meetings. Also concerns and conflicts are brought up openly and solutions openly discussed.

Typical well performing team is collaboration of innovative technology, skills, ideas, performance, committed, trust and common goal of the members for accomplishing committed goals

While having a clear communication plan is important in a project for project manager, it is also important to have an efficient self organising team which performs and tackles the issues at hand openly. Team building becomes more challenging as the individuals are working remotely and some level of connection is lost between team members.

The base of trust becomes even more critical for any well-functioning team in a remote work environment. "There must be mutual trust between the manager and the employee for employees to be engaged in their roles and productive in remote work situations." (Gartner 2021. Managing Remote Teams During the Coronavirus (COVID-19) Outbreak) Building trust in co-located environment, there are more trust building opportunities during casual interactions daily. In contrast, in remote teams, trust building opportunities do not exist, so the activity of building trust needs to be more intentional. According to Gartner, employees at high trust organisations experience 106% more energy when working, 50% better productivity and 76% higher engagement. (Gartner 2021. Managing Remote Teams During the Coronavirus (COVID-19) Outbreak)

There is no unofficial communication, no coffee machine to stop by at, people don't meet colleagues in a co-located office. It can lead to situation where some of the needed project information is lost and people are disconnected from the team. Team engagement needs to be supported by management in situations where team engagement is at risk and everyone in the team should have the information to complete their work as planned. (Gartner 2021. Managing Remote Teams During the Coronavirus (COVID-19) Outbreak)

Having efficient team building and development is essential also in remote projects. Learning from mistakes and keeping people connected to the project team becomes more important in a virtual world. Having a project manager not being constantly in the centre of everything than a team being self-organised and taking the initiative and sometimes failing on their own is an efficient team.

Skillset for a project manager related to team dynamics includes leadership skills, interpersonal skills, emotional intelligence skills, coaching skills and mentoring skills. These skills are described more in detail in the following paragraphs. (PMBOK 2004)

*Leadership* skills are essential throughout the project lifecycle. Today's complex world with virtual teams and team members originating from different cultures demands even more excellent leadership knowledge and capabilities than before. The success of a project is often defined by project leadership than by technical factors.

*Interpersonal* skills and capability to adapt personally, include the appropriate use of social power, which is essential for building relations in a successful project execution. The most successful project managers have integrity, values and genuine concern for their members of the project team. They are also not afraid to take on challenging issues and pull appropriate stakeholders and team members to facilitate conversations and determine resolutions. These soft skills are essential for a project manager when developing the project team.

*Emotional intelligence* skills is an characteristic of a person's social skills. "Emotions are crucial in helping people make sound decisions. Logical thinking is often only rational justifications for our emotional decisions (Burgan & Burgan, 2012). EI is the ability to sense, understand, manage, and apply emotional data in a way that helps us in leading, motivating and influencing team members and project stakeholders. Individuals with high EI are better at managing conflicting paradigms, managing their own emotions, and

aligning the goals of groups (Davis, 2011, p 42). Emotional awareness and emotional knowledge are relevant to organizations utilizing human manpower, and humans naturally expressing emotions, both individually and when interacting with others.” (Thuerbach, C. 2013)

*Coaching* skills are often combined with mentoring skills. “Coaching has become very popular, but many people are confused as to what it means. Coaching is about helping other people succeed now and in the future through an action-oriented dialogue to reach their personal goals as well as the project's goals. The techniques and methods used are mostly questions, encouraging and challenging the person to do something, and to give feedback. Coaching can thus be defined as the process of challenging and supporting a person or a team to develop ways of thinking, ways of being and ways of learning. The goal is to identify and attain personal and/or organizational goals.” (Thuerbach, C. 2013)

*Mentoring* skills and coaching skills are related, but they are not the same. Mentoring is being a positive role model that gives support on issues more focused on the mentee's personal development. Mentor can make suggestions and relationship is more informal. There is no evaluation of the success of mentoring and it is rarely connected to job advancement. Mentors can give support for their mentee's to get over obstacles, based on their experience and support.

#### 5.4. Conceptual Framework of This Thesis

Communication and team dynamics are the elements in focus for the conceptual framework of the thesis. Having good communication flow and team dynamics that empower trust and knowledge sharing, in addition to highly skilled team, lead to successful project execution with high performing committed team to match the common goals.

Below picture shows the elements of the conceptual framework and enablers for successful team dynamics and collaboration.

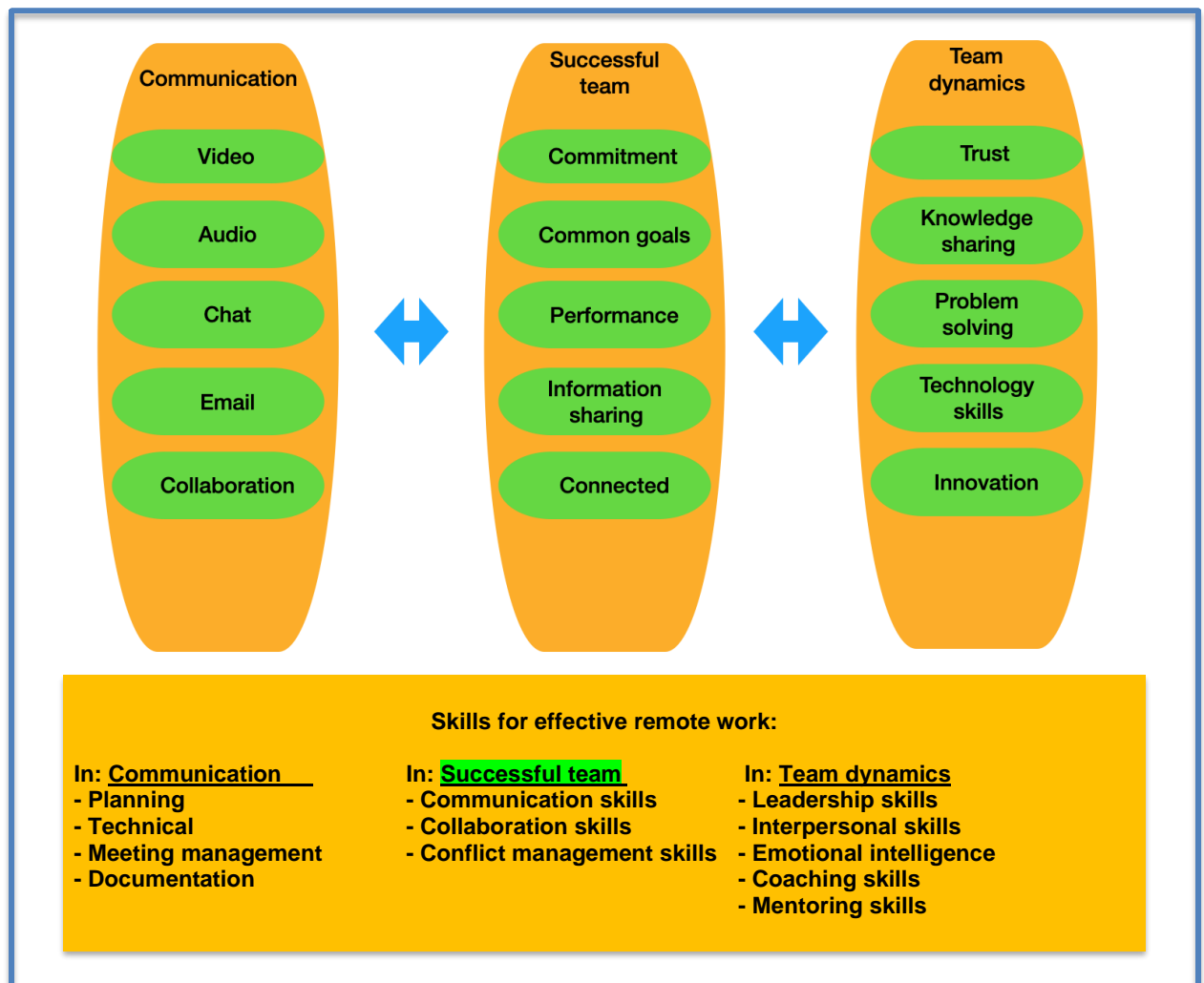


Figure 5. Conceptual framework for the proposal building.

As seen from Figure 5, first, having efficient communication flow within the team is essential, utilising video, audio, chat and email in a good way, team collaboration is emphasised. Communication plan ensures that different communication needs are addressed with the correct frequency and tools. Efficient planning also ensures that there is enough information sharing and information overflow risk is mitigated.

The skills related to effective communication in remote work include (1) Planning, (2) Technical, (3) Meeting management, and (4) Documentation.



Second, successful team is based on the factors above which then show as team commitment towards common goals and high performance while team being connected and sharing the results of innovation.

The skills related to effective team building in remote work include (1) Communication, (2) Collaboration and (3) Conflict management.

Third, team dynamics build on trust empower people sharing knowledge, actively solve problems and utilise their technology skill for new innovations. Highly skilled technical professionals share fluently their knowledge with newcomers and junior team members. Problems solving is encouraged and issue ownership is shared among the team.

The skills related to creating effective team dynamics in remote work include (1) Leadership skills, (2) Interpersonal skills, (3) Emotional intelligence skills, (4) Coaching skills and (5) Mentoring skills.

Proposed solutions and findings are described more in detail in Section 5.

## 5. Building Proposal for Best Remote Working Practices for IT Project Management

This section merges the results of the current state analysis and the conceptual framework towards the building of the Proposal using Data 2. The proposal is built based on the interviews and the suggestions from literature and best practice discussed in Section 4.

### 5.1. Overview of the Proposal Building Stage

The proposal for the study was build on several sources: first, informed by the results from CSA, second, by analysing what literature has about the subject and, third, by collecting data 2 from relevant experts.

The proposal incorporated best practices found from literature and insights put forward from interviews and discussions, from both Data 1 and 2. Suggestions based on experiences came from the interviewees.

### 5.3. Initial Proposal

The initial proposal is divided into two areas: Communication and Team dynamics, based on the selected focus areas of this Thesis.

#### 5.3.1. Communication

Having a proper stakeholder analysis identifies how and what should be communicated to different stakeholders by who and how, keeping the audience perspective in mind. Usually it is a good practice to have a person who is on top of the task have the communication responsibility as there is a risk of information loss if someone else does the communication. Sharing the communication responsibility empowers trust and openness.

Planning the internal project communication empowers team and makes information transparent and open. Good practise is to keep the team involved in the planning and take feedback how the communication plan is working.

Information overflow is a relevant risk in remote project management. Having a well structured communication plan reduces the risk. Gathering feedback and adjusting on the results is a good practice.

In efficient team communication, people meet and share opinions equally, listen to each other and continue work offline and connect individually.

Below, an example communication plan with best practices. As a general advice, the team should keep specially regular meetings limited and well organised not to overload the project with meetings, though having enough communication at the same time.

Table 2. Example of a project communication plan.

Description	Frequenzy	Method	Audience	Best practises
<b>Daily meeting</b>	Daily	Online	Project team	Have meetings short and well structured, stick to high level and breakout to other meetings for detailed discussion
<b>Weekly status</b>	Weekly	Online	Project team + stakeholders	Have prepared materials and involve team to communication
<b>Workshop</b>	On demand	Online	Project team	Prepare agenda with workshop outcome. Keep the timeline and engage people
<b>Steering group</b>	Monthly/bi-weekly	Online/Teams/Zoom	Project steering group	Have a standard presentation with clear high level status. Take actions for more detailed discussion.
<b>Project group</b>	On demand	Online/F2F	Team members	Empower people to meet f2f if possible in small groups or 1to1.
<b>Social media</b>	On demand	Teams/Slack	Team members	Create proper channels for communicating general items and empower 1to1 communication
<b>Coffee breaks</b>	Weekly	Online/F2F		Have some informal coffee break or other meeting to discuss non work related things

Methods for communication in remote work environment become more important than when co-located in same location. Tools can be utilised to have documentation afterwards of the meeting results. Using social media to capture different discussion

threads and create a knowledge bank for the future could be considered as strength of remote work.

Meetings and interaction should prefer video calls as it is the richest form of communication in remote environment. People can pick up the conversation details easier when you can see the person and their body language. You can also utilise screen sharing to explain your topic which makes it easier for your audience to follow. Video calls engage people in the conversation and create feeling of a real face-to-face meeting.

In relation to the skillset development, the following skills need to be developed:

First, *Communication planning* skills in a remote work include planning the communication so that the best media and frequency for each target audience is selected.

Second, *Technical* skills to utilise the tools available are crucial for efficient communication flow. Utilising efficient meeting tools, social media tools and project management systems in a remote work is essential skill for an IT project manager.

Third, *Meeting management* skills include having clear agenda, purpose and outcome of each meeting with quality minutes of the meeting recorded.

Fourth, *Documentation* skills include constructing clear messages when sending out communication, having clear and organized document management plan.

### 5.3.2. Team dynamics

Remote work creates many possibilities for interaction with the tools available. Flexibility is one benefit of remote work. There should be trust within the team and management to utilise the benefits and at the same time commonly agreed rules how the flexibility is used in the company. Individuals should have the right to define when and how they perform the tasks accordingly to the goals and targets set. Some basic practises become even more important when working remotely, for example attending meetings and showing up on time.

Knowledge sharing should be empowered and highlighted. There should be environment where knowledge is shared by the best experts in area in a structured way, keeping mind that senior team members are not overloaded with the tasks.

It is important to have team connected and engaged competence wise also in remote work environment. To achieve this it's a good practise to have individuals paired for example with a mentoring structure for and pair programming. Mentoring structure creates a knowledge sharing atmosphere and can bring newcomers and junior team members to proper competence level. Also it is important to share the mentoring responsibility, so that mentoring does not overload individuals.

With pairing team members so that there is a "no-one works alone" principle, many benefits can be achieved, for example in a software development project:

- Code quality with peer reviews
- Task progress by reducing points for a need to ask for consultation
- Knowledge sharing for innovation
- Code maintainability as there are more people aware of code element and structure
- Result matching the requirements with more than one person working
- Attrition impact mitigation

Problem solving and getting support and feedback can be emphasised by creating a lean and open organisation where issues at hand are communicated openly and team feels that there are common goals to be met. Good practise is to have open channels for discussions around different topics in addition to individuals connecting with each other. Creating a channels for communicating issues at hand also creates a knowledge bank that can be referred when issues arise to see if the problem has already been solved by someone.

There are eight key interpersonal skills for project managers are described by The Project Management Institute, one of which is team development. Team development activities involve goal setting, defining team roles and procedures, and establishing work processes, including communication, conflict management, motivation, and leadership.

Team development is not a one-time activity but is a continuous process throughout the project life cycle. (Levin, G. 2009)

First, *Use of communications and collaborative tools and techniques* with available communications technologies. The project manager needs to ensure that the same collaborative tools are available to all team members no matter where they are located. The team must have the access to same collaboration and project management tools regardless of their location.

Second, *Collaborative leadership* enables diverse points of view to conflict management. The project manager cannot meet each stakeholder in different location. Leadership role is expected, by the team, to make sure that team member communicates with the project manager and other team members based on specific need. Team members share the decision power, and there is trust among the team members as everyone's opinion is viewed more equally than in a co-located setting in which one's status, age and experience is easily known.

Third, *Working* on virtual projects is more likely to include people from different cultures than in co-located projects. Team diversity can drive collaboration. There should be cultural understanding and respect of the diversity of the project team. In practice this means that common language within the project team, including both verbal and written is agreed upon. Holiday planning is including different common holidays in different cultures.

Fourth, *Conflict management*, in virtual teams, becomes more important than on a co-located project setup. The project manager takes action for resolution when a conflict is identified. There can be different technical views on issues and also personality issues causing conflicts. Sometimes conflicts may exist within a team that are not apparent for other team members not involved actively on the issue at hand. The project manager should support team members to actively find resolution and to have open dialog within the project team.

Finally, *Innovation* is a key for any company's success. Remote work creates some challenges as there are no whiteboards and coffee breaks to discuss the innovative ideas and suggestions. Some tools can be used to mimic the process, but there is no clear evidence that does this really work. This is something to focus in the future.

### 5.3.3. Summary

Table 3. Initial proposal for the skillset needed for efficient remote work in IT project management.

Communication		Team Dynamics	
<i>Methods &amp; Tools</i>			
<b>Tools</b>	Select proper media for each communication. Prefer Video over Audio.	<b>Trust</b>	Empower trust and let people utilize the flexibility of remote work with clear ways of working.
<b>Collaboration</b>	Emphasize collaboration within the team and create pairs and sub teams.	<b>Knowledge sharing</b>	Create knowledge sharing atmosphere in the project where people actively support each other and tackle the issues at hand. Create induction plans for newcomers and junior team members.
<i>Project manager skills</i>			
<b>Planning</b>	Create clear communication plan with proper media and frequency for each target audience.	<b>Leadership</b>	Use collaborative leadership and share the decision power within the team and empower the team to be brave to make decisions. Have an "ok to fail" approach.
<b>Technical</b>	Have excellent knowledge of the communication tools available for communication and select correct tools for each purpose.	<b>Interpersonal</b>	Form 1 to 1 relations with the team members as much as possible and get to know the team members.
<b>Meeting management</b>	Keep meetings effective with clear agenda, invite correct people and share the meeting minutes.	<b>Coaching</b>	Coach people to develop their ways of thinking and learning.
<b>Documentation</b>	Create document management plan and keep documents organized and accessible for target audience.	<b>Mentoring</b>	Support the project team to make good decisions with advice when needed. Promote self-organizing and self-confidence.

The initial proposal validation is described in Section 6.

## 6. Validation of the Proposal

This section reports on the results of the validation stage and points to further developments to the initial Proposal. At the end of this section, the Final proposal and recommendations, are presented.

### 6.1. Overview of the Validation Stage

This section validates the proposal developed in Section 5. In addition of validation, feedback was collected on the initial proposal and further improvement areas were identified.

The Initial proposal was validated by sharing the proposal with manager from a consultant company. She was asked to refer the initial proposal on the company's current ways of working and how the proposal would fit into the company's plans for organizing remote work in the future.

### 6.2. Developments to the Proposal

The focus areas selected for the thesis were validated and well received emphasising the need to empower communication and team dynamics.

#### 6.2.1. Developments to Communication

In addition to the work related communication needs described in the initial proposal, the validating expert also stressed the need to have more unofficial communication and this seems to be in focus in the company. For example, having virtual coffee breaks and trying to connect people also "unofficially" is seen almost as important as the work related communication. This might be because there has been distributed teams and most of the workforce have worked more or less virtually before, so what is seen missing is how to create workplace like environment where people interact with each other casually.



### 6.2.2. Developments to Team Dynamics

It was pointed out that effective teams should have more fun together, there could be virtual events around different topics. Having unofficial non work related events can improve team dynamics and get people interact more casually around professional topics also. Also from people point of view, it is good to have also casual events virtually, for example concerts or other get-together like happenings.

### 6.3. Final Proposal

In addition to initial proposal, development on the unofficial communication and creating workplace like environment where people can interact casually is something to look at in the future. Having also fun in virtual environment is important for teams and people to survive in the virtual world. These activities are typically called team building.

Table 4. Final proposal for the skillset needed for efficient remote work in IT project management.

Communication		Team Dynamics	
<i>Methods &amp; Tools</i>			
<b>Tools</b>	Select proper media for each communication. Prefer Video over Audio.	<b>Trust</b>	Empower trust and let people utilize the flexibility of remote work with clear ways of working.
<b>Collaboration</b>	Emphasize collaboration within the team and create pairs and sub teams.	<b>Knowledge sharing</b>	Create knowledge sharing atmosphere in the project where people actively support each other and tackle the issues at hand. Create induction plans for newcomers and junior team members.
<b>Retrospectives</b>	Have retrospectives to find improvement areas in communication.	<b>Unofficial communication</b>	Create unofficial communication channels, like virtual coffee breaks to help people engage with the team.
<i>Project manager skills</i>			
<b>Planning</b>	Create clear communication plan with proper media and frequency for each target audience.	<b>Leadership</b>	Use collaborative leadership and share the decision power within the team and empower the team to be brave to make decisions. Have an "ok to fail" approach.
<b>Technical</b>	Have excellent knowledge of the communication tools available for communication and select correct tools for each purpose.	<b>Interpersonal</b>	Form 1 to 1 relations with the team members as much as possible and get to know the team members.
<b>Meeting management</b>	Keep meetings effective with clear agenda, invite correct people and share the meeting minutes.	<b>Coaching</b>	Coach people to develop their way of thinking and learning.
<b>Documentation</b>	Create document management plan and keep documents organized and accessible for target audience.	<b>Mentoring</b>	Support the project team to make good decisions with advice when needed. Promote self-organizing and self-confidence.
<b>Event planning</b>	Plan casual team building events face2face or online to create unofficial communication	<b>Casual interaction</b>	Take time to have casual interaction with team members and discuss off-work topics.

Nevertheless the mimicking workplace like environment virtually seems like the obvious thing to do in the future, it remains to be seen how well companies succeed on this and is that the way of remote work in the future or does remote work actually create something totally new and change people behaviour even more than now is seen.

Companies having retrospectives around remote work and constantly improving the way of working based on the feedback are more likely the most attractive places to work for the most talented people in the future.

## 7. Conclusion

This section concludes the study into executive summary, evaluation and closing words including further development ideas for the future.

### 7.1. Executive Summary

The objective of the thesis was to improve consultant market potential by finding out which set of skills are needed in working as a consultant in a remote environment and to create a set of recommendations and guidelines on working remotely as a consultant. The focus was on project management in a remote work environment.

Fundamentals of project management in the remote work environment were analysed in current state analysis, using the existing knowledge on literature and interviews on experts working in the area.

As a result of the proposal, the basics of project management remain the same. There is quite a bit of change in communication and team dynamics while working remotely.

By focusing on structured and planned communication in a project, enough information is shared openly, and people are not overwhelmed with information overflow.

The study around team dynamics shows that correct mix of flexibility and structured ways of working emphasising team individuals actively collaborating with correct tools and methods sharing their expert knowledge brings moderate teams to excellent performing group of experts. By actively following up the dynamics, finding best practices with the team and showing the value of the team by celebrating achievements, create healthy and innovative work culture.

Project managers with well established remote working practices can match the need in the market and offer the customers business benefits by showing a solid skillset.

## 7.2. Next Steps and Further Suggestions

Companies that focus on developing remote work practices and keep on developing the team communication and dynamics are more likely to succeed in the future as remote work is here to stay based on the results of the study.

The first thing to do could be to target the low hanging fruits by establishing basic remote working practises around communication and team dynamics connecting the team together. For example having regular meeting schedule with emphasising video calls might be something that can be implemented with tools available. Second by having a mentoring structure guarantees that newcomers and juniors are brought up to speed effectively and can start to contribute on the project.

Next, consistent development and feedback loops improve the ways of working and create basic foundation on the success in remote work.

Importantly, innovation was identified as an improvement area for the future. By following the technology development, data usage and finding out how to empower innovations and have creative collaboration related to deep technology problem solving will be beneficial to focus in the future.

## 7.3. Closing Words

Remote work is part of the evolution of project management. By utilising the results of this study, project managers can find ways to get started on the journey. By recognising the impact and being active on the subject, project managers can further develop their professional skills and have more successful projects in the future.

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