



UNIVERSIDADE FEDERAL DE PERNAMBUCO  
CENTRO DE INFORMÁTICA  
PROGRAMA DE PÓS-GRADUAÇÃO EM CIÊNCIA DA COMPUTAÇÃO

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**FEEDBASIC: a guide to implement feedback practices for remote software  
development teams**

Recife  
2023

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Dissertação apresentada ao Programa de Pós-Graduação em Ciência da Computação da Universidade Federal de Pernambuco, como requisito parcial para obtenção do título de mestra em Ciência da Computação. Área de concentração: Engenharia de Software e Linguagens de Programação

Orientador (a): Carina Frota Alves

Recife

2023

Catálogo na fonte  
Bibliotecária Monick Raquel Silvestre da S. Portes, CRB4-1217

R484f     Ribeiro, Ana Beatriz Cavalcanti  
              *Feedbasic: a guide to implement feedback practices for remote software development teams* / Ana Beatriz Cavalcanti Ribeiro. – 2023.  
              129 f.: il., fig., tab.

              Orientadora: Carina Frota Alves.  
              Dissertação (Mestrado) – Universidade Federal de Pernambuco. CIn, Ciência da Computação, Recife, 2023.  
              Inclui referências e apêndices.

              1. Engenharia de software. 2. Desenvolvimento de software. I. Alves, Carina Frota (orientadora). II. Título.

              005.1                      CDD (23. ed.)                      UFPE - CCEN 2023-148

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Aprovado em: 23 de agosto de 2023.

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## **ACKNOWLEDGMENTS**

There are many people to whom I must express my gratitude for all the support, care and understanding over the last few years. First of all, I thank God for granting me health, discernment and perseverance to overcome difficulties, discouragement and, finally, reach the end of this journey that was the academic master's degree. To my family, thank you for all their support, especially when nervousness and insecurity occasionally visited. To my boyfriend, for all the understanding and affection, even if sometimes from a distance, and for always giving me that breath of energy when tiredness insisted on arriving. To my friends who not only supported and publicized my research, but also listened to my wishes and assured me that everything would work out - and did not it? I also thank a very special little being who, most likely, will not read this dissertation: my little dog, Cookie. He was the one who accompanied me for several nights during the planning and development of this work, who made me develop the ability to type with one hand and continue to caress with the other, and who showed me that if there is love involved, it will work.

A special thanks, and to whom I dedicate this paragraph, goes to my supervisor, Carina. Since my bachelor, I had the honor to be mentored by this amazing professional and person, sympathetic and with admirable intelligence. No wonder, she inspired and supported me to continue this academic journey starting for the master's degree, always being the support, guide, and security that a new adventure requires. I am extremely grateful for all the knowledge shared, calls and all the times you told me "You are on the right path!". May this partnership continue until the doctorate, and beyond. Also, to the Centro de Informática, my thanks for all the infrastructure, support and encouragement to research, which made this journey an even more enriching process.

Finally, I think it is worth mentioning that no journey is easy. We stumble, we make mistakes, we fix it and we evolve: that was my master's degree. All the readings and writings in the early hours of the morning, abdications, and achievements, further increased my love for research and admiration for all those who dedicate their lives to doing science. Undoubtedly, this journey does not end here.

## **AGRADECIMENTOS**

São muitas as pessoas a quem eu devo deixar meus agradecimentos por todo o suporte, carinho e compreensão ao longo destes últimos anos. Primeiramente, agradeço a Deus por ter me concedido saúde, discernimento e perseverança para superar as dificuldades, os desânimos e, finalmente, chegar ao final desta jornada que foi o mestrado acadêmico. À minha família, agradeço por todo o apoio, especialmente quando o nervosismo e a insegurança ocasionalmente fizeram visita. Ao meu namorado, por toda a compreensão e carinho, ainda que por vezes à distância, e por sempre ter me dado aquele sopro de energia quando o cansaço insistia em chegar. Aos meus amigos que, não só apoiaram e divulgaram a minha pesquisa, como também escutaram meus anseios e me asseguraram de que tudo daria certo - e não é que deu mesmo? Agradeço também a um serzinho muito especial que, muito provavelmente, não irá ler essa dissertação: meu cachorrinho, Cookie. Ele que me acompanhou por várias noites ao longo do planejamento e desenvolvimento deste trabalho, que me fez desenvolver a habilidade de digitar com uma única mão e seguir fazendo carinho com a outra, e que me mostrou que se tem amor envolvido, vai dar certo.

Um agradecimento especial, e a este eu dedico este parágrafo, vai para a minha orientadora, Carina. Desde a graduação tive a honra de ser orientanda dessa profissional e pessoa incrível, compreensiva e de uma inteligência admirável. Não à toa, me inspirou e apoiou a seguir nesta jornada acadêmica partindo para o mestrado, sempre sendo suporte, guia e a segurança que uma nova aventura requer. Sou extremamente grata por todos os conhecimentos compartilhados, ligações e todas as vezes que você me disse “Você está no caminho certo!”. Que essa parceria continue até o doutorado, e depois dele. Também ao Centro de Informática, meu muito obrigada por toda a infraestrutura, suporte e incentivo à pesquisa, que fizeram desta jornada um processo ainda mais engrandecedor.

Por fim, acho válido ressaltar que nenhuma caminhada é fácil. A gente tropeça, a gente erra, conserta e vai evoluindo: assim foi o meu mestrado. Todas as leituras e escritas nas primeiras horas da manhã, abdições e conquistas, aumentaram ainda mais o meu amor pela pesquisa e admiração por todos aqueles que dedicam a sua vida a fazer ciência. Sem dúvida, essa jornada não acaba aqui.

## **ABSTRACT**

Feedback is an essential part of the routine of software development teams. Different feedback practices have been adopted by leaders and managers to provide information on employee performance, align goals and resolve conflicts. The significant growth in the adoption of the remote work model has created new challenges to the effective and sustainable use of feedback by organizations. The main challenges include lack of trust within the team, loss of access to body language and limited access to information regarding the performance of the collaborator. Despite the recognized importance of feedback in motivating employees and the challenge of performing it in the context of remote work, there is a lack of studies focused on understanding how feedback practices are currently conducted in remote software development teams. From this context, the objective of this work is to explore how feedback practices are being conducted by software development teams that work totally or partially in remote model. For this, a mixed research method was used to capture the different perspectives associated with feedback practices. We performed a multivocal literature review to map the benefits, limitations, and good practices of feedback. Then, we conducted semi-structured interviews with 10 leaders and managers of software development teams to understand their perceptions about feedback practices. Finally, we surveyed 83 members of several remote software teams to get their perceptions and feelings about receiving feedback. The triangulation of data collected from different research methods enabled the development of FeedBasic, a guide aimed at implementing and improving feedback in remote software development teams to improve employees' satisfaction and effectiveness of the feedback process. Among the good practices proposed by the FeedBasic include the development of an action plan focused on the evolution of the employee, and the frequent monitoring of their progress towards the established goals. These practices may boost team engagement and make the process more enriching for the collaborator.

**Keywords:** feedback; remote teams; software development.

## RESUMO

Feedback é uma parte fundamental da rotina de times de desenvolvimento de software. Diferentes práticas de feedback têm sido adotadas por líderes e gestores para prover informações sobre o desempenho dos colaboradores, alinhar metas e resolver conflitos. O expressivo crescimento da adoção do modelo de trabalho remoto tem criado desafios ao uso efetivo e sustentável do feedback pelas organizações. Dentre os principais desafios destacam-se a falta de confiança dentro do time, a perda do acesso à linguagem corporal e a limitação de informações sobre o desempenho do colaborador. Apesar da reconhecida relevância do feedback na motivação dos colaboradores e do desafio que é realizá-lo no contexto de trabalho remoto, há uma ausência de estudos centrados no entendimento de como as práticas de feedback são, atualmente, conduzidas nos times de desenvolvimento de software remotos. Partindo deste contexto, o objetivo deste trabalho é explorar como as práticas de feedback são conduzidas por times de software que trabalham em modelos total ou parcialmente remotos. Para isso, foi utilizado um método de pesquisa misto a fim de capturar as diferentes perspectivas associadas às práticas de feedback. Realizamos uma revisão multivocal da literatura para mapear os benefícios, limitações e boas práticas de feedback. Em seguida, conduzimos entrevistas semiestruturadas com 10 líderes e gestores de times de desenvolvimento de software para entender as suas percepções sobre as práticas de feedback. Finalmente, realizamos uma pesquisa *survey* com 83 membros de diversos times de software remotos para entender as suas percepções e sentimentos sobre o recebimento de feedback. A triangulação dos dados coletados a partir dos diferentes métodos de pesquisa possibilitou o desenvolvimento do FeedBasic, um guia que visa a implementação e melhoria de práticas de feedback em equipes de desenvolvimento de software remotas para melhorar a satisfação dos colaboradores e a efetividade do processo de feedback. Dentre as boas práticas propostas no FeedBasic estão o desenvolvimento de um plano de ação focado na evolução do colaborador e o acompanhamento frequente dos seus avanços em direção às metas estabelecidas. Tais práticas podem melhorar o engajamento no time e tornar o processo mais enriquecedor para o colaborador.

**Palavras-chave:** feedback; times remotos; desenvolvimento de software.



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## 1 INTRODUCTION

### 1.1 RESEARCH CONTEXT

Feedback consists of providing information about behaviors and actions to individuals to generate performance improvement, also recognized as a mechanism to stimulate learning and motivation (GEISTER et al., 2006; SCHIMDT et al., 2012). As a result of improving processes and behaviors, feedback allows the team members to better share knowledge and align expectations with the organization, optimizing their individual and team results (LONDON and SESSA, 2006). The significant growth of the remote work model by software development teams, especially after the Covid-19 pandemic, has evidenced the challenges for an effective and sustainable use of feedback by organizations.

In remote teams, adherence to this practice is even more relevant because it helps to maintain employees' motivation, helps to identify and communicate to the team members their strengths and gaps, and encourages them to develop their skills (HANDKE et al., 2022; TOPALOGLU and ANAC, 2021). There are several feedback practices adopted by remote software development teams, such as giving compliments after a great job, discussing how a task was performed or how impediments were solved, and annual performance evaluations, which are sometimes combined to compose an unique feedback process. Despite that, there is still a lack of studies providing practical guidelines on how to optimally implement and improve feedback in software development remote teams (BALCAZAR and SUAREZ, 1985; ALVERO et al., 2001; SLEIMAN et al., 2020).

Therefore, given the great adherence to the remote work model and the importance of feedback for remote software development teams, it becomes increasingly important to improve the feedback and, more specifically, the set of practices adopted during the feedback process. In this context, this research aims to identify the benefits of the feedback practices, the most common challenges faced, and the best practices adopted by organizations, managers, leaders, and employees that adopt the feedback while working fully or partially remotely.

### 1.2 PROBLEM STATEMENT AND RESEARCH QUESTIONS

The growing adoption of remote work models, in both partial and total modalities, has created new challenges to successfully adopt feedback practices, impacting its results and employees' experience. The main objective of this research is to understand how feedback practices are conducted and how they impact remote software development teams. It is known that feedback involves managers, leaders, and other team members, referred to as “employees” in this study.

This dissertation explores the research problem: **How feedback practices are conducted in remote software development teams?** To achieve this goal and investigate this problem further, we proposed six research questions:

**RQ1:** What are the benefits of feedback process adoption for remote software development teams?

This research question aims to start the investigation by understanding the potential benefits obtained from the adoption of feedback practices. The answer to the first research question results in a list of benefits, which we considered as the initial motivators to keep this practice running in the teams.

**RQ2:** What are the challenges involved in the feedback process for remote software development teams?

To help understanding how to improve the feedback practices, it is necessary to understand the main challenges faced by team leaders, managers, and employees in the process. The answer to this question will serve as a basis to improve the feedback practices currently adopted, by overcoming the pain points identified by the participants of this process.

**RQ3:** What are the recommendations available in literature to support the feedback process for remote software development teams?

To investigate how to improve the feedback currently adopted by remote software development teams, it is important to gather suggestions from leaders, managers, and employees that are participating in the process. The answer to this

question will inspire and drive the proposal of feedback practices' improvement by the end of this study.

**RQ4:** How are leaders and managers of remote software development teams using feedback practices?

To understand feedback practices within the reality of remote teams, it is important to know how leaders and managers have been conducting it in their teams, and also their perceptions regarding the impacts of these practices. The answer to this question will give a managerial perspective of the benefits and limitations of the feedback practices when adopted in a remote context.

**RQ5:** What are the perceptions of remote software development team members about the feedback practices currently adopted?

We understand that it would be important to capture the impacts and limitations of feedback from all those who participate in this process. To do that, this question aims to get the particular perceptions from different team members of remote software teams. The answer to this question will amplify our understanding of the feedback practices, giving us a more operational perspective.

**RQ6:** How to improve feedback practices for remote software development teams?

The answer to this research question aims to help practitioners willing to improve the feedback process, through the improvement of each feedback practice included in it. The answer to this research question is a guide to implement or improve feedback practices, by incorporating the best recommendations collected from the previous questions. The guide aims to mitigate the challenges and potentialize the benefits, generating an overall improvement to the feedback process and increasing participants' satisfaction. The guide was designed with BPMN notation to facilitate the practical adoption by teams.



The gaps identified in the literature that will be investigated in this research are: 1) Analyzing the benefits of the feedback practices for remote software development teams; 2) Understanding the challenges and limitations faced by leaders and employees in the feedback practices process; and 3) Providing a guide to implement and improve feedback practices to increase the satisfaction of remote software development team members during the process.

### 1.3 THEORETICAL AND PRACTICAL CONTRIBUTIONS

We observed that even with the relevance of feedback for software development teams working remotely, there is still a gap in the studies that provides guidelines to optimize the process in these specific teams (ALVERO et al., 2001). One contribution of this research is to provide a better understanding of the characteristics of the feedback practices currently implemented in remote software development teams, such as the tools used, their frequency, and who participates in the process. We also identify the benefits generated by the feedback practices adoption and the most common challenges faced along the process. We started our study with a Multivocal Literature review, a type of literature review that includes both academic and gray literature, aiming to get all the contributions made by academics and practitioners. To explore the problem from an empirical perspective, we conducted semi-structured qualitative interviews with 10 leaders and managers from 5 different organizations to capture their managerial perspective regarding the feedback practices, their impacts, the main challenges faced when trying to run such a process in their teams, and best recommendations to those trying to implement or improve the feedback practices in their teams. To capture the perception of team members regarding feedback practices, we created a survey questionnaire that was answered by 83 members of remote and hybrid software development teams from different organizations. Using the survey, it was possible to get their particular perceptions regarding the feedback practices currently adopted by their teams, what are their preferences and what they miss in the current process, and also understand the feelings generated by these practices.

We bring an innovative research perspective to improve the feedback for remote teams, going beyond identifying the characteristics, benefits, and challenges of the feedback practices and providing a guide that can be used by leaders and

managers to implement or improve feedback practices in their teams. This guide, called FeedBasic, is the final contribution of this research. It was created based on the insightful information collected by the conduction of the mixed research method that included multivocal literature review, qualitative interviews, and survey. In this guide, we define the activities that need to be executed from the beginning of the feedback process until its monitoring, the artifacts produced and used in each of the stages of the process and give some tips that could be used to enrich the process. The FeedBasic guide integrates several feedback practices, such as formal feedback delivery, commonly adopted by organizations, and quick informal feedback meetings to follow up on employees' performance. The ultimate goal of the guide is to improve the employees' satisfaction throughout the entire process and increase the effectiveness of the feedback in remote software development teams.

#### 1.4 DOCUMENT STRUCTURE

This dissertation is divided into eight chapters. Chapter 1 brings the motivations, research questions' description, and contributions of the work. Chapter 2 presents the theoretical background of the literature on Feedback and Remote Teams. Chapter 3 explains the research methodology adopted to conduct the study. The research results are divided in three chapters. Chapter 4 presents the results of the Multivocal Literature Review, Chapter 5 presents the results of the qualitative interviews conducted with 10 team managers and leaders of remote software development teams, and Chapter 6 presents the survey results answered by 83 IT professionals. Chapter 7 summarizes the results of the mixed method research and presents the FeedBasic guide. Finally, Chapter 8 concludes the dissertation, resuming the main findings, explaining how FeedBasic contributes to research and practice, and discussing the limitations and insights for future research.

## 2 THEORETICAL BACKGROUND

### 2.1 REMOTE WORK

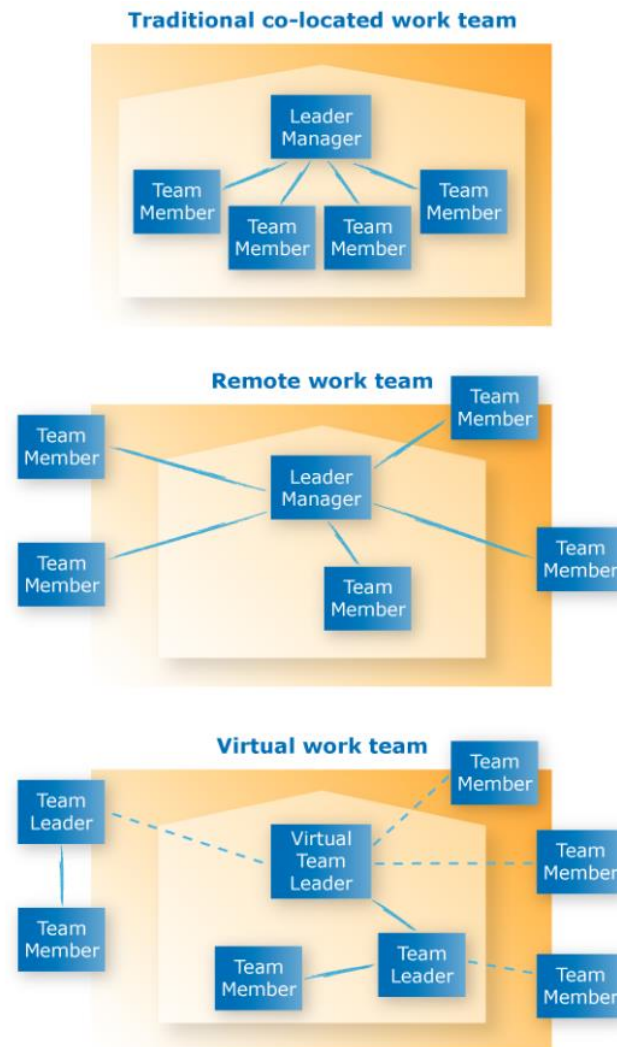
Remote work (also referred to as telework or working from home) is not a novel concept. For instance, the concepts of telecommuting and telework were introduced by Jack Nilles in the early 1970s, while working at the University of Southern California on projects that aimed at eliminating rush-hour drives and reducing energy consumption by letting employees work closer to home – or at home – via telecommunications links (NILLES, 1996). It was also adopted as the work model by a lot of organizations even before 2020 (ANAKPO et al., 2023; SOKOLIC, 2022; IWG, 2019), but it has gained attention because of the Covid-19 pandemic, which forced many organizations to shift from a traditional face-to-face work environment to a fully remote workforce for health and safety reasons. The numbers from Brazil illustrated this trend: the total of remote workers doubled every 15 years before 2020, but the growth of this work model during the pandemic was equivalent to 30 years of pre-standard growth (FGV, 2023). In the pandemic, remote work has become one of the most extensively applied techniques to minimize unemployment and keep society operating, while protecting the public from the virus (CHOUDHURY et al., 2021).

Remote work is the practice of employees doing their jobs from a location other than the employer building, such as an employee's home, a co-working, or a private office, while keeping communication with colleagues and performing duties using digital means of communication, such as e-mail and voice mail, videoconferencing, social networks, computer programs and apps, and instant messaging systems (VMWARE, 2023; ANAKPO et al., 2023; SELIVERSTOVA, 2022). However, the possibility of personal contact still exists in this work model, and it is possible to rarely go into a traditional office to do their job (VMWARE, 2023). Remote work arrangements can be temporary or permanent, part-time or full-time, occasional or frequent, depending on the organization and team's needs and policies. This working model also requires specific policies governing equipment use, network security, and performance expectations (GARTNER, 2023). These teams can also have members referred to as telecommuters, people who work remotely, though not necessarily at home, and teleworkers, people who work from anywhere

and can continuously be on the move, being also sometimes named “nomad workers” or “web commuters” (SNOWDON and BOUCH, 2023).

The significant difference between remote and traditional teams, also called collocated teams, is that employees of the first may be separated by physical distances. In contrast, in traditional teams, they are adjacent to each other (ZIMMERMANN, 2011). Other important differences between traditional teams and remote ones are that the meetings are not usually conducted in person, team members may be in different locations and time zones, and team members’ cultures can be vastly different. Remote and virtual are terms used interchangeably to refer to teams that do not work collocated on companies' sites. However, there are also quite a few differences. A remote team is a group of people who are working on the same project, who also report to the same manager, may be located in different cities or countries, may have the same area of expertise, or have completely different skills that are relevant to the project. Virtual teams, although sharing those geographic and skills varieties, do not have a unified management structure, so their members can report to different managers at the same time and do not have a long lifetime duration - it usually ends when all the tasks are completed or the project is interrupted (TFOT, 2023). Figure 2.1 synthesizes the differences between traditional, virtual, and remote work models regarding location and report relationships. In the figure, the continuous line represents a fixed and long-term relationship between team members and their leader, while the dashed line represents relationships that have a short and ephemeral duration, usually ending when the project ends.

Figure 1 – Comparison between traditional, remote, and virtual work models



Source: TFOT (2023).

Several studies have been conducted to investigate the adoption of remote work by organizations. The results of a McKinsey & Company's (2022) survey showed that thirty-five percent of respondents say they can work from home full-time, while another 23 percent can work from home from one to four days a week, meaning that 58 percent of the employees were able to work fully or partially remotely. The results of this research also showed that the suitability for remote work differs by industry and role within industries and has implications for companies competing for talent. This finding is consistent with 2021's International Labor Organization (ILO, 2021) which estimates that nearly 18% of workers have occupations suitable for home-based work and live in countries that have the infrastructure to enable home-based work (SOKOLIC, 2022). For example, the same McKinsey's research (2022) revealed that most employed people in computer and

mathematical occupations report having remote-work options, and 77 percent report being willing to work fully remotely, while only 43% of people working in education were able to work remotely.

Recent research conducted with Brazilian organizations reinforced the strong adherence to the remote work model (FGV, 2023). 32,7 percent of companies confirmed the adoption of the remote work model, including the ones that already adopted this modality before the Covid-19 pandemic. Also, 34,1 percent of employees can work remotely at least once a week. This number has reduced if compared to the results of the same research conducted in 2021, where 55,5% of employees were able to work remotely at least once a week (FGV, 2023), but it is still a very significant number. Looking at the specific software development market, the 23rd edition of the Confidence Index Robert Half (CIRH) showed that IT professionals are the ones who most value remote work. According to the survey, 37 percent of IT professionals do prefer full remote work, and 55 percent of them accepted the hybrid model (IT Forum, 2023).

The remote work adoption by organizations has also changed the recruiting and hiring dynamics. A McKinsey survey of 2021 showed that 90 percent of the employees that took new jobs in new cities did not have to relocate. This signalizes that companies that are still mishandling the transition to a hybrid or remote work environment need to look carefully at these aspects to keep competitive in their own market. Reinforcing that, another research showed that 62 percent of IT employees are open to looking for a new job if their current companies decide to return to the traditional work model (IT Forum, 2023).

The popularity of remote work is explained by the upsides associated with it, which typically include an increase in productivity, recruiting and hiring advantages, cost savings, and greater flexibility (VMWARE, 2023; RALPH et al., 2020). It is important to note that, right after the broad adoption of remote work during the pandemic crisis, the normal benefits of working from home commonly mentioned in the literature were not applied to every software team member. Some people are working at kitchen tables and on sofas while partners, children, siblings, parents, and pets distract them, there is no ergonomics or adequate infrastructure (RALPH et al., 2020). Despite that, the studies conducted in the years that succeeded the pandemics showed overall positive results from remote work adoption. Among the main benefits are the cost reduction for both organization and employees, because it

allows them to hire in cheaper geographies while employees save daily travel expenses (WAIGHT et al., 2022; TFOT, 2023; FERREIRA et al., 2021). Another benefit is higher productivity, perceived by 30 percent of organizations surveyed by FGV (2023) because of the decrease or elimination of commutes, without the need to get stuck in traffic for a few hours each day and also the allowance to work in an environment with fewer interruptions, leading to a better concentration (TFOT, 2023; VMWARE, 2023; FERREIRA et al., 2021; MENOLLI et al., 2023). Flexibility is perceived as another benefit of remote work, since employees can better organize their routine to accomplish both work and personal affairs, which may increase employees' motivation (WAIGHT et al., 2022; FERREIRA et al., 2021; SOKOLIC, 2022).

The remote work model is also associated with recruiting and hiring advantages since it greatly expands a manager's pool of potential candidates (FERREIRA et al., 2021), and also to higher retention, as the employees will be satisfied with the flexibility of their jobs and, therefore, consider staying with you (TFOT, 2023). Teams improved the use of processes, using the process ceremonies more constantly and rigorously since it was noticed that remote work requires a better plan. Studies also show an increased use of tools, techniques, and artifacts in the software process development, as new ways to solve doubts and to improve knowledge management (MENOLLI et al., 2023). Also, employees who work remotely were noted to take fewer sick days and to feel more motivated (SOKOLIC, 2022).

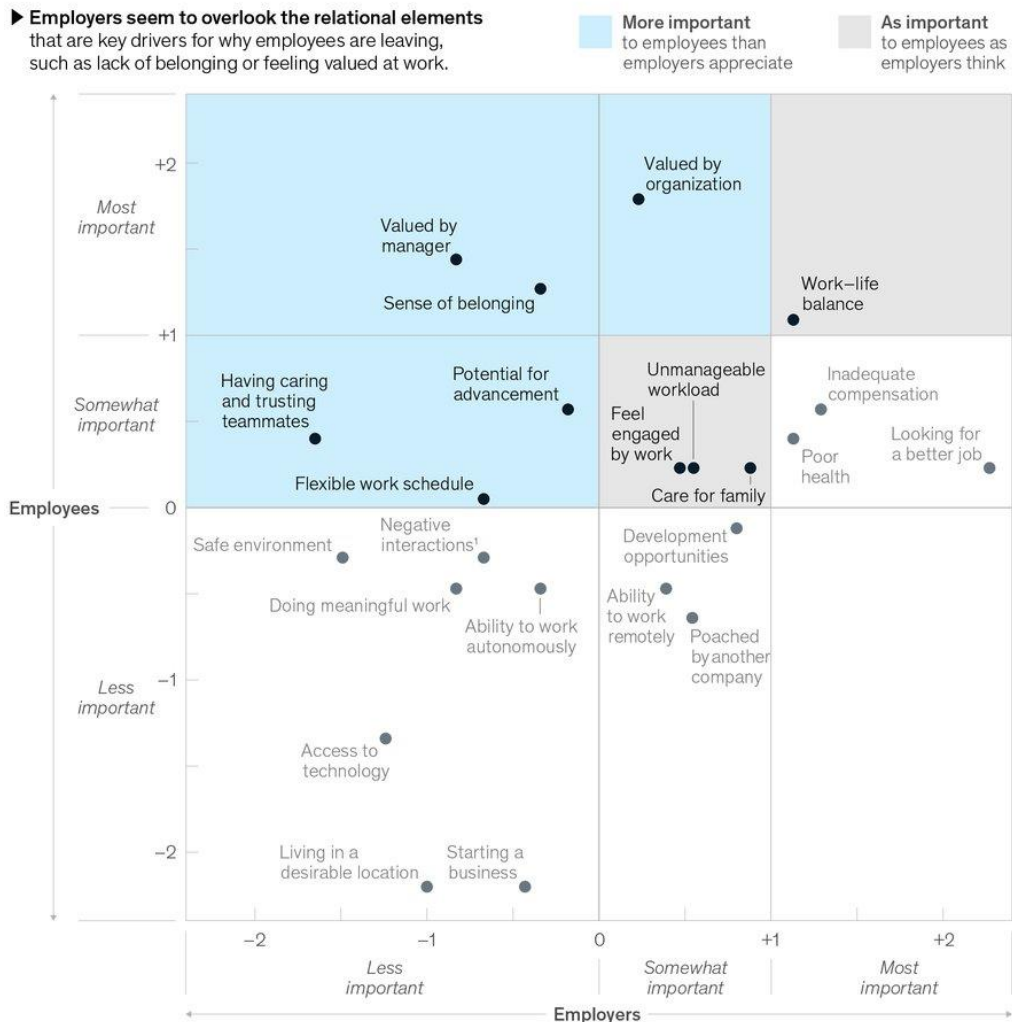
Problems with remote working tend to appear when the best practices and basic principles of how remote teams work are missing. The most commonly mentioned disadvantages of remote work are the lack of personal communication, which leads to difficulties on creating a bond among employees to foster truthful and honest relationships (TFOT, 2023; SELIVERSTOVA, 2022), the absence of visual contact that would allow the reading of body language and lack of prevalent signs necessary to understand context (JACKS, 2021; SOKOLIC, 2022; WAIGHT et al., 2022). Another problem involves the lack of informality in daily routine by the elimination of hall conversations and the need to book appointments and schedule time to discuss simple issues, reducing the fluid and organic conversations and tacit knowledge sharing (JACKS, 2021; WAIGHT et al., 2022). The use of workspaces not completely prepared for remote work and also unreliable technologies may also

compromise the projects, leading to frustration and diminishing results (FERREIRA et al., 2021; WAIGHT et al., 2022; VMWARE, 2023). It becomes harmful to solve doubts and develop software skills, leading to consequences for long-term career prospects (SOKOLIC, 2022; MENOLLI et al., 2023). As remote work provided new positions and role possibilities, it has led to an increased turnover in the teams (MENOLLI et al., 2023). McKinsey & Company survey (2021) brings interesting points on the reasons why people are quitting their current jobs, highlighting that employers did not fully understand why employees are leaving. As presented in Figure 2.2, employees prioritize more relational factors, such as feeling valued by their organizations or managers, and feeling a sense of belonging at work; while employers are more focused on structural factors, such as compensation.



Figure 2 – Employers *versus* Employees' perceptions of why employees are leaving**Employers do not fully understand why employees are leaving.**

Factors that are important to employees  
versus what employers think is important



Source: McKinsey & Company (2021)

Another disadvantage of the remote work model is the difficulty of motivating employees, which results in a constant need for refining motivational tools and employee loyalty programs (SELIVERSTOVA, 2022). Because of all these possible disadvantages, successful implementation of a remote work model within organizations requires a management style that is oriented to results as opposed to tasks. Although there's no single "right" way of working remotely, there are some general good practices to create the conditions for success. For example, investing in team building, by creating activities that promote social interaction, such as the celebration of team achievements and scheduling regular meetings, creating a

general sense of belonging (VMWARE, 2023; FERREIRA et al., 2021; NG et al., 2022); using suitable and efficient technologies that allow employees to perform without technical impediments (FERREIRA et al., 2021; VMWARE, 2023), and also defining clear guidelines and policies, to foster a culture of trust within the organization and the team (VMWARE, 2023). It is also important to consider the workers' culture and personalities, finding appropriate means of contact and coordination among team members (SELIVERSTOVA, 2022), as well as reinforcing the use of measurement tools on how well workers manage and integrate personal work lives (FERREIRA et al., 2021). To avoid team members that are geographically dispersed feeling unmotivated, JUNIOR et al. (2012) suggest: investing in training, that motivates team members through the acquisition of new knowledge and techniques; and the use of feedback about how the activities were or are being performed, which motivates teams of software development, by allowing them to see how your work is being seen by others, as well as it decreases the feeling of isolation between parts of a distributed team.

Although there are a lot of challenges faced by adopting the remote work model, research suggests that the trend of working from home will continue post-pandemic, and to a much greater extent than pre-pandemic, but rarely in a fully remote mode. This draws attention to hybrid models, which offer workers more flexibility while preserving a degree of control and stability for the employer (MICROSOFT, 2021; SOKOLIC, 2022). The hybrid work model is a variety of remote work models, including teams that periodically work inside the office or use the office building for collaborative activities and community building (SELIVERSTOVA, 2022; SOKOLIC, 2022). The hybrid model may well be attractive, as it seems to combine the benefits of working in the office - the ability to collaborate, innovate, and interact with colleagues face-to-face - with the flexibility and elimination of commuting associated with working from home (SOKOLIC, 2022).

As the global trend to improve the quality of life, companies need to incorporate the concept of work-life balance into their corporate policies in order to retain their employees. The turnover rate in organizations is related to the lack of flexibility, low work-related autonomy, and high stress levels. Therefore, companies need to ensure that processes are well managed, resources needed for work are similar to those in the traditional office, information flow is smooth and transparent, employer and employee values are aligned, and there is a sense of organizational

justice. This will most likely become an ongoing process of negotiation, trial, and error, and adaptation with the goal of alignment between employer and employee expectations (SOKOLIC, 2022).

## 2.2 FEEDBACK

The quality of employees is one of the most important factors to determine the company's progress. This quality is associated with the employee's performance, commonly summed up as the employee's ability to perform certain skills and drive the tasks assigned to them. Great employee performance increases the positive results of companies and enables them to keep competitive. To help the employees on identifying their technical and behavioral gaps and give them guidance to work on the improvement of these gaps, organizations and teams commonly use feedback practices in their daily routine.

There are several different definitions of feedback. Geister (2006) defines feedback as a means to provide employees with information about their behavior with the purpose of generating performance improvement. Schmidt (2012) defines feedback as an important mechanism to stimulate learning and personal motivations. Commonly, feedback and performance evaluation are interchangeably used to describe this information delivery, but in this study, we are adopting the term "feedback", since performance evaluation relies on checking if the tasks are aligned with what was expected, excluding the planning of goals and improvements also focused on personal abilities. Feedback provision can include giving compliments, increasing responsibilities, and providing challenging assignments. Throughout this work, we will use the term "feedback practices" to refer to these different manners used by team members to deliver feedback, which could be combined or isolated within the feedback process. From this feedback, employees can gain useful knowledge about performance-related problems, career progression, completing tasks, and whether they are displaying positive or negative behavior at work (EVA, 2019). Therefore, feedback practices can assume different formats, signals, and languages, depending on the particularities of the organization, team, and employee, but they all have as final goals to lead an improvement in employee performance.

Kluger and Denisi (1996) define feedback as the information about one's task performance provided by an external agent. Following this definition, feedback needs

a source to be generated. Meyer-Leive (2022) classifies the sources into three sets: the observer, who has reviewed the behavior of the feedback receiver and is able to evaluate the behavior and could be a teammate or supervisor; the task environment, which includes aspects surrounding the giver and receiver; and the self-evaluation when an individual evaluates their own past performance to improve for the future. It is also possible that the individual receives feedback from one or several agents, but studies have found that the use of more than one source has increased the self-perceived task competence (STONE and STONE, 1984). Also, the inclusion of more sources in the process makes the data gathered from the feedback more diverse and gives a higher potential for being accurate (MEYER-LEIVE, 2022).

Still regarding the sources of feedback, the annual performance feedback evaluations provided by supervisors are adopted as a norm for several organizations, while feedback from wider employee groups is not formally adopted, occurring more frequently when teammates provide informal advice to each other aiming to help to best perform their job role. There is a perceived difference in the impacts of these two feedbacks: supervisor feedback is associated with an increase in the intrinsic motivation of employees, inspiring them to go beyond their basic contract requirements and skills. Coworker feedback is associated with a bigger generation of new and useful ideas, increasing innovative actions, meaning that both of them must be associated to extract the best from both approaches (EVA, 2019).

Feedback is also provided with a purpose and can be classified into different types. Gan et al. (2023) define two main categories of feedback, which are feedback as a product and feedback as a process. As a product, feedback can be understood as a means to tell the receiver if the way he acts is right or wrong, meaning that in this case, the feedback is corrective or evaluative. Otherwise, when the feedback is built as a process it suggests strategies to improve learning and evolution. It also uses the term “process-oriented feedback” to refer to the feedback as a process since it includes useful information on processes necessary to complete a task or achieve a goal. There are also other more specific distinguishing aspects between feedback: it can be elaborate or simple; descriptive, comparative, and evaluative; cognitive or motivational feedback. Elaborate feedback includes an explanation that serves as a guide for learning, while simple feedback only gives information about what went right or wrong. Descriptive feedback sums up the receiver's behavior, while comparative uses other individuals' performance as a reference, and evaluative

provides a judgment of the performance, the same way it is done when the feedback is created as a product. Cognitive feedback is used to share information on what is needed for the process, while motivational feedback focuses on the impact on intrinsic motivation, as reinforced by Meyer-Leive (2022) who states that feedback “serves a motivational function when it provides information about outcomes associated with rewards”.

Many leaders use the feedback they give and receive from employees not only to help them learn but to evaluate the performance and engagement in the organization and job, evaluate potential promotion opportunities, and strengthen the relationship and loyalty between the organization and the employee (MEYER-LEIVE, 2022). Because of that, feedback can also have a positive or negative sign, which depends on the relation between the performance rating and a previously established benchmark (KLUGER and DENISI, 1996). Positive feedback is the expression that the evaluated performance is above the defined reference point. On the other hand, negative feedback, sometimes referred to as change-oriented or corrective feedback, is the expression that the performance is below the reference. Some studies concluded that leaders could use positive feedback to enhance the performance of their employees, while negative feedback, otherwise, has no effect on performance (GOLLER, 2023; MEYER-LEIVE, 2022).

Feedback has implications in a lot of aspects: it has impacted behavior, motivation, job satisfaction, and productivity, according to the results of Sach and Petre (2012), and Geister et al. (2006). The results of the feedback practices on performance were perceived not only at the individual but also at a team level, which was explained by the social comparison processes: individuals working in a group compare their performance with that of the other group members, inducing a pressure towards a reduction in performance in discrepancy. Feedback is also considered important for reaching a trusting environment among team members, enforcing the notion of the group, and enhancing teamwork. Motivation was also shown to be more positively impacted by feedback for the less motivated team members (GEISTER et al., 2006).

It is known that remote work adoption added difficulties in keeping the employees motivated, maintaining productivity, and achieving performance goals (BOULANGER, 2023). Several motivation theories suggest that feedback is an important factor in motivation by providing information on performance or on the

results of one's actions (SACH and PETRE, 2012). Because of that, researchers have conducted studies to identify the feedback implications on teams working remotely. The same benefits were observed, but new challenges were added to the feedback practices because of the communication gaps, unclear expectations, and absence of a sense of belonging common in remote work environments (BOULANGER, 2023). It was observed that remote teams may be more benefitted by process feedback, as it does bring a broad view of how employees behave to complete the tasks, not only in what is produced (GEISTER et al., 2006).

The lack of feedback can demotivate employees (EVA, 2019), and because of that it is important to not only implement but also constantly improve to improve the practices used to provide it. The most important change that needs to be made regards the training for feedback, it is important to train supervisors and coworkers on how to provide useful feedback but also prepare the receivers to use it to their own advantage (EVA, 2019). Using a defined set of criteria to evaluate all employees is also important to make the experience unified and fair, especially when the feedback is promotion-oriented (MEYER-LEIVE, 2022). Rather than acting as a judge to evaluate deviations from plans and strategies that are imposed above and forcing employees to get back on track, it is important to adopt a coaching-oriented system of performance management, which also includes feedback practices, in which the goal of the leader or manager should be to build commitment to and engagement with the organization and its broad goals and to assist and support employees who are having difficulty carrying out their particular roles in the process of executing this process (MURPHY, 2019).

## 2.3 PROJECT MANAGEMENT IN SOFTWARE ENGINEERING

Wysocki (2006) defined a project as a sequence of unique, complex, and connected activities that have one goal or purpose and that must be completed in a specific time, within budget, and according to a specification. To make sure that the project results will deliver the expected business value, it is important to apply knowledge, tools and techniques to manage all the aspects related to the project. Based on that, Wysocki (2006) defined project management as an approach that uses tools, templates, processes and client involvement in order to meet the defined requirements and needs and deliver expected business value. In the software

engineering field, the results of a great project management are commonly systems or services that deliver value to its stakeholders by facilitating daily activities, automatizing repetitive tasks, or improving life quality.

There are several project management approaches, in the software development field two of them are most adopted: traditional and agile. The traditional approach has a fixed sequence of operations, where each process step must be completed before proceeding to the next step, in addition to not allowing a return to a previous stage after its completion. It therefore requires good documentation and understanding of the features, functions, and requirements of the project, in order to be able to complete the project without any changes being necessary throughout its development (FERNANDEZ and FERNANDEZ, 2008). A very common model that follows the traditional approach is Waterfall. On the other hand, the agile approach proposes an iterative process, which allows changes and adjustments throughout the process, based on the Agile Manifesto (2001). Models that are usually adopted by teams that follow the agile approach are Scrum and Kanban. There are multiple aspects to be considered when choosing the best management approach that fits a specific project. The need for adaptability and flexibility, as well the need for continuous delivery and communication with the client, very common in software development projects, made the agile management approach largely adopted by those teams.

In both traditional and agile approaches, a great project manager has to overcome several challenges. The management of a team that works remotely is even more challenging: the geographical distribution of team members, the social and cultural differences, and the multiple time zones are new variables that need to be treated to ensure the project success. Among the most common challenges faced when managing remote software development teams are establishing effective communication, coordinating activities, creating trust and providing a great IT infrastructure to execute the tasks (SILVA et al., 2010). In addition to that, the study conducted by McKinsey & Company (2021) revealed that in recent years, employees started to value relational aspects, such as work-life balance, sense of belonging and feel valued by their managers, more than structural factors, such as earnings and access to the newest technologies, emphasizing that the project management must be focusing on people rather than tools (MISHRA and MISRA, 2010).

Therefore, it is important to extend project management to include people management actions, by prioritizing high job satisfaction, high morale, healthy work environment, strong monetary support, career-oriented tasks, proper education and training to all team members. To do that it is important to invest in activities that promote collaboration, clear communication and expectations sharing, and enhance trust and team belonging (SILVA et al., 2010). By providing such conditions while managing people, the entire team will be able to produce their best, leading to an increase in the organization results.

## 2.4 CHAPTER SUMMARY

This chapter presented the necessary theoretical basis to develop and understand this study. First, we presented concepts about remote work, its main characteristics, the advantages, and disadvantages of its use, and how it has been adopted around the world. We also presented information about the adoption of the remote work model by the software development teams, the target of this study. Then, we discussed concepts about feedback, defined the term "feedback practices", and analyzed the advantages and disadvantages of feedback. We also explored the new challenges involved in the feedback process in the remote context. We also discuss aspects related to project management, the most common approaches in software engineering field, and the challenges commonly encountered.



### 3 RESEARCH METHODOLOGY

This chapter describes the methodological approach used to investigate the research questions, with the objective to get useful insights to help remote software development teams on implementing or improving their feedback practices.

#### 3.1 RESEARCH OVERVIEW

This research aims to investigate the problem “**How feedback practices are conducted in remote software development teams?**”. We aim to understand the perspectives of feedback benefits, challenges and good practices, from both team leaders and managers as well as team members. This problem led us to define the following research questions:

**RQ1:** What are the benefits of feedback process adoption for remote software development teams?

**RQ2:** What are the challenges involved in the feedback process for remote software development teams?

**RQ3:** What are the recommendations from literature to support the feedback process for remote software development teams?

**RQ4:** How are leaders and managers of remote software development teams using feedback practices?

**RQ5:** What are the perceptions of remote software development team members about the feedback practices currently adopted?

**RQ6:** How to improve feedback practices for remote software development teams?

We summarize the process to conduct this research in the following phases (Figure 3.1).

Figure 3 – Research Phases



Source: The author (2023)

In the study planning phase, we defined our strategy to conduct this research. We started getting a broad comprehension of the trend topics surrounding feedback in literature and what has been discussed about the feedback practices used in remote software development teams. Considering the relevance of the feedback practices for the effective management of remote software development teams identified in this initial exploratory investigation, we decided to follow a mixed method approach to conduct the study. The mixed method approach allows us to investigate the phenomenon from a multiple and holistic perspective. We applied this method's triangulation approach with the intention to decrease the deficiencies and biases that come from any single method. This mixed method approach included three different methods to collect data:

- 1) Multivocal Literature Review,
- 2) Qualitative Interviews,
- 3) Survey Questionnaire.

We started our investigation by conducting a Multivocal Literature Review, a type of Systematic Literature review that includes gray literature, as blog posts, videos, and white papers, in addition to formal literature, as peer-reviewed publications in journals and periodicals (Garousi, 2019). By including both types of literature in this review, we were able to get the perspective from practitioners and academics.

After the Multivocal Literature Review, we moved to the phase of Qualitative Interviews conducted with managers and leaders of remote software development teams. We had a total of 10 interviewees from 5 different organizations, all of them working fully or partially remotely. These interviews were one of the central data sources of this research, as they provided us a managerial perspective of the feedback practices adopted in their teams. To analyze the data collected through the interviews, we followed a thematic analysis adapted from the approach proposed by Braun and Clarke (2006), which defines seven steps to guide the process discussed further in the following sections.

Then, we created and distributed a survey questionnaire using the Google Forms platform, aiming to get the perceptions about the feedback practices from all the members of remote software development teams, amplifying our vision to get an operational perspective as well. This questionnaire was composed of 26 questions, divided into four sections, and it was available to receive answers for four weeks in April 2023. 85 practitioners answered the survey questionnaire, but we only considered 83 answers as valid based on the criteria defined for our target public. We used the tools available on the Google ecosystem, such as Google Sheets and Google Forms, to organize our data, generate graphics, and analyze the correlations in the information to better understand our findings.

Finally, we move forward to the closure of this research by designing a guide to implement and improve feedback practices in remote software development teams. We started this phase by identifying the common findings among the data collected with the discussed research methods. Then, we organized these findings and used them as inputs to design a guide with the goal of supporting the implementation and improvement of feedback in a way that increases employees' satisfaction with the process. This guide integrates several feedback practices, such as formal feedback delivery, commonly adopted by organizations, and quick informal feedback meetings to follow up on employees' performance. The guide, named FeedBasic, was created using BPMN notation. The notation is broadly used in process design and modeling, to give a clear vision of the activities needed to be executed by each actor, and the artifacts necessary and produced in each stage. The FeedBasic guide is composed of four main stages: 1) Plan the feedback, 2) Deliver the feedback, 3) Develop an action plan, and 4) Follow up on the progress. To enrich

our guide, we provide a set of recommendations to implement and improve feedback based on the data collected in the previous phases of the research.

### 3.2 PHASE 1 - STUDY PLANNING

In the ***study planning phase***, we defined the research problem and specific questions. Based on our previous studies and our professional experiences, we decided to investigate the feedback in our research. After an initial investigation to define the theme we want to explore in this research, we conducted a detailed investigation to find the research gaps in the area of feedback. We found several studies that investigate the impact of feedback practices adoption in specific aspects, such as motivation, productivity, and innovation, but we identified an absence of studies that map the overall benefits and challenges of the feedback practices adoption in the context of remote work, and studies that provide a guideline to optimize the process for remote software development teams.

Based on the identified gap in the literature and considering the current context where teams are mainly working on remote or hybrid models, our central research problem “**How feedback practices are conducted in remote software development teams?**” emerged. To investigate this problem, we designed the 6 research questions listed in Section 3.1. To get a broad overview of the feedback practices, we decided to start our study by conducting a Multivocal Review Literature focused on the feedback practices in remote software development teams. Considering the relevance of the investigated process to the industry, our data collection techniques were defined as a combination of qualitative interviews conducted with team leaders and managers and an online survey questionnaire to gather the particular perspectives of remote software development team members.

We decided to conduct data collection without any geographic or cultural limitations, aiming to include different types of organizational cultures and structures, as well as different approaches to the feedback process in the practitioner field.

### 3.3 PHASE 2 - MULTIVOCAL LITERATURE REVIEW

#### 3.3.1 Context

In this section, we present an overview of how we conducted the Multivocal

Literature Review. Given the relevance of the feedback practices for academics and practitioners, we decided to adopt the Multivocal Literature review approach to cover the largest number of sources by including both academic and gray literature, aiming to get a complete and diverse analysis of feedback in remote software development teams. The literature review was structured and carried out mostly based on (GAROUSI et al., 2019) and (KITCHENHAM et al., 2009) guidelines. Also, it is important to highlight that we worked collaboratively during the entire process to reduce biases in data extraction and analysis, to ensure the quality and validity of our findings in this phase of study research.

This phase of our study was performed in three different phases: (1) source search and selection, (2) application of inclusion and exclusion criteria, and (3) data extraction. The Multivocal Literature Review focuses on answering RQ1, RQ2 and RQ3 by identifying the benefits, challenges and recommendations commonly presented in academic and industrial studies.

### 3.3.2 Source selection and search string

We used two different search engines to identify primary studies, since we do not want to limit the scope of the study to a systematic review of academic publications, but also incorporate an extensive body of gray literature in the analysis. We used Google Scholar to search for studies published on academic forums, such as scientific journals and conferences. We used the Google search engine to identify relevant publications on blogs, popular forums, and websites. We defined our search string as the following combination of keywords and operators:

*("team feedback" OR "performance review" OR "performance evaluation") AND  
("virtual team" OR "remote team" OR "distributed team")*

We applied the same search string to both search engines. From the application of the string on the Google Scholar engine, we obtained a total of 3090 studies. On the Google search engine, we noticed that despite the large number of hits returned from the string application, only the first pages do contain relevant content to our study. To limit the number of studies to be included in this search engine, we restricted our search space only to the first 10 pages on the Google website, using its engine relevance ranking.

### 3.3.3 Inclusion and Exclusion Criteria

To ensure the inclusion of relevant sources and exclude the out-of-scope ones, we defined inclusion and exclusion criteria. We screened the resultant set of studies from string searches with the following exclusion criteria:

- Publication was not written in English.
- Publication does not answer any of the review questions defined.

After that, to increase the completeness of the collected sources, we performed backward and forward snowballing on the initial set of papers selected. To guarantee that no out-of-scope sources were being included in our final set of sources, we adopted the following inclusion criteria:

- Publication discusses remote team issues.
- Publication discusses feedback issues.

As a result of the inclusion and exclusion criteria application, our final set included 41 primary studies (21 from academic sources and 20 from gray literature). The final list is available in APPENDIX A.

### 3.3.4 Data Extraction

After selecting the set of studies, we created a spreadsheet on Google Sheets to keep all the records organized and facilitate the analysis. The first step performed was identifying the attributes that should be found in the studies. These attributes were first defined based on our knowledge of the area and then they were constantly refined as the review progressed. Each attribute was considered a category on our mapping, defined at an abstraction level that would help the data extraction.

We were interested in gathering the descriptions of the feedback practices, the most common benefits and challenges listed in the literature, and recommendations to increase the feedback results. During the data extraction, the authors evaluated the findings, checked if the content was valid, and discussed if they were relevant to answer the review questions, following a systematic qualitative

data analysis approach. We synthesized the findings into 3 categories: “Benefits”, “Challenges” and “Recommendations For Feedback”.

### 3.4 PHASE 3 - QUALITATIVE INTERVIEWS

#### 3.4.1 Context

A semi-structured interview is a data collection method that relies on asking questions within a predetermined thematic framework (GEORGE, 2022). It relies on structured and unstructured types of interviews: the interviewer has a draft of the questions to be asked, but the phrasing and order of the questions are not set.

We chose semi-structured interviews to allow the interviewees a degree of freedom to explain their thoughts, as well as to enable certain responses to be questioned in greater depth (HORTON et al., 2004). This data-gathering technique also offers flexibility in both designing and refining the interview guides and in conducting the interviews, since we can revise our protocol and adapt the questions while the interviews are being conducted. To conduct our semi-structured interviews, we based our data collection and analysis on the steps described by Horton et al. (2004) and on the practical steps detailed by Adams (2015).

The use of qualitative interviews to collect data with leaders and managers of remote software development teams allows us to answer RQ4. The freedom when answering the questions allowed the leaders and managers to share details about how they conduct feedback on their teams, discuss their experiences in the feedback process and provide recommendations. Throughout the interviews, it was also possible to answer RQ1 and RQ2 questions by getting the benefits and the challenges of feedback from the interviewees' perspectives.

#### 3.4.2 Data Collection

Before starting the data collection, we shared with the interviewees an Informed Consent document to share the details about the study research, explain how the interviewees' collaboration would happen, and how we were going to keep the confidentiality of the data shared (the Informed Consent document is available on Appendix B). After the acceptance of the terms, we confirmed the scheduled interview and then started the data collection.

To conduct the data collection, we first created a semi-structured interview protocol based on the research questions defined (the interview protocol is available in Appendix C). We create this protocol to be used as a guide when conducting the interviews, to get the information needed to answer the proposed questions as we maintain the flexibility of the interviews by letting interviewees share information freely. The protocol has 21 questions divided into five parts based on the research questions:

- 1) Context and general vision of the project/organization,
- 2) Identifying the characteristics of feedback processes in the projects/organization,
- 3) Identifying topics considered main challenges/difficulties faced while adopting a feedback process,
- 4) Identifying main benefits acquired from feedback process adoption,
- 5) Recommendations to improve the feedback process.

We conducted 10 interviews with people from different organizations whose roles are associated with team leadership, acting directly as a team leader or as a project manager. The details of the interviews are described in Table 3.1. The first 2 interviews were conducted by phone call, and the other 8 interviews were conducted via video conference on Google Meet between March and May of 2023. The average duration of the interviews was 20 minutes. With the interviewees' permission, all interviews were recorded and then transcribed. To help with data analysis, during the transcriptions, we generated documents on Google Docs that were used later to help with data analysis.

Table 1 – Qualitative Interviews Overview

<b>ID</b>	<b>Role</b>	<b>Date of Interview</b>	<b>Transcript Pages</b>	<b>Duration (min)</b>
I1	Technical Specialist	13/03/2023	6	26:22
I2	Team Leader	28/03/2023	6	21:09
I3	Test Team Leader	29/03/2023	5	17:48
I4	Team Leader	30/03/2023	3	14:10



I5	Team Leader	04/04/2023	3	11:08
I6	Consultant/ Team Leader	04/04/2023	6	23:22
I7	Team Leader	04/04/2023	5	20:10
I8	Project Coordinator	19/04/2023	5	25:25
I9	Project Manager	26/04/2023	3	18:39
I10	Project Manager	14/05/2023	6	28:53

Source: The author (2023).

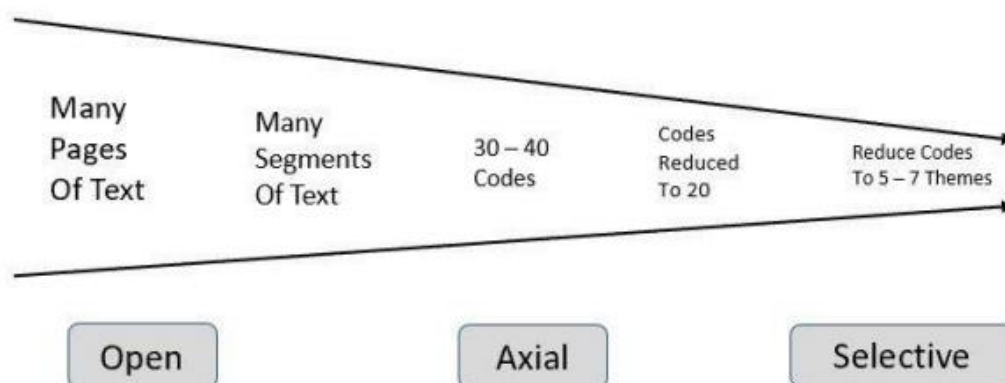
### 3.4.3 Data Analysis

For the analysis of data collected in the interviews, we conducted a thematic analysis, which is a process that involves delving through a data set, identifying patterns, systematically coding, deriving themes, and then, creating a narrative based on the collected data. We adopted an approach inspired by the six-step approach defined by Braun and Clarke (2006), dividing our thematic analysis into 7 main phases: 1) Familiarize with and organize data, 2) Create initial codes, 3) Decide what to code and add new codes, 4) Collate codes with supporting data, 5) Group codes into themes, 6) Evaluate and revise the themes, 7) Write the narrative.

The first phase starts with the raw data, familiarizing with what was collected and organizing it for analysis. From the videos recorded in the interviews, we produced 10 documents with an average of 5 pages each. This process happened in parallel with the interview's conduction. After all the transcripts were created, we read them again and started highlighting the most important insights per interview. We created a spreadsheet on Google Sheets platform to centralize the most important quotes gathered from interviews. We decided to follow an inductive approach to this study, which means that our focus was generating theory from collected data. We based our coding process on the process proposed by Williams et al. (2019) described in Figure 3.2. After organizing all quotes in the spreadsheet, we could follow to the next phase, in which we started to create initial codes following an open coding approach. The initial version of the codes was based on the collected data and the entire process was conducted manually. The idea in this first moment was to synthesize the main message from each quote into a short sentence. The code

creation was an iterative process, so we re-read the highlighted quotes, as well as the interviews, to make sure that there were no more codes to be created. Also, we revisited all our codes and then refactor each one of them to a shorter and clearer message.

Figure 4 – Overview of coding process: Open, Axial and Selective Coding



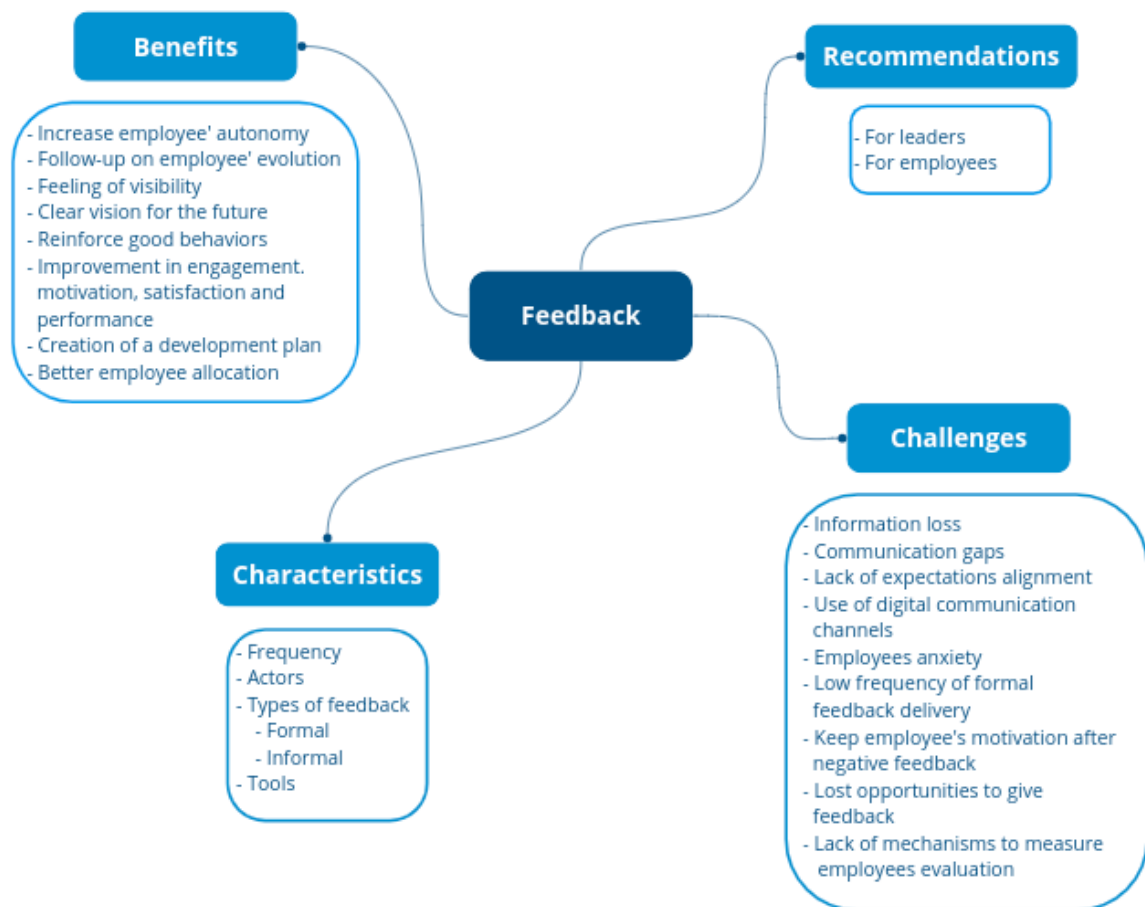
Source: WILLIAMS et al. (2019)

In the third phase, we started to clean up our spreadsheet following an axial coding approach. First, we revisited the defined codes for each quote, changing and removing them when needed. Our analysis was also based on the number of mentions for the same code, which indicated the level of relevance of that specific topic in that context. Then, we started to associate the same codes for the excerpts that represent the same meaning. After that, in the fourth phase, we grouped the excerpts associated with a particular code on the spreadsheet to allow an easier reading and a better understanding of each code created. Within this process, the codes were adjusted and revised. Following the design process, the fifth phase involved the creation of categories and themes. We followed a selective coding approach and started to group similar codes and create categories that describe each topic area. After that, focusing on answering the proposed research questions and associating our data with them, we defined themes. Each defined theme was complex enough to include the categories associated, as well the codes. The themes describe something meaningful about the research questions. We used Miro, a digital collaboration platform, as a tool to support this step by giving a visual perspective of how our data was organized.

In the sixth phase, we reviewed and revised the initial set of themes, ensuring that each theme had enough data to be supported and distinct. We checked which

themes were similar to each other and merged them to avoid redundancy. We removed themes that did not have something to contribute to our overall analysis, to take out ones that were not relevant enough or did not have enough information to be supported. All the codification phases included in the data analysis process were validated by the supervisor during orientation sessions with the researcher to minimize discrepancies in the data. Our final set of themes and categories is represented in Figure 3.3.

Figure 5 – Final Categories of Thematic Analysis



Source: The author (2023)

In the final thematic analysis phase, we wrote our narrative based on the analyzed data. We associated all the collected data with the proposed research questions and used the most relevant quotes to reinforce the relevance of the final insights.

### 3.5 PHASE 4 - SURVEY QUESTIONNAIRE

#### 3.5.1 Context

A survey is a data-gathering and analysis approach in which respondents answer questions or respond to statements that were developed in advance (KASUNIC, 2005). It goes beyond just the instrument for gathering information, it is a process that must follow specific guidelines. In this study, we adopted self-administered web-based questionnaires as the survey instrument.

We decided to use a survey approach on this study because it allows us to gather large-scale data, it is cost-effective, since it is administered at a minimal cost. Surveys provide anonymity and confidentiality to participants, allowing them to express their opinions and experiences more openly, and allows gathering valuable insights by incorporating open-ended questions along closed-ended questions. The survey questionnaire allowed us to answer three of the proposed research questions, which were RQ1, RQ2 and RQ5. To conduct our survey, ensuring the instrument and data validities, and reducing the possible bias introduced during the data analysis, our data collection and analysis used the six stages established by Kitchenham (2008) as well as the process defined for survey research by Kasunic (2005) as guidelines.

#### 3.5.2 Data Collection

Before creating the survey instrument, we started by defining the survey design, the target audience, the topics to be approached and its basic structure. Similarly to the interviews, our main goal was to use our survey instrument to get answers to our research questions. We created the survey instrument based on a transversal design, since we were going to ask the respondents about specific time spots (KITCHENHAM and FLEEGER, 2008). To ensure that the data we collected using the instrument would be valid to answer our research questions, we decided to choose as target audience only members of software development teams working in a remote or hybrid model. We did not exclude any specific roles, so any person whose team matches with this requirement could respond our survey instrument.

To gather all the information needed, we used a web-based questionnaire as the survey instrument. The questionnaire was created on Google Forms platform

because it already offers tools that facilitate the posterior data analysis. The questionnaire has 26 questions, 16 of them use multiple choice, 6 use text boxes, and 4 use selection boxes. We decided to follow a mixed approach combining aspects from qualitative and quantitative research, to get the diversity of answers that came from investigating human experiences and perceptions. The questions were divided into 4 sections, each of them focusing on a specific investigated on this study: 1) questions associated with the context in which respondents are working 2) questions associated with the current practices adopted by the respondents' teams and organizations, 3) questions associated with the respondents' preferences in the feedback process, and 4) questions associated with the feelings and improvement points of the feedback process. The survey questionnaire is available online on the following link: <https://forms.gle/YMBhXDZJv6rojGxD9>. The full questionnaire is also available on the APPENDIX D of this study.

After reviewing the instrument and validating its language and structure with 2 software development professionals, we started to distribute it on channels that directly access the target audience, such as University mailbox, Linkedin, personal Instagram account, Slack and Whatsapp groups. The questionnaire was available for responses for 3 and half weeks, from May 3rd to May 26th, and 85 professionals answered the survey. All data was collected anonymously, to remove any impediments that forbids them to share their experiences and opinions freely.

### 3.5.3 Data Analysis

Before starting the actual data analysis, it was necessary to validate if all 85 received answers were valid. In our research scope, we only considered valid the answers from members of remote software development teams, independently of their roles. Because of that, 2 samples were discarded from our final set of answers, as both participants were working in the office the entire week.

To analyze the data collected with the survey questionnaire, we used the tools provided by Google Forms platform, such as graphics and tables. At first, we use the data provided by the survey respondents to draw a demographic profile of the sample, such as the age distribution of the participants, level of education, specific area of expertise within remote software teams, and length of experience. In the analysis of the answers to the following open questions, a process like that carried

out both in the multivocal literature review and in the interviews was carried out. In this case, all responses were organized in a table on the Google Sheets platform, then grouped into large categories that, finally, generated the macro categories discussed in the sections.

For the closed questions, the data were easily grouped according to the respondents' choices, without the need for prior organization and categorization. The purpose of combining open and closed questions was to allow respondents to share their experiences, feelings, and expectations, without limiting the options to a closed set constituted from our prior knowledge on the subject.

### 3.6 PHASE 5 - DESIGN OF THE GUIDE

The RQ6 “How to improve feedback practices on remote software development teams?” asks for a solution to improve the feedback in the mentioned teams. The responses obtained in the previous research questions served as inputs to define our guide.

Based on the recommendations, and understanding the major challenges faced by leaders, managers and employees along the feedback processes, we created a guide to support the implementation and improvement of feedback practices, increasing the satisfaction of participants with the process. The guide was designed using BPMN, Business Process Model and Notation, which is a global standard for modeling business processes that provides a visual perspective of the end-to-end process.

The guide FEEDBASIC divides the feedback process into 4 main stages:

- Plan the feedback,
- Deliver the feedback,
- Develop an action plan,
- Follow-up on the progress.

Each stage has several activities and artifacts that will guide the leader or manager to understand what is required to run the feedback process, prepare the necessary infrastructure, and inform the team.

### 3.7 CHAPTER SUMMARY

In this chapter we presented the research methodology adopted to conduct this study. We decided to follow a mixer research approach composed by a Multivocal Literature review, Qualitative Interviews, and Survey Questionnaire. The research methodology is composed of five phases, and each of them is discussed in the sections that compose the chapter. Section 3.2 discusses the goals and outcomes of the study planning phase, Section 3.3 describes the Multivocal Literature review conducted, Section 3.4 presents how the qualitative interviews were conducted, Section 3.5 details how the survey questionnaire was incorporated into the method, and Section 3.6 presents how we created the guide FeedBasic.

## 4 MULTIVOCAL LITERATURE REVIEW

### 4.1 OVERVIEW OF RESULTS

As discussed in Section 3.3, in which we presented the method applied to conduct the Multivocal Literature review, the findings were organized into three categories corresponding to proposed research questions. The first review question RQ1 aims to explore the benefits provided by feedback adoption in remote software development teams. The RQ1 is answered in the next chapter section titled “Benefits”. Aiming at a different point of view from the previous question, the review question RQ2 aims to provide an overview of the main challenges of the feedback process when implemented in remote software development teams. The answers for RQ2 were grouped in the section titled “Challenges”. With the third review question RQ3, we aim to identify the best recommendations that can be integrated in the feedback process currently adopted by remote software development teams to improve its results. For RQ3, the corresponding answers were grouped in Section 4.4, titled “Recommendations for Feedback”.

The findings from the literature review were divided by source types (e.g., academic or gray literature). It is possible to differentiate them by its nomenclature, the academic sources have the letter “A” plus a number as identifier, while the gray sources have the letter “G” plus a number as identifier. All the studies included in the final filtered set are available in APPENDIX A.

### 4.2 BENEFITS

Most data related to the benefits of the feedback process was collected from the gray literature (81,25%). Only three studies from the academic literature mentioned the benefits of feedback process adoption. From the analysis of the primary studies, we clustered the benefits of feedback for remote teams into categories. We observed the most cited benefit obtained from the feedback process is **improvement of team performance**. It was mentioned as a benefit of the feedback process by eight sources [A17, G1, G2, G3, G10, G15, G18, G20]. It is followed by **improvement of individual engagement**, **promotion of team’s connection**, and **increase of team empowerment**, all of them cited by six sources each.



[G1, G10, G13, G14, G15, G20] mentioned the **improvement of individual engagement** as a benefit of feedback. We can highlight the results of [G14] presenting that 65% of the interviewed employees felt fully connected with their work after receiving the feedback, what accordingly to [G10] can be explained by the use of feedback as a critical source of inspiration to improve, which engages employees in their activities, and also as a connection between individuals and business leaders as well as team members [G20].

Linked to that, feedback process is also identified as responsible for **connecting the employees to the business and to the other team members** [G2, G5, G10, G11, G15, G16], especially when the method adopted includes the entire team, giving voice to everyone [G10] and enabling the connection of members in a more personal level by sharing vulnerabilities [G5, G11]. Three sources [G2, G15, G16] point out that the feedback process also connects the team by facilitating communication and allowing the members to identify where to improve as a group, in a resilient and collaborative way. This aspect is also discussed by study [G10]: *"By creating a space for team members to honestly and openly communicate about weaknesses in a workflow, problematic habits or behaviors, or other challenging topics, feedback nurtures better communication."*

Another benefit attached to feedback practices is the **increase of team empowerment** [G3, G10, G13, G14, G15, G18], which is explained by [G3, G15] as a collateral of when team members feel valued and proud of their work when some time is dedicated to appreciate their performance or to give some help to improve it, according 70% of interviewers on [G10]. [G13, G14] pointed out that this increase of team empowerment is caused by the improved morale and confidence when feedback is delivered. [G18] consider this benefit is also related to the reduction of imposter syndrome occurrences, as regular feedback can alleviate the feelings of self-doubt and inadequacy that are even stronger among remote team members.

Three sources [G2, G10, G18] discuss that feedback helps employees to **improve their abilities** because it signalizes which behaviors are positive and must be repeated, and which ones must not happen again [G1, G3, G15]. [G10] highlights that this benefit reflects directly on the team's performance, which was observed to increase by 40% in this study. Four sources [G14, G15, G16, G18] mentioned the feedback as a **builder of team confidence**, playing a key role in the success of the business because of that [G18]. Related to it, another benefit identified is the

**increase of employees' motivation and job satisfaction**, which are cited by four sources each, [A1, A10, A17, A21, G1, G3, G11, G18], because it provides information on employees performance and allows the appreciation of the good work of your team [A17, G3] as well as keep things moving in the right direction [G11, G18]. It is important to highlight that these aspects are not the same: motivation refers to the desire to work and is signaled by engagement and focus, while job satisfaction refers to emotions in reaction to the job, signaled by employees' happiness and intention to stay at the company [A21]. [A1, A10] mentioned the positive effect on motivation and job satisfaction was more relevant on less motivated team members, when the feedback was built based on a positive content.

Another benefit of the feedback practices mentioned by selected sources is the **alignment of the team with the company's objectives** [G9, G14, G20], which is closely linked to the promotion of the team-business connection mentioned before. As shown in [G14], 65% of the team members said they felt fully connected with their work after receiving feedback. [G9, G20] emphasize that feedback is responsible to keep the team and members aligned with the company goals, strengthen the organization culture and reinforce its values, factors that require even more attention for teams working remotely. The **facilitation of the business decision-making process** [G1, G10, G11] is another mentioned benefit. [G10, G11] considered that the feedback process helps managers to make wiser decisions related to the business and team structure, aiming to optimize the team's work, while [G1] pointed out it supports the mitigation of problems earlier. The **reduction of turnover rate** was also mentioned [G1, G4], which was observed on [G4] to get an average of 15% lower on companies that implemented regular feedback.

#### 4.3 CHALLENGES

We clustered the challenges involved in the feedback process mentioned by the sources into the following categories and among those we observed that the top three are: **lack of trust in the team, limited access to information, reduced face-to-face interactions, and communication gaps**. Most of the sources describing the challenges of feedback are included in the gray literature (68.2%), while a minority of them are included in the academic literature (31.8%), which we explain

by the greater proximity of the gray literature regarding the experience of remote teams with this process.

**Lack of trust in the team**, among team members and team members' trust in the feedback process itself, was considered a key challenge by six sources [A1, A10, A16, G13, G18, G19]. [G13] reinforces that team members may isolate themselves in the remote context, bringing a lack of trust which can make the feedback even harder to be delivered [G18, G19]. [G19] stated that *"establishing connection is paramount and we know with connection comes trust"*, detaching that it is necessary to find ways on building it when offering feedback remotely. Looking at the feedback process perspective, [A16] points out that a critical factor to achieve successful feedback is to maintain the employee's trust in the feedback process.

The **limited access to information** is perceived as a challenge of the remote feedback process by six sources [A11, A13, G1, G2, G18, G20]. The author of [G20] said: *"One of the most difficult things about conducting performance reviews at a time when your team has gone remote is that you don't have as much data as you usually do because you're not seeing your employees in person. (...) The risk is that 'your old biases, positive or negative, are going to be amplified.'"*. [A11, G1] mention the few mechanisms available to gather data on remote environments make it harder to keep an awareness of what and how employees are working, turning the feedback construction harder. This highlights the need to find proper methods to evaluate performance based on the limited-gathered data [A13, G18]. In [G20], the author had also reinforced the importance of considering the circumstances in which the employees are working: *"your approach calls for a little more flexibility, a little more heart, and a little more leniency"*.

[A13, G8, G13, G14, G15] considered the **reduced face-to-face interactions** as a challenge of remote feedback, especially because of the team members' isolation in remote context, which reduces team connection [G13]. These reduced interactions lead to absence of body language and moments of face-to-face collaborative work, limiting the ways of gathering impressions from other team members', making the moment of feedback delivery harder [G8, G15]. [A13, G4, G7, G17] highlighted **communication gaps** as challenges involved in remote feedback. These communication gaps are justified by the absence of signals available in face-to-face meetings, making it hard to adjust the language while communicating, and the difficulty to join in synchronous feedback because of the different time zones

[A13, G7, G17]. In [G17], the author said: *"The managers I interviewed also note that when they are giving feedback in person, they can adjust context to communicate the severity of the news. With his employees now working from home, he can't control the setup that way."*, reinforcing the communication challenge in the moment of feedback delivery. Study [G4] brings an interesting discussion on communication challenges: *"Yet, the most recent workplace statistics revealed that managers generally dislike giving feedback to their employees. The same statistics revealed that, ironically, employees want more feedback"*, revealing an antagonistic relationship between seeking and offering feedback for remote teams.

[A6, G15, G17, G20] consider **dealing with emotional aspects related to the Covid-19 pandemic** as a challenge to provide feedback. With the amount of negative daily news received, people need to feel grounded and confident at work, which increases the importance of a well-structured feedback process [G15]. This stressful scenario also strengthens negative bias, which can diminish the positive contributions from the feedback process [A6, G17]. One of the experts interviewed by [G20], describes: *"People are wrestling with uncertainty and existential dread"* and concludes by saying that this makes performance reviews even more challenging.

[G5, G10, G19] mention the **maintenance of the cadence of the feedback delivering** among the challenges faced, which was considered by [G5] as an effect of transition from office to remote environments. *"I had no idea how we were going to continue giving each other feedback remotely once we all returned home. As I predicted, we didn't continue."*, [G5] said. [G10, G19] reinforce the need to keep the feedback delivery at a constant pace and shorter frequency. In opposition to the traditional perception of feedback as a performance catalyst, [A16, A17, G4] discuss the capacity of feedback to act as a **demotivator for employees** as a challenge to be addressed. Results from [A17] show that 73% percent of negative feedback had an impact on the behavior of employees, demonstrating the power of this process, so the design of feedback requires careful consideration of the factors that are likely to make it more effective [A16]. [A11, G18] point out the **lack of a feedback-specific tool**, making it hard to give and receive feedback in the remote context.

#### 4.4 RECOMMENDATIONS FOR FEEDBACK

Most sources that identify recommendations to improve the feedback process

were found in the gray literature, while only six references were found in sources from the academic literature set. This shows that the discussion about how the process could be improved is still quite restricted to the practitioners' field despite the known relevance of this theme.

Focusing on the first stages of feedback, two good practices mentioned by a lot of sources are the **use of multidimensional indicators in the evaluation of team members** [A13, A15, G3, G8, G9, G18, G20]. Sources suggest gathering the information to build the feedback from various sources to avoid biases and also to cover topics that are not covered in the typical feedback process [A15, G3, G9, G18]. It also highlighted the need to adapt performance indicators to the new context of remote work, which is sometimes being experienced for the first time, including metrics such as employees' contributions to team performance, adaptability to new, and ability to acquire and share knowledge [A13, G8, G20]. This variety of information helps the creation of an effective goal-setting development plan as the feedback report will include details and specificities regarding employees' expected performance.

It is also highly recommended to **involve the entire team** [A13, G11, G16] in the feedback process to enrich the information provided on the feedback delivery by gathering several perspectives about employees' performance, which can be achieved by using traditional feedback methods such as Feedback 360. To support this collaborative feedback process, [A1, G6, G13, G19] recommend the **creation of a trusted environment** - considered by 33% of remote managers the major thing to be prioritized on remote teams [G6] - where employees feel empowered and safe to share their opinion. To this happen, it is important to create opportunities in which team members can support each other and, when possible, promote face-to-face interaction. Three sources [G2, G13, G16] indicate the **adoption of a template for feedback** as a good practice to plan the feedback in a structured and standardized manner.

After planning the feedback, five sources [A4, G1, G9, G16, G20] suggest the **adoption of two-way communication channels** as a good practice when delivering the feedback, making the remote feedback close to a real conversation and also catching the impressions of the recipient while it is being delivered [G16]. The **use of video calls** as the feedback-delivering channel is recommended by eight sources [A3, G3, G5, G13, G14, G16, G18, G20].

Four sources [G7, G8, G9, G11] recommended the use of a **feedback-dedicated software tool** as a good practice to support the delivery of feedback as it can assist managers and leaders in tracking employee performance, which can be done using an online tool. The author of [G8] said that “*Performance management software can assist you in tracking employee performance and equipping employees to progress in their careers.*”. [A15, A16, G3, G5, G8, G12, G14, G15, G17] recommend that the **feedback must be specific about the aspect under evaluation** since it is considered a critical point for feedback success. To do that, sources recommend building feedback focusing on the quality of what was developed by the employee, always keeping clear that the provided evaluation is based on what was produced in fact. [G3] recommends the evaluation based on the quality of the work delivered.

The practice of **keeping the feedback regular** is suggested by fourteen sources [A4, G3, G4, G6, G7, G8, G10, G11, G13, G14, G15, G16, G18, G20] because it would help on employees adjustments and calibrations, which is reinforced by [G20] results, showing that 72% of participants want to receive feedback more regularly, while 60% said they like it on a daily or weekly basis. It is suggested that **informal feedback must be a routine**, like one-on-one meetings, which can be combined with formal performance evaluation, reducing the money and time costs commonly attached to the process, and allowing instant feedback on someone’s action or achievement. It is also suggested to build a **clear feedback message** [A15, G1, G4, G5, G6, G8, G9, G12, G17, G19] and **as simple as possible** [A15, G3, G4, G6, G14, G15, G17, G18] to avoid misunderstandings or ambiguities. To do this, [G17] suggests the use of contrasts, balancing positive and negative points [G4], and examples [G19] to build a clearer feedback message with the support of simple and direct language. Also, it is suggested to focus only on the performance evaluation topics, leaving any other subjects such as salary adjustments away from the feedback delivery moment, keeping it short and precise [A15, G4, G6].

Studies also highlight the following good practices while delivering the feedback: **make the feedback expectations clear** [G4, G5, G10, G12, G14, G19, G20] and **provide a goal-oriented development plan** [A16, G4, G5, G8, G11, G18]. Studies recommend providing information about the expectations of the employee’s performance, and explicitly communicating the points on which the

employees must address or work harder. [G12, G20] emphasize it is important to encourage better performance, growth, and learning of individual employees. To help on that and enhance the expected results of feedback, as well as to monitor the employees advances towards the established performance goals, it is important to provide a development plan oriented by the goals established. [A16, G5, G8] reinforces that this plan is important as it will act as a guideline to achieve what is expected of the employees.

Five sources mentioned that feedback is not only important to identify points of improvement in the employee's performance, but it is also important to use this moment to **recognize an employee's good performance** [G1, G8, G11, G15, G20] in carrying out their activities. The compliment should be given right after identifying a good problem-solving or a high-quality delivery, to encourage the employee and add more value to what is produced [G1, G15, G20]. [G8, G11] considered that it is important to keep the celebration of good accomplishments alive even in a remote work environment.

Studies considered adopting a post feedback monitoring stage as essential to achieve the desired impact on individuals, teams, and organizations. As practice, studies recommend **a constant follow-up** [A1, A4, A16, G5, G9, G18] after the feedback delivery to allow monitoring the employee's progress towards the goals established on the development plan built. As described by DeNisi and Kluger in [A16]: *"A coach can help further motivate employees who receive positive feedback from various sources, while helping the recipients of negative feedback formulate a workable strategy for performance improvement"*. It is also recommended to **create a moment of reflection** [A1, A4] after the feedback delivery to process and understand all the information provided. As Penarorra and colleagues [A1] stated: *"A period of reflection after providing feedback may improve the effectiveness of a feedback intervention"*. In addition to those practices, two sources [G8, G11] consider a good practice while planning the next round of feedback to **constantly calibrate the performance evaluation**, which can be done by applying surveys of engagement with employees to evaluate if the performance evaluation implemented is still adequate. [G8] recommends *"Calibrate performance within and across teams to ensure consistency. A performance calibration meeting — whether it's in person or through a conference call — is an important step to standardize performance reviews"*.

*across your company.”.*

#### 4.5 CHAPTER SUMMARY

This chapter presented the findings from the Multivocal Literature review. They were separated into 3 categories, which originated three different sections: section 4.2 presented the benefits identified in the literature review, section 4.3 presented the challenges mentioned in the literature, and section 4.4 presented the best recommendations listed in the sources included in the literature review.



## 5 QUALITATIVE INTERVIEWS

### 5.1 CONTEXT OVERVIEW

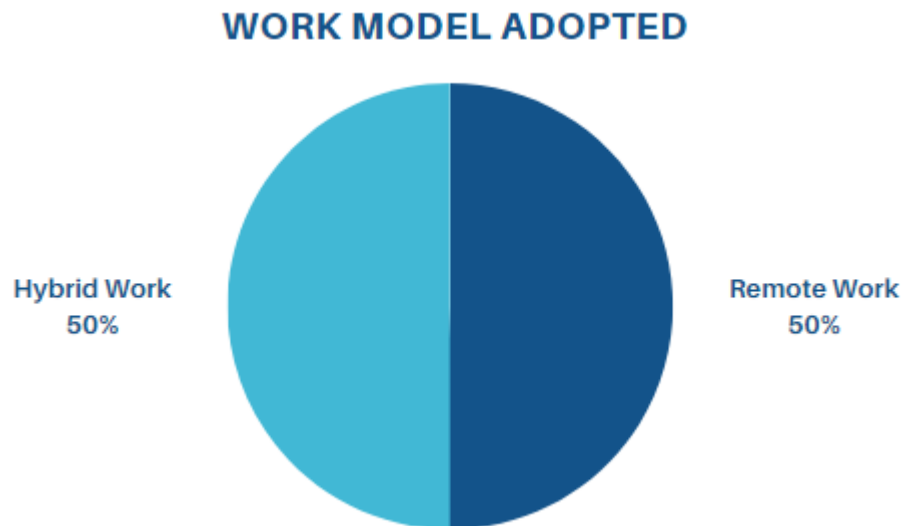
The interviews discussed in this chapter were conducted between March and May of 2023, using video calls on Google Meet platform. We had 10 participants, 5 women and 5 men, and the average time of each interview was 20 minutes. Looking at the roles' distribution among the interviewees, we observe that 6 are team leaders on their teams, and only one works in a test team. 3 of the interviewees are in management positions, 2 working as Project Manager and 1 as Project Coordinator. One participant works as Technical Specialist, giving support to more than one team. Table 3.1 presents the details about each interview with more details.

When asked about the adoption of Agile methods on their teams, interviewees adopted different variations of agile methods. Scrum and Kanban were mentioned in 5 interviews, 3 of the participants also mentioned that those methodologies are combined and adapted according to the project characteristics. 3 interviewees mentioned that they do not adopt a specific Agile methodology, but they use tools and ceremonies of agile development, such as the board from Kanban, and the daily and retrospective meetings from Scrum. Two interviewees explained the adoption of Agile methods depends on the characteristics of the project, as well as the client's needs, so agility is not adopted to all the current projects running in their teams.

Regarding the current work model adopted by the interviewees' teams, as well as their organizations, we got the distribution presented in Figure 5.1. Half interviewees work fully remote, while the other half adopt a hybrid work model. None of the interviewees is currently working only in the office. Regarding the participants who stated that hybrid work is adopted by their team, the frequency in which the employees need to go to the office varies. Three interviewees said the frequency is not officially defined, so the employees can work in the office whenever they want. I1 said that the employees are invited by the organization to go to the office every three months, but he emphasized that this visit is not mandatory. I1 said: *"In my work contract says: once a quarter I can come here [the interviewee was in the office during the video call]. So, it's not even a matter of obligation, it's a matter of will (...), each one is free to deny: 'this quarter I won't be able to go because of something'.*

(...) *It's not something set in stone.*". I1 also mentioned that these visits focus more on team building than on software development activities.

Figure 6 – Work Model Adopted



Source: The author (2023).

We also aimed to get an overview of the organization position regarding the maintenance of the current work model. When we asked the interviewees about it, we got a lot of different answers. 6 participants said that their organizations did not establish going to the office as a mandatory policy, but that they are leaving the offices available to the workers, as well as encouraging them to go there as they feel comfortable and necessary. Only one participant said that his organization has started to change to a hybrid work model, but it was still in early stages.

Considering the major adoption of remote work by the participants' teams, we asked them about the advantages and disadvantages perceived by them regarding this work model. Among the advantages, the participants mentioned that the remote work model allows a bigger routine flexibility [I1, I2], a broader access to talents around the world [I1], and the possibility of asynchronous communication with the client, not limited by the time working in the office, improving the delivery time [I2]. I2 also mentioned that the adoption of this work model did not decrease the quality of deliveries: *"There was a change in the team, many people from our team left, but the new people who arrived, despite having less experience, were able to meet the demands that were expected from our team."* On the other hand, some

disadvantages were also mentioned by the participants. They emphasized that the remote work model makes it harder to identify the difficulties faced by the employees, to keep a constant communication inside the team, as well as to follow the employees' evolution towards the established goals. It was pointed out that the remote work leads to a large number of meetings, which causes a reduction in the work visibility, since the team manager is less present in the team's routine.

We also asked the interviewees about the impacts they consider the remote work model has on the feedback practices. I4 mentioned that this work model allows a better preparation for the feedback moment, by giving enough time to organize the topics that will be discussed and the script that will guide the conversation, as well as it increases the receptivity from employees: *"Just the fact that you are not personally in front of me, maybe it already helps you to receive the message without you being shy or very ashamed, (...), so I think the person feels even more comfortable"*. I2 mentioned that this work model gives more time to the employees to dedicate their time to work on the improvement points discussed in the feedback moment: *"When you're at home, in an environment more isolated from others, (...) that you have to wait 15, 20 minutes, you easily think 'I'm going to watch a little video here from my course' and then the person ends up not wasting time. (...) [besides] without the tiredness of commuting, I think the person can absorb knowledge much faster and take more advantage of these training sessions"*.

In contrast, I7 highlighted the remote work model makes the informal feedbacks sparser because it requires a previous scheduling - what is aligned to the full schedule common in this work model. The participants also mentioned that the trouble to identify the employees' evolutions and difficulties also makes the feedback poor information in some cases. Also, I9 mentioned that the feedback conducted remotely reduces the proximity and decreases the access of important cues provided from body language: *"(...) I think that in the remote one you lose a bit of proximity, sometimes you can't interpret the person's expressions, body behavior so well, whereas in the face-to-face one you can break it down more the ice, can read a little more the climate of the environment"*. Table 5.1 synthesizes the benefits and Table 5.2 synthesizes the challenges mentioned by the participants regarding the remote work model.

Table 2 – Advantages of Remote Work Model

Advantages	Interviews
Routine flexibility	I1, I2
Access to talents around the world	I1
Asynchronous communication with clients	I2
More time to dedicate to improvement points identified on feedback	I2
Better preparation before the feedback delivery	I7

Source: The author (2023).

Table 3 – Disadvantages of Remote Work Model

Disadvantages	Interviews
Perception of the difficulties faced by employees	I2, I3
Reduction of works' visibility	I5, I2, I8
Follow up the employees' performance improvements	I3
Large number of meetings	I8
Makes the feedbacks sparser	I7
Reduces the access to body language in the moment of feedback delivery	I9

Source: The author (2023).

## 5.2 CHARACTERISTICS OF FEEDBACK

One of our goals when we decided to conduct interviews with managers and leaders of remote software development teams was to get a broad overview about the characteristics of the feedback practices implemented. By doing that, we were able to answer RQ4, which is “How are leaders and managers of remote software development teams using feedback practices?”. Following a thematic analysis based on the approach described by Braun and Clarke (2006) to analyze our collected data, the themes resulting from the selective coding phase were: **Types of Feedback**, **Frequency**, **Actors** and **Tools**. We discuss each theme and provide highlights and excerpts from the interviews.

### 5.2.1 Types of Feedback

In the interviews, the participants separated the feedback practices into 2 different categories: **formal** and **informal**. In the participants' perception, **formal feedback** is related to the feedback practices structured and defined by the organization. In this type of feedback, the organization is responsible for defining the tools and the frequency of feedback deliveries. For example, I1, I9, and I10 mentioned that the organization requires formal feedback at least once a semester, as explained by I1: *"Here we have formal feedback every semester, (...) these are formal processes that the company has as one of the guidelines, (...) so every year you have at least 2 feedbacks"*. It was also mentioned by I3 that in formal feedback, the employee is evaluated more rigorously based on the organization's values and the expected performance based on its role inside the organization. I9 mentioned that in their organization formal feedback has two main objectives: the one conducted in the middle of the year has as main objective to follow the employee's performance and identify possible impediments, while the one at the end of the year also includes rewards and salary adjustments.

The other type of feedback practice identified in the interviews is **informal feedback**. Different from formal feedback, this type of feedback can assume different forms depending on the team. I1, I6 e I9 mentioned that informal feedback is delivered in daily conversations, right after good work was observed or an improvement point was identified, in a more continuous way than formal feedback. I1 said: *"The formal feedback is very nice for the company, but I think that day-to-day feedback "Wow, you did a good job, keep it up", or "Don't go that way, because you're going to encounter these mishaps" is the most important feedback only for the employee's feeling, but also for him to change"*. I1 mentioned that the informal feedback happens in the form of compliments that can be made informally in the daily conversations and in the platform provided by the organization: *"There is also a very nice tool that we use here, which every month we receive a certain amount of credit. The name of the creed is "sumupinho". So, if someone does something good, you can post it here and there, we can exchange it for rewards, like uber, Ifood card..."*. I2, I3, and I9 mentioned that they started to use one-on-one meetings. In these meetings the leader and employee can talk directly about topics brought by both, to give informal feedback. They highlighted that the main goal of one-on-one is

not the feedback delivery, but this is an exclusive time for discussing expectations and the next steps in the career. I2 said: *"We increased the number of one-on-ones (...) to create a closer communication channel with the team, to create a relationship of trust with the team so that they begin to understand that the person is willing to help and dedicate themselves to helping solve the problem with you and then be able to open up more when you have a problem, to be able to evolve together and build a solution together"*. I3 also mentioned that even with the feedback being out of the scope of one-on-one meetings, sometimes feedback about certain situations is requested in the conversation and then informal feedback is delivered. I3 mentioned her team implemented a gamified system to follow up on the interns' evolution regarding both acknowledgment as well as team activities, delivering informal feedback on each evaluative cycle, and that sessions of Canvas Feedback are also requested from the employees themselves.

### 5.2.2 Frequency

The frequency of feedback delivery varies between teams and organizations. Based on the data from the interviews, we mapped that the common frequencies in which the feedback is delivered are once a semester, once a trimester, every two weeks, once a week, or in an undefined period. When the interviewees mentioned that formal feedback is delivered once a semester or trimester, they commonly referred to formal feedback, which one implemented as an organizational practice. I2 highlighted: *"People are evaluated at each evaluation cycle, which takes about 6 months"*. Both biweekly and weekly frequencies referred to informal feedback practices, which can include one-on-one meetings to follow up on how the activities regarding the daily work and career development plan are evolving, and get quick feedback from that, as well as short feedback meetings to evaluate technical aspects: *"The main objective of the one-on-ones is to follow up on the Individual Development Plan, for the person to see any difficulties they are having, update the plan, or some goal that has changed (...) but it can also be used to give feedback if anything has happened in these 15 days between one-on-ones"*. I5 mentioned that the feedback does not have a fixed frequency in his team, it usually happens after the end of a sprint, a term of Scrum methodology for a period in which a set of tasks

selected by the team must be delivered, and includes all the team, but it can also be requested at any time to both the leaders and pairs.

### 5.2.3 Actors

Regarding the actors of the feedback practices adopted by the interviewed managers and leaders, we got two different answers. Four of the six interviewees that specified who is part of the feedback delivery and building, answered that only the team leader or manager and their direct leads participate actively in the feedback process. I6 mentioned this happens because by directly leading, they have access to the activities, challenges, and evolution of the employees more directly, making more sense to follow this structure than including people outside the team to build and deliver the feedback. I2 and I7 mentioned that even within this leader-led structure, they catch information from the pairs inside the project as well as outside the project, that have interacted with the employees in the evaluated period.

On the other hand, I1 and I10 mentioned that the entire team is included in the feedback process. I10 mentioned that the entire team is included in the evaluation, even with the feedback delivery itself only includes the leader and led: *"(...) So today the evaluation process is 360: I evaluate the team, the team evaluates me, the peers evaluate me and I evaluate the peers. So, I inform a list of peers that I want to be evaluated and whether people accept it or not, if they accept it, they evaluate me."* In the I1's team, both evaluation and feedback include the entire team, and highlighted: *"It's not just the vision of your engineer manager or just the product manager's vision, the team itself can evaluate you too and tell you where your strengths and areas of improvement are. So, it's a somewhat complex assessment, but it gives you input not only from the perspective of a vision and not just from your peers."*

### 5.2.4 Tools

I1, I2, I3, and I8 said they use the platform Culture Rocks to conduct the formal feedback. Here, it is important to highlight that I2, I3, and I8 are from the same organization, which explains the use of the same tool. I8 also highlighted that there is low adherence to the use of the platform outside the period in which the feedback is being built and delivered: *"I assume that I don't have much adherence to Culture in*

*the sense of feedback. I only use feedback there when it's a performance cycle (...) And then I use it more to follow the company's protocols, I don't have such high adherence."* I7 and I9 mentioned they use a tool called WorkDay, in which it is possible to register a goal, a priority, and then the feedback is built based on the employee's evolution towards the established goal. This tool is used only for formal feedback. Here, as with the previous tool, there is a convergence in the use of the tool because both interviewees work in the same organization. Another tool, only mentioned by I10, is Pulses, which is an internal tool of the interviewees' organization, in which the employees receive, every two weeks, a questionnaire including a lot of areas, such as personal satisfaction, health, deliveries, satisfaction with the team you are working on, that will be later used as input to create the final feedback report, but can also be used as a trigger to informal feedback. In one excerpt, I10 said: *"So, we have cases here of leaders who have already received messages like that, detonating him, and nobody knows who did it. And it doesn't matter to know either, what matters is to know what people are thinking about him and what he can do to improve."*

Concerning informal feedback, I3 mentioned that they use Notion and online boards to support both their previously mentioned gamified approach as well as Canvas Feedback sessions. I4 mentioned that on its team, they use Notion as a support tool to keep a registration of information shared in the informal feedback, between leader and lead, that can be relevant to the entire team. As mentioned before, there is a reward tool used in I1's organization to deliver informal feedback that will be visible to the entire company. I5 mentioned that there is a similar tool available in his organization for making compliments and thanking your teammates publicly, but it was never used by him.

### 5.3 BENEFITS

One of this study's research questions, more specifically the RQ1, is "What are the benefits of feedback process adoption for remote software development teams?". Aiming to bring insights from the interviews that may help us on answering this question, we asked the leaders and managers participants which aspects they perceived to be positively impacted by the feedback practices adoption and what this practice changes, in a positive way, in the dynamics of both teams and individuals.



Some of the benefits we extracted from the interviews' data were the **improvement** of a lot of different aspects: **engagement, motivation, satisfaction, and performance**, which was enforced by mentions of technical, productivity, and delivery quality improvements. These improvement points are interconnected, as highlighted by I8: *"A standard benefit for open people, whether for improvement points or positive ones, you can see the greater engagement of people seeking to attack improvement points or reinforce strengths. I think this impacts on many things, it impacts performance, this impacts on greater integration with the team, greater engagement (...)".* Another benefit attached to feedback practices in participants' perception is that it **gives a feeling of visibility** to employees, as I1 detailed: *"It's like you, as a leader, really care about the person, it's like you're looking, it's like... 'Someone looks at me'... When someone sees that you have material, that you give examples of what not to do, how it could have been done better, I think it is pleasant for the person who is receiving."* By giving practical examples of routine, the feedback practices can **reinforce good behaviors as well as point out possible improvement points**: *"I think the feedback is also a lot of space for me to suggest ways for you to better develop or enhance something within your activities."*, I3 mentioned. Closely related to this, the feedback also gives the employee **a clear vision for the future**, as I1 mentioned: *"[the feedback provides] a good vision for the future, of being able to change the course of navigation that we are doing when we see that we are on the wrong path quickly"*. This means that feedback makes it possible to redirect employees' actions and careers to move in the right direction.

Another feedback's benefit is that it gives the employees valuable input to **create a development plan** for their careers. I3 observed that: *"After this feedback, people end up having more inputs to create action plans for themselves, because sometimes you know you're not doing so well, but you don't know how to improve."*, so the information shared by the leaders helps them in defining their goals more accurately. This plan in a collaborative way, and as the feedback practices allow an exchange of information and expectations between leader and employee, it allows the leader to **allocate team members to tasks and small projects more aligned to their development goals**, as mentioned by I6: *"The leader meets with each member who is led to make some alignments related to some pillars of the project and personal life (...) to ensure that we also try, on our side, as leadership, to do our best so that the person achieves what is expected"*. I7 reinforced this feedback benefit

saying: *“It is a slightly more senior person who helps slightly more junior people navigate this whirlwind of options, projects, and areas. So, this person talks and understands what you want, where you want your career to go, so we allocate you to project X or Y.”*

It was also mentioned that one of the benefits of the feedback practices is that it allows a **follow-up on employees’ evolution towards the goals** established. Feedback is the moment of reinforcing good behaviors and pointing out possible improvement points, as discussed before, it is also the moment to analyze how your actions have helped you to achieve your personal and career goals. Using the development plan as a guideline, the leader can compare how the employee is performing with what was expected from him. I6 detailed this benefit as follows: *“I think [feedback] it's a way for you to progressively monitor this point of how good is happening, the person is feeling recognized and is adhering to what they expect, and, of course, signaling some alert if necessary.”*

Two interviewees also mentioned that an indirect benefit caused by feedback practices is that the **employees started to act more autonomously and fearlessly**. This benefit is strongly related to the other benefits presented before, specifically the identification of improvement points. I3 brings an interesting example of the mentioned benefit: *“There was a recent case of an intern who has been doing an internship for a long time, so we expect him to take the lead on some things, show himself more... And he was there in a comfort zone. That [the feedback] made him appear more, take activities and lead them.”* I6 also highlighted that one of the most positive changes is in how their leads positioned themselves in the discussions: *“I notice a lot of confidence in behaving, taking a position (...) One of the most positive things that I have, including an analyst as an example, is this evolution in the security of taking a position.”*

## 5.4 CHALLENGES

To explore RQ2 from the viewpoint of leaders and managers, we asked them which are the main challenges perceived during the feedback process and what are the factors that may hinder the effectiveness of feedback for both teams and individuals.

**The communication gap** is mentioned as the biggest challenges involved in the feedback process. In the interviews, it was mostly related to the difficulty of employees communicating the problems and obstacles faced by them to their leaders, which can be related to the lack of confidence among the actors involved in the feedback process. It was reinforced by I2: *"Now, we depend a lot on the person who is having difficulty exposing this difficulty, because sometimes they are not aware that the person is going through that difficulty or had a problem, because they may have had the problem and simply hid it because they managed to solve it by themselves only."* This communication challenge also leads to unclear messages, as exemplified by I6: *"There are many things that we think are clear and sometimes they are not, for the sake of communication, there are points or assumptions that you assume, for example, that the person understood and absorbed, and you failed to get your message across"*. Strongly related to communication challenges, interviewees pointed out that there is a **lack of expectations alignment** between leaders and employees. As the information exchanged between both of them is not clear because of a mutual lack of trust to communicate, there is a misunderstanding about the improvement points and behaviors that must be maintained. I6 exemplified: *"For me, it is a big difficulty because I think that sometimes we create an expectation that the person is going to do a certain thing and he doesn't do it, because we thought he understood what he was supposed to do... On the other hand, the person thinks she wouldn't need to do such a thing, so ok for her, but then there's that atmosphere of unmet expectation."* The interviewees have associated these two challenges with the difficulty to **choose the best approach** to deliver feedback and to the **use of digital communication channels**. The use of digital communication channels was a challenge introduced with the advent of the remote work model. In the opinion of the interviewees, this change made it more difficult to structure and clearly transmit the feedback, as mentioned by I6. In the words of I7, *"The 'how' is the difference. The person can put a shield or melt the shield according to how you are going to approach the person about that."* So, choosing the best approach, considering the particularities attached to the context of remote work, is crucial to the great receptivity of feedback.

**Receptivity** was also mentioned by the participants when asked about the challenges faced. The interviewees highlighted that it depends on the person that is receiving the feedback, but that this aspect turns out to be more challenging when

the feedback delivered is not very positive. I10 said: *"We know that there are people who accept it well, especially when it is not very positive feedback, we know that there are people who accept it well and there are people who do not accept it well, who are there questioning, justifying themselves, and simply do not see it, do not agree."* Another participant, I2, mentioned that receptivity is considered a very challenging aspect because the feedback may be received as a personal critique: *"The problem we see is that sometimes people have difficulty understanding feedback and think it is a criticism of the person when it is not. (...) Sometimes the person says 'I think you could improve your communication' and the person closes down, takes it as a personal offense, then they don't even want to touch it."* A challenge mentioned by the participants that has a direct impact on receptivity is dealing with **employees' anxiety** when the feedback delivery gets closer. I1 said: *"I often feel a certain need, urgency from people to receive feedback, they want to be the first... And because of this anxiety, I ask: 'Are you okay to receive feedback today? Because if you don't have it, we don't do it today (...)'. Because maybe she understands me the wrong way or I express myself in a way that, at the time of anxiety, can generate a conflict."* I2 also relates the anxiety to the market moment: it was noticed that the employees' anxiety increases in periods in which a lot of layoffs are happening, and the software development work field is less stable.

Challenges related to negative feedback were also mentioned by the employees. The **delivery of negative feedback** was considered a challenge and **keep the motivation of employees after receiving negative feedback**. I7 related that it is necessary to change how the negative feedback is seen by employees: *"In my opinion, you better not give up on the person. (...) and you say 'I'm not giving you trouble because I don't trust you', it's better, it'll be a slap, but the person will understand why that's happening and will know what he can do to improve"*. Another challenge commonly mentioned was the **low frequency of formal feedback delivery**, which makes getting together a huge amount of information on the feedback report and leads to bringing outdated information to the discussion. I1 said that *"A lot of people do feedback every 6 months and take a picture of the past, (...) 6 months, which we know is a very long time, things change a lot, especially for this new generation that is a little more rushed"*. I9 highlighted that this low frequency may generate unfair feedbacks: *"I even think it's unfair when the person didn't have feedback the whole year, and when they get to the evaluation, terrible feedback"*

*comes, detonating the person, because if they had spoken before, during the journey, the path, they could have changed the route, changed the way there".*

The participants also mentioned that the **routine makes them lose opportunities to give feedback** more assertively and quickly. I8 said: *"In your routine, on a day-to-day basis, you can easily let things pass you by, easily overlook or overlook opportunities for improvement or even recognition of good things done, celebrate certain victories and such."* I10 pointed out that this is difficult because there is a lack of habit of close follow up employees' activities: *"In fact, what I would like is to give more feedback. The formal one, which is once a year, that's very little. But I would like to have time and get into the habit - because I'm not used to - giving more feedback to the team"*.

The combination of the low frequency of formal feedback delivery, combined with the absence of opportunities in routine to overcome this with informal feedback, brings another challenge: **information loss**. In the opinion of interviewees, this challenge emerges from a combination of two factors: the big amount of information to be kept on record until the time to deliver the feedback and also the big number of employees they need to follow up. I1 discussed this topic in more detail: *"I think one of the biggest difficulties we have is forgetting... We like to write down a lot of things in our minds. That's why I always say that these 6 months are too long, because maybe the first 2 months were brilliant and the last 4 were a disaster, and I only remember the last 4."*

It was pointed out by I5 that the **organizational structure** may be a challenge to adopt and maintain feedback practices. I5 shared his experience: *"The company I work for is a \*confidential\* outsourced company, and not only does it exist, but also other companies. So, the junior who works with me is from another company, so it's difficult for me to outline something for him since he's from another company"*. Another topic mentioned in the interviews that is perceived as a challenge is the **lack of mechanisms to measure the employees' evolution**. It was noticed that this can lead to a subjective evaluation that may not reflect the actual advances of employees toward their goals, as I4 said: *"We still don't have such an effective, efficient way to monitor this kind of thing, it's kind of in the perception, in the subjective if that has improved or not, both formally and informally."*

## 5.5 RECOMMENDATIONS TO IMPROVE THE FEEDBACK PROCESS

After analyzing the data from interviews, the recommendations to improve the quality of process feedback is divided into two main groups: recommendations for leaders and recommendations for employees. It is important to highlight that this division was not balanced: only two recommendations focus on actions for employees, while the others focus on actions that must be performed by leaders and managers.

Table 4 – Recommendations to improve the feedback process

<b>Recommendations</b>	<b>Actors</b>
Consider the individuality of employees	For leaders
Do not use the moment to blame the employee	For leaders
Evaluate the performance of employees based on the evaluative rule for their role	For leaders
Communicate activities and expectations	For employees/leaders
Provide practical examples	For leaders
Bring orientations that help in the evolution of the employee	For leaders
Structuring feedback content before delivery	For leaders
Use tools to structure feedback	For leaders
Don't miss the timing	For leaders
Schedule a time box only for feedback	For leaders
Keep constant records of the performance of employees	For leaders
Gather insights into how employees interact with others	For leaders
Select the right language	For leaders
Build clear feedback	For leaders
Balance positive and negative points	For leaders
Focus on employee actions and their impact on the team	For leaders
Create a welcoming environment for the employee	For leaders
Turn the feedback into an usual conversation	For leaders
Choosing the right time to deliver feedback	For leaders
Draw a tangible development plan	For leaders



Request a return feedback when giving feedback	For leaders
Be open to hearing what the leader has to share	For employees

Source: The author (2023).

### 5.5.1 Recommendations For Leaders

One good practice suggested to improve the feedback process is to **build and plan feedback considering the individuality of employees**. In this context, I8 said: *"The main challenge I see in this regard is because each person has their individuality, their way of communicating, of receiving feedback, so you have to gradually create this sensitivity to understand that you will communicate with each one differently, and It's all right, we'll never find a standard for communicating with people in the same way."* The participants also mentioned that it is important to have a more humanized look at each employee, as this excerpt from the conversation with I6: *"So I think it's looking at who's on the team as a person and not just a work resource, you know? (...) The key is to pay attention to the person's day-to-day life, I think all aspects of it, not only professional because no one is a robot either, people have other factors in life"*. The participants also recommended **not using the moment to blame the employee**, but to understand the reasons why the employee was acting in a specific way and then try to help him to improve. As I10 discusses about the feedback moment: *"It's not just about blaming. It's about supporting, it's about understanding, it's about trying to help to do better."*

The leaders and managers interviewed also highlighted the importance of **evaluating the performance of employees based on the evaluative rule for their roles**. They said it is important to draw a parallel between the actions taken by the employee and what is expected of them and build feedback based on that. According to I3, it leads to fairer feedback: *"Today I realize that with the performance cycle and the company's values very well defined, we can identify some aspects and some skills that are already right for you to evaluate. (...) Also understand what level is expected for that person, because it is very different for you to give feedback to an intern who has just joined and to another who is preparing to become a junior."* Also related to it, interviewees mentioned that it is important to always **communicate the activities and expectations** clearer, and this must come from both leader/manager and employee. Looking more specifically at the leaders' actions, it is important to

share what is expected from your employee in terms of performance, to guide their actions and help to understand the improvements points discussed in the feedback easier. In this context, I1 said: *“I think one of the worst things is work thinking you're doing what you're being asked to do, and in the end, someone is expecting more or less. So, when expectations are in line, I think that giving feedback and receiving feedback is much easier because there has already been preparation about what is expected of you.”*.

It is also suggested that **providing examples and bringing orientations that help in the evolution of the employee** is also important to improve feedback practices. About this aspect, I2 commented about how feedback must be built: *“Not only criticize, but also say what was expected (...) when you make constructive criticism the way we do, we don't say “oh, you were bad at that”, we say “hey, you can improve it, if you do it that way” or “you did that, but you should have done it that way”, so when the feedback is well constructed, with instructions on what the person has to do to improve, I think it's very positive”*. I10 emphasizes that providing examples is important to make clear that the subjects brought to the table are based on actual observed behaviors, not on a personal opinion: *“The feedback for him to be good, for him to have some result, he has to have inputs, situations, examples. Because if I approach an employee and say: “Look, your productivity has dropped!”, he will say “Why are you saying that? Based on what?”. So, I think I must take the inputs to the feedback, to be able to have positive feedback, to be able to have results. [The absence of examples] can leave room for you to think that it is an opinion of your manager, so there are people who may think that it is something personal.”* To help in bringing examples and useful orientations, the leaders and managers said that **structuring the feedback content before its delivery** is a very good practice. The participants mentioned this practice is important to ensure that all the topics you want to discuss are covered in the material you prepared, that you select examples and suggestions related to each topic, and to help you on planning the moment of feedback delivery in terms of time duration and tools. I7 mentioned this previous structuring helps to build balanced feedback: *“Structure yourself previously. Don't think of a bad thing the person did and go for feedback. No, structure it first, try to reflect also on the good things that the person has before you go and point the finger at that specific point. And then, at that specific point, structure yourself, think about what happened, how you can give examples and not just*



*criticize, think about how to give tips for people to improve.*". To help with this process, it was also recommended to **use tools to structure feedback**. I7, for example, suggested the use of methodologies already validated to help on this activity, especially if you are starting to build and deliver feedback. In the interview, one tool was suggested: *"If you have a lot of difficulty in structuring this, sometimes the person is starting, there are a lot of methodologies that you can use for feedback. there is one that I think is called STAR, it has 4 steps there from the letters and you can structure your thought"*, said I7.

Another aspect that was strongly recommended, and that solves one of the major challenges pointed out, is to **not miss the right time**. By that, the participants mean it is important to give feedback as soon as possible. This recommendation does not change depending on the feedback content: both positive and negative feedback may be delivered right after the event happens. About that, I8 said: *"A very important thing that I also think is that you do not miss the timing, you know? I have a performance cycle in 1 month and I have the opportunity to give feedback now, I do not need to wait. (...) Praise, recognition, opportunity for improvement, these are things that if you miss the timing, you can forget about it, do not even do it anymore because it may not make sense anymore."* A practice that was mentioned by the participants and that can help in not missing the timing is to **schedule a time box only for feedback**. They explained that this practice is important because it allows leaders and managers to plan their day and week based on the feedback meetings schedules, organizing their daily tasks in a way of leaving a slot of time free to be self-dedicated only to the feedback moment. I4 highlighted that the feedback *"is the most important moment of the day"*. I4 also highlighted that defining this time box also helps in structuring the feedback content: *"Something that we adopted here and that we saw that it was really necessary is to set a prior time for feedback, so having a standard time there already scheduled, so you can have an idea of how long that conversation will last."*

The participants mentioned it is important to **keep constant records of the performance of employees**. As mentioned in the previous sections, one challenge perceived by the participants is the loss of information. To overcome this, they recommend keeping notes of the actions and observations you take day by day. I1 said: *"(...) So I think it's very valuable for you to write it down point by point day after day, week after week (...) because in 6 months, in the end, you will make an*

*apparatus of everything, and you will be able to have good material to give good feedback.”.* According to I4, it is also important to check the evolution of the employees. It was also recommended to **gather insights about how employees perform with other persons** to help on building feedback. The participants mentioned this information will complement the records you keep, and remove a possible bias that you can add to your evaluation unconsciously. I3 said it is important to know what is going on in the team members' interactions, highlighting that the use of Canvas Feedback helped with that issue: *“What I think is cool about the feedback canvas, which the leader-leader feedback sometimes doesn't have, is the look of other people. so, in the feedback canvas, you find out that that person did that activity and was so collaborative with the other interns, and you didn't have that vision... so sometimes having the vision of other people is very important”.* I2 shared your experience: *“Those who are working directly with the person sometimes have a better view of the person's work. (...) then I talk to the person's peers, with the sponsor who works directly with the person, sometimes that person has leaders, and is acting as a mentor to an intern... so it will be talked to everyone around that person to be able to give feedback to that person.”.*

The participants highlighted the importance of **selecting the right language** to build and deliver the feedback. I9 said: *“I think the biggest challenge is to communicate clearly, that the person understands, but without the person feeling diminished or unmotivated because, at the end of the day, we want to give feedback to motivate people, but depending on how you say the person may not like it, let it go”.* This recommendation is strongly related to the other two recommendations, which are to build **clear feedback** and **balance positive and negative points**. The leaders and managers said it is important to give feedback clearly enough so that the receiver understands the message completely, in the same way as it is not too negative that can act as a demotivator or diminisher. I7 commented on how she used to build feedback to mitigate these risks: *“(...) It is well learned here that we always have to give feedback weighing good and bad things, to improve, let's say, I like to highlight 3 good points, that the person is doing super well, and 3 points that the person has to improve and that's usually the way I consolidate.”.* It was also recommended to always build feedback that **focuses on employees' actions and their impacts on the time**. By using the right language, to build a clear and balanced message, the leaders and managers said it is important to reinforce that

the feedback takes into discussion the employee's actions, and not their characteristics and preferences. I8 mentioned the use of a specific methodology to help to mitigate this aspect: *"I really like the feedback wrap, which is a methodology you can follow when giving feedback. (...) The biggest lesson you can take from it is that you are giving feedback to the action and not to the person. So he brings up a lot that this conversation is not about you, but about how your actions had a positive or negative impact on you, on the team, on the client."* This good practice is potentialized with the structuration of feedback content, inclusion of practical examples, that supports the improvement points identified, as well as useful suggestions to evolve at these points.

The interviewees said that **creating a welcoming environment for the employee** improves feedback practices. According to I6, it is important to *"ensure that the person has the freedom and feels comfortable enough to raise their hand when necessary"*. They said that working on the trust relationship between leader and employee is a continuous process. I4 also highlighted that the creation and maintenance of this environment is important to create more assertive feedback as it leads to better communication between leader and employee: *"I think that feedback is a process, despite being formal and that we adopt daily, it also has a bit of affinity with the person you are talking to. Having a good interpersonal relationship often results in giving more assertive feedback, (...) knowing how to speak better, knowing what the person's real difficulties are."* Regarding the feedback delivery moment, the participants highlighted the importance of **turning the feedback into a usual conversation**. I8 detailed how he implements this good practice: *"I don't set up a meeting saying, 'I scheduled this meeting to give you feedback'. The conversation flows and then I try to bring it more naturally, so as not to label it too much and not create tension, anxiety, or any other feeling in people. I try to go more organically."* The participants also said that it is important to encourage dialogue and exchange of opinions, so the employee does not feel judged or pressured. I7 recommends: *"Listen to the person. It's not just you accusing, listen because the person agrees or doesn't agree. I always ask, 'Do you agree?', because sometimes she's going through a moment in her life and it was because of that, and sometimes she tells you. So, try to also listen to the person, and give some thought. Make it a conversation and not a feedback inquiry."* To help with that, the participants also highlighted the importance of **choosing the right time to deliver feedback**. As

mentioned in previous sections, dealing with employees' anxiety to receive feedback is one of the challenges perceived by leaders and managers, so they emphasized the importance of choosing the right time to mitigate the risks of miscommunication and conflicts. I9 mentioned the importance of this aspect: *"And I think that a point of feedback is also the moment to place it. Sometimes the person is not having a good day, and we have to understand these nuances, so as not to be unfair."*

To increase the positive outcomes from feedback, the participants highly recommended that the leaders must **draw a tangible development plan** based on the feedback content, working with the employees to do that. I2 emphasized that it is important to pay attention to the number of activities and goals included in this development plan, to ensure it will be tangible: *"It's even necessary to control the team so as not to put too much in the plan because you have to think about the long term, things you're going to do in 6 months. And you won't be able to work all the gaps in 6 months. So sometimes the person gets a lot of stuff excited about the feedback and ends up getting lost."* The participants also recommended that leaders and managers must **request return feedback when giving feedback** to get the perceptions of employees about how they are performing in their roles. I10 highlighted the importance of this feedback to identify behaviors that are negatively impacting the team: *"Always, in all even informal feedback, I always give feedback in return... Because this is important to me and I have already received feedback, Ana, of impressive things. I was doing something with intention A, normal, neutral intention, and the person thought I was doing it with intention B. (..) Then see what a cool thing: I had an action that for me was a neutral thing, and people were understanding it differently. (...) So I think this feedback is very interesting, because there are things that we don't imagine, there are actions that we don't imagine are being misinterpreted."* I7 mentioned that the Feedback 360 is adopted as an alternative to getting this return feedback, and also commented that it is important to evaluate if the employee's performance is a reflection of its bad leadership: *"I personally also like to do 360, I like that the other person also gives me feedback. I ask, 'how do you think I could do better...' because sometimes the person's performance is because of my leadership."*

### 5.5.2 Recommendations For Employees

In the interviews, only two recommendations were targeted to employees. One recommendation is to **clearly communicate the activities and expectations**. Looking at the employees' actions, it is important to always leave the leader or manager aware of the activities the employees are doing and the advances they are having toward the goals established. According to the participants, this will help to build fair and more assertive feedback. The interviewees also said the employees must communicate expectations that go beyond the scope of the project, as mentioned by I2: *"It may not even have anything to do with the project itself (...) and then it is something that will work on the satisfaction of the person, the more satisfied person will perform better."*

The second recommendation focuses on **being open to hear what the leader is going to share**. I1 said: *"Another important point is also: listen. If someone took the time to say anything about your career, understand that that person is trying to help you in a way."* The leaders and managers interviewed highlighted the importance of listening to the information they are sharing in the feedback moment and then trying to extract the main aspects that are going to aggregate in their career, daily routine, and work quality. I8 also mentioned it is advised to "disarm" when receiving feedback: *"We must try to absorb what will add to the career. (...) I always try to disarm myself because feedback is not a moment of defense. (...) It is not the role of the receiver there to defend that point raised to show that the other person is wrong, but to absorb what makes sense to you and see the actions you can take from there to improve."*

## 5.6 CHAPTER SUMMARY

This chapter presented the findings from the qualitative interviews conducted with 10 leaders and managers of remote software development teams. First, we presented the characteristics of the feedback conducted in the interviewees' teams. Then we presented the benefits and challenges commonly encountered by the interviewed leaders and managers. Finally, we presented recommendations, based on their experiences with the feedback process, to implement or improve the feedback process for remote software development teams.

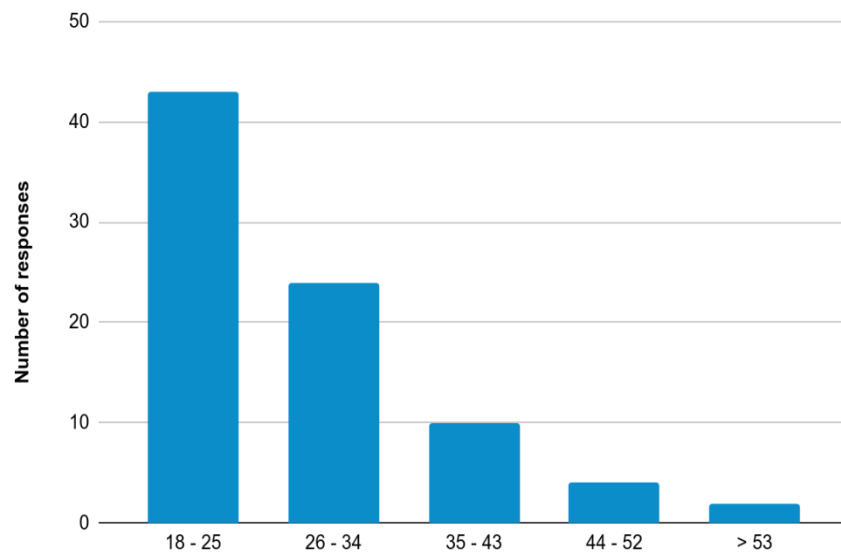
## 6 SURVEY QUESTIONNAIRE

This chapter presents the results of the survey conducted with 85 members of remote software development teams. The survey aims to investigate the perception of team members regarding the feedback process adopted by the organizations.

### 6.1 DEMOGRAPHICS

Our survey was answered by 83 members of software development teams. We had to exclude two answers because the respondents do not work in remote or hybrid model. Participants' age distribution is presented in Figure 6.1. They are mainly male (73,5% male vs 25,3% female and 1,2% non-binary) and mostly work as developers/software engineers/programmers (66,3%). The answers about the participants' current roles were very distributed between the given options, but we can also highlight the prevalence of Data Scientist/ Data Engineer (8,4%), Project Manager/ Product Owner/ Scrum Master (6%) and Requirements Analyst/ Requirements Engineer (4,8%). Here, it is important to highlight that a relevant number of participants (18%), did not get their bachelor's degrees in common IT areas. Most participants have a short professional experience in IT, and 53% answered they have up to 3 years of experience in the area. When asked about their current career level in their current organizations, the participants were mostly divided between the options related to the earlier career stages, such as Mid-Level (30,1%), Junior (25,3%), and Intern/Trainee (21,7%).

Figure 7 – Participants' age



Source: The author (2023)

Regarding the educational background, participants mostly answered that they have a complete Bachelor's degree (33,7%) or an incomplete Bachelor's degree (32,5%), we interpreted that participants who chose the incomplete Bachelor's degree are still university students. Participants' main degree is mostly distributed between three courses: Computer Science (33,7%), Computer Engineering (24,1%), and Information Systems (16,9%). Table 6.2 presents more details about the demographics of participants.

Table 5 – Demographics of participants

<b>Gender</b>	Men	61	73,5%
	Women	21	25,3%
	Non-binary	1	1,2%
<b>Education</b>	High-School	3	3,6%
	Incomplete Bachelor's Degree	28	33,7%
	Complete Bachelor's Degree	27	32,5%
	Incomplete Graduate School	6	7,2%
	Master's Degree	17	20,5%
	Doctorate	2	2,4%

<b>Degree</b>	Computer Science	28	33,7%
	Computer Engineering	20	24,1%
	Information Systems	14	16,9%
	Systems Development and Analysis	4	4,8%
	Design	2	2,4%
	Others	15	18,1%
<b>Professional Experience</b>	Less than 1 year	13	15,7%
	1 - 3 years	31	37,3%
	3 - 5 years	19	22,9%
	5 - 7 years	3	3,6%
	7 - 9 years	1	1,2%
	More than 9 years	16	19,3%
<b>Career Level</b>	Intern/Trainee	18	21,7%
	Junior	21	25,2%
	Mid-Level	25	30,1%
	Senior	13	15,7%
	Leader/manager	6	7,2%
<b>Roles</b>	Developer/ Software Engineer/ Programmer	55	66,3%
	Data Scientist / Data Engineer	7	8,4%
	Requirements Analyst / Requirements Engineer	4	4,8%
	Project Manager/ Product Owner/ Scrum Master	5	6%
	DevOps Engineer/ Infrastructure Engineer/ Network Engineer	3	3,6%
	UX/UI Designer	3	3,6%
	Others	6	7,2%

Source: The author (2023).

## 6.2 CHARACTERISTICS OF FEEDBACK



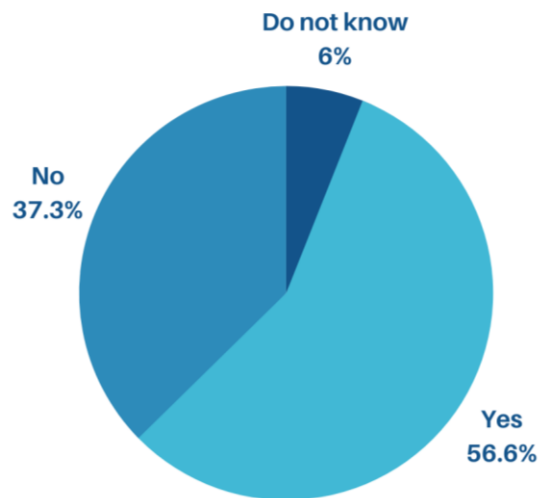
In this section, we explore the main characteristics of the feedback processes adopted by the participants' organizations.

### 6.2.1 Types of feedback

Initially, we asked survey respondents about the organization's position regarding the feedback process. When asked if the feedback was an institutionalized process, meaning that the organization offers enough tools, information, and space to implement it, 56,6% of the respondents said that their organization has the feedback as an institutional process. 37,3% of the respondents answered that their organization does not have feedback institutionalized and 6% answered that they do not know the answer to this question. The answer's distribution is presented in Figure 6.2.

Figure 8 – Feedback practices' adoption from organizations

#### IS FEEDBACK A WIDELY INSTITUTIONALIZED PRACTICE ACROSS YOUR ORGANIZATION?



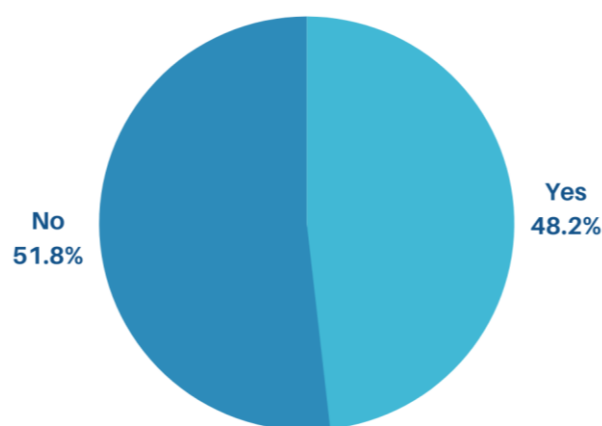
Source: The author (2023)

Aiming to investigate how the types of feedback were implemented, we started by asking respondents if their teams adopted formal feedback practices in their routines. The answers to this question were very balanced as presented in Figure 6.3. 48,2% of respondents confirmed that their teams adopted formal feedback, while 51,8% of the respondents answered that the formal feedback was not adopted. Here it is important to highlight the association between this question and the previous one. 3 of the 36 respondents that answered that their organizations do not have feedback as an institutionalized practice or do not know this information, said that,

despite this organizational positioning, their teams adopted formal feedback in routine. Otherwise, 11 of the 47 respondents that answered that their organizations do have feedback as an institutionalized practice, also said that their teams do not adopt formal feedback in their routines. From these answers we can infer that even with the organizational positioning, the teams have a certain freedom to either adopt or not formal feedback on their routines, choosing the approach that better fits their specificities.

Figure 9 – Formal feedback adoption

**DOES YOUR TEAM ADOPT FORMAL FEEDBACK PRACTICES ON A DAILY BASIS?**



Source: The author (2023)

We also asked the respondents about informal feedback practices adoption in their team routines. 16 of them answered that there was no informal feedback in their teams, and 1 respondent said that there was no informal feedback but mentioned one-on-one meetings adoption as a formal practice. 9 of the 16 respondents, which corresponds to 10,84% of our entire sample, had answered that there was no adoption of formal feedback too, as we discussed before, which signalizes that there was no feedback practice implemented in their teams.

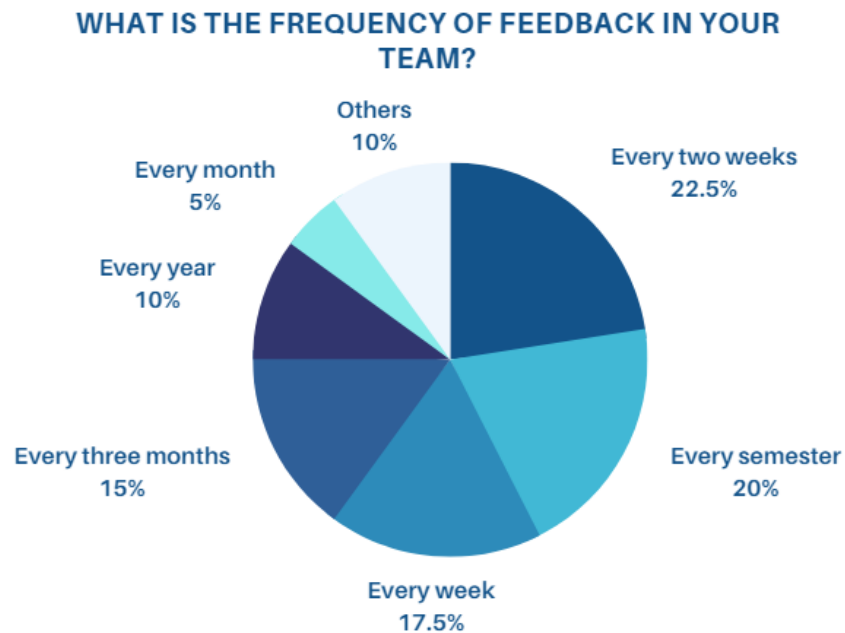
Otherwise, 79,51% of the respondents answered that informal feedback was adopted in their teams in a lot of different ways. This was an open-ended question, so the respondents could share more about how the informal feedback practices happen in their teams, such as information about the format and the actors involved. Among the informal feedback practices, the respondents mentioned that it happens in common daily conversations when pairs are working together on a task or during

the coffee breaks, after delivering part of the project or concluding a more complex task, and in one-on-one meetings. It was mentioned that compliments are used to give positive informal feedback and that some ceremonies from Scrum, such as dailies, sprint reviews, and sprint retrospectives, are also used as a moment to deliver informal feedback, both positive and negative. The respondents also highlighted that the informal feedback does not happen following a defined process, within a defined structure nor a regular frequency, but it happens more organically between daily activities or when it is requested, as mentioned by one of the respondents: *“It occurs, however, it is a feedback that does not occur naturally, I usually create situations and request this feedback from professionals with seniority levels above to understand my weaknesses and attack them.”*

### 6.2.2 Frequency

As we mentioned in the previous section, regarding informal feedback, the respondents did not bring any information about a defined frequency of its delivery, because this type of feedback usually occurs more organically. Because of that, the answers we present in this section are based on the respondents whose teams adopt formal feedback practices on their routines, which corresponds to 40 respondents. As presented in Figure 6.4, the answers from them were very well distributed between the given options. We highlighted the most frequent answers, as follows: 9 of them pointed out that the feedback happens every two weeks, 8 of them that the feedback happens every semester, 7 said that the feedback happens every week, 6 that the feedback happens on a trimestral basis, and 4 of them that the feedback happens annually. The other six answers left were divided between options added by the respondents themselves, among which we can mention monthly (with 2 answers) and every two months (with 1 answer). In one of the answers, the respondents mentioned that: *“[the feedback] It does not have a defined periodicity. Whenever possible and necessary, usually after a pairing action, presentation...”*

Figure 10 – Feedback practices frequency



Source: The author (2023)

### 6.2.3 Actors

We also aimed to understand the participation of each respondent in the feedback practices adopted in their teams. Regarding this aspect, similarly to the frequency characteristics, the question was only available for the participants that had answered “Yes” when asked about the formal feedback adoption. Because of that, we got a total of 40 answers to “How do you participate in the feedback process?” question.

Most of the participants, 76,74% of them, were equally divided between three of the given options: 11 said that they are evaluated only by their leader and do not evaluate anyone, 11 said that they are evaluated only by their leader and also evaluate them, and 11 said that they are evaluated by their entire team and evaluate the entire team too. 4 respondents answered that they are evaluated only by their leader and evaluates the entire team, while the other 3 answers left were divided between options added by the respondents themselves.

About the actors in the feedback process, we can also mention that when questioned about the adoption of informal feedback practices, the respondents mentioned feedback practices that included only the leader and employee, as well as the entire team to illustrate their answers. From the answers collected with the survey

questionnaire, we can identify that, despite the big diversity of responses about who has active participation in the feedback process, there is still a predominance of feedback practices in which only leaders and employees participate.

#### 6.2.4 Tools

To better understand the characteristics of the feedback practices adopted by remote software development teams, we also questioned the participants about the use of tools, methodologies, and frameworks in this process. Following the same approach as the previous aspects discussed, the questions regarding tools and methodologies were only made for the participants that indicated the adoption of formal feedback practices on their teams' routines. We chose to use open-ended questions because we considered the multiplicity of possible tools and methodologies used by teams in feedback practices.

When asked about the tools used by their teams to support feedback, only 23 answers were registered. 7 respondents said that Qulture Rocks is the tool used to support the feedback, and 5 respondents said that they use internal tools from the organization, but do not name them. Other tools available in the market that were mentioned in the responses were Pulses, Bizneo, and Lattice, with 1 mention each. 8 of the respondents said that they do not use any support tools for feedback practices. Since it was an optional question, 17 participants did not answer it.

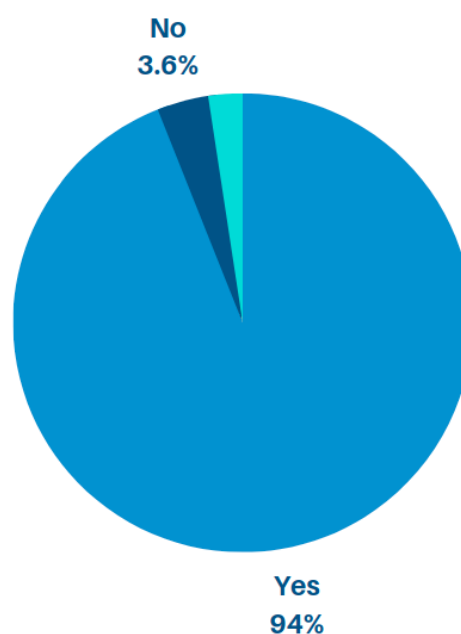
Regarding the use of specific feedback methodologies or frameworks, we observed the same pattern as in the responses collected when asking about the tools used to support feedback. Only two specific methods were mentioned by the respondents: 360 Feedback, mentioned by 8 respondents, and Feedback Canvas, mentioned by 3 respondents. Also, 3 respondents answered this question with one-on-one meetings, which we interpreted as a misunderstanding of the question objective since one-on-one meetings have not as its primary goal the feedback delivery. 9 respondents said that they do not use any specific feedback methodology or framework, and since it was an optional question too, 17 participants did not answer it.

### 6.3 FEELINGS GENERATED BY FEEDBACK PRACTICES

To start our investigation regarding the feelings commonly associated with the feedback in the perspective of survey participants, we first wanted to understand if they do like or do not like feedback. By understanding that we could answer the RQ5 proposed, which was “What are the perceptions of remote software development team members about the feedback practices currently adopted?”. 79 of the participants said that they like receiving feedback, while only 4 participants had chosen the opinions “No” and “Others” to answer the question proposed. This number shows that even with the challenges and difficulties faced in the adoption of the feedback practices, the benefits attached to it still make this a practice seen positively by practitioners. There was no pattern identified between the respondents who said that they do not like feedback, they are from different age groups, have different educational backgrounds and also pointed out different feelings that emerges from the feedback: one of them mentioned grateful, motivation and tranquility; other mentioned anxiety, uncertainty, nervousness and shame; and the other 2 respondents have mixed positive and negative feelings on their answers. Figure 6.5 shows the distribution graphically.

Figure 11 – Participants like or dislike feedback practices

#### DO YOU LIKE RECEIVING FEEDBACK?



Source: The author (2023)

After that, we asked the respondents about the feelings the feedback process arises on them with the question “Which are the feelings that the feedback process arises on you?”. We gave some options in the questionnaire, but we also included one option in which the respondents could add some other feeling that was not covered in the given options.

At the top of the image, we have grouped the feelings which we considered as positive ones, while the more negative feelings were grouped at the bottom of the figure. It is possible to see in the image that positive feelings are prevalent over negative ones in respondents' answers, which makes sense as the majority of the respondents like the feedback process, as discussed before. The feelings that arose from feedback practices for the biggest part of the respondents are **Motivation** to reach new goals, for 81,9% of participants, and **Recognition** for good actions, for 74,7% of them. Other positive feelings mentioned by the participants were **Satisfaction** with what has already happened (53%), **Acknowledgement** (51,8%), and **Visibility** (42,2%). **Joy**, **Tranquility**, **Excitation**, and **Happiness** were chosen by 16, 16, 8, and 7 respondents respectively.

Regarding the negative feelings, the most mentioned one was **Anxiety**. This feeling was chosen by 26 respondents (31,3%), and it is followed by **Nervousness** (15,7%), **Insecurity** (13,3%), **Judgement** (12%), and **Uncertainty** (9,6%). The respondents also selected Fear, Shame, and Unworthiness as feelings that arise from the feedback practices. The options added by 3 respondents did not describe actual feelings, so we did not include them in this analysis. There was no pattern identified in the feedback practices characteristics adopted by the respondents that see Anxiety as a feeling generated by feedback. Here, it is also important to highlight that Anxiety was chosen by more participants (26) than Tranquility (16), demonstrating that even with the feedback being a well-accepted practice, there are still improvement points that can be worked on to make the employees and leaders experience more positive.

## 6.4 BENEFITS OF FEEDBACK

One of the study research questions proposed to guide our investigation, more specifically the RQ1, was “What are the benefits of feedback practices adoption to software development virtual teams?”. Aiming to identify the benefits that emerged

from the feedback practice, we create two questions in the survey questionnaire to help us better understand which aspects related to performance and soft skills were positively impacted by the feedback practices adoption.

#### 6.4.1 Performance Aspects

To better understand how the feedback impacts performance from practitioners' perspective, we asked respondents the following question: *“Which of the following aspects related to your performance do you believe was (were) impacted by the feedback process?”*. The participants could choose more than one option and also could add new options to the list. There are 3 aspects considered by most respondents that suffer impacts from feedback practices, which are **Productivity** (62,7%), **Delivery Quality** (53%), and **Technical Enhancement** (50,6%). Other aspects considered by respondents impacted by feedback were **Security** (43,4%), **Delivery Time** (27,7%), and **Job Progression** (27,7%). Five respondents, which corresponds to 6% of the total, do not consider that feedback has impacted any performance aspect.

#### 6.4.2 Soft skills

Regarding the soft skills, to get respondents' perspective, we created the following optional open-ended question: *“Do you believe that the feedback process influenced the development of your soft skills? If so, cite examples of some of these soft skills.”*. We decided to use this type of question, open-ended and optional, to not exclude any soft skills by giving a close list and giving enough freedom to each respondent to share their perspective.

We got an amount of 57 valid answers to the question, which corresponds to 68,67% of the entire sample, of which only 6 pointed out that the feedback practices have no impact on soft skills. Communication was mentioned by 25 respondents as an impacted soft skill, and in their answers, it was associated with several different aspects. Respondents have mentioned an **improvement in interpersonal communication** inside the team, such as by asking for more feedback, sharing difficulties faced when working on a task, or being **more open when receiving feedback**, and outside the team, improving the presentations to be done to other



sectors of organization and working collaboratively. Another soft skill that the respondents considered positively impacted by feedback was **teamwork**, as mentioned by 10 of the survey participants. They had perceived an improvement in listening to different opinions and dealing with different profiles inside the team, as well as in taking decisions regarding technical and personal aspects that would impact the entire team more collaboratively. 4 respondents have mentioned that **their organization** has improved after receiving feedback, highlighting the time management as the most impacted aspect in this sense. The other 4 respondents mentioned that they started to **act more proactively** after feedback, taking actions on their own, and leaving their comfort zone. **Self-confidence, autonomy, and resilience** were also mentioned by one participant each and could be considered aspects that act in boosting proactiveness, because the first two help the employee on giving the first step to leave the comfort zone, while resilience helps them to try again when some of your proactive action failed.

## 6.5 CHALLENGES OF FEEDBACK

Our second research question proposed in this study was “What are the challenges involved in the feedback process for virtual software development teams?”, as we mentioned in previous sections of this dissertation. Aiming to understand what could be considered a challenge for feedback practices implementation on remote software development teams, we asked the participants what they do not like about the feedback process currently running on their teams. We proposed an optional open-ended question to get the biggest number of diverse responses, aiming to get a broader view regarding the topic.

### 6.5.1 What participants do not like about the feedback process?

The proposed question was answered by 57 survey participants, corresponding to 68,67% of the entire sample. Considering that the question was open-ended, we had to group the participants' answers by similarities, aiming to bring them into topics. From the answers collected, 6 of the participants mentioned that they do not like the **big interval between feedback meetings**, and 2 respondents also highlighted that it should occur right after the action. Associated with this

frequency problem, which usually happens in formal practices, 2 respondents said that they **do not like the formality associated** with feedback by saying that it should be more natural. About that, one of the participants said: *“Usually formality. I prefer it to be something more informal and more direct, rather than those long forms with questions that often don't apply and need hours to be answered.”*. On the other hand, 2 respondents said that they **do not like when feedback happens unexpectedly**, explaining that in this situation, even the manager/leader does not have enough time to think about the topics to be brought to discussion.

Looking at more structural aspects, 7 respondents mentioned that they **do not like when the feedback is generic**, with a lack of specificity on the actions that have to be improved or implemented. Associated with it, respondents mentioned that the **lack of structure** (2 answers) and the **lack of clearance** (3 answers) are also characteristics that they do not like in feedback because both of these aspects make it harder to understand what is truly expected from them. Also related to the aspects mentioned above, 2 respondents also said that they do not like when the feedback **does not have an action plan or suggestions** to improve the actions discussed in the feedback meeting. One of the answers from participants was: *“When formal feedback is vague, in a way that doesn't give me direction in achieving my goals. Example: when I receive feedback that my work is exceptional, that I have been doing very well, but I am not rewarded for it in any way. When this happens, it seems that feedback is worthless and they are just nice words for me to continue delivering value above expectations without receiving anything in return.”*.

Some participants mentioned aspects related to the way the feedback meeting currently happens. 3 of the respondents mentioned that they do not like when the feedback **uses video calls with an open camera or when it happens in person**, detaching that this situation asks for a quick response that, sometimes, they do not have. 4 of the participants said that they **do not like when the feedback is given in front of the entire team**, especially because they do not have control over the information that is going to be shared. On the other hand, 2 participants mentioned that they **do not like unilateral feedback that came only from the leader**, saying that they preferred the participation of the entire team, at least on the evaluation. 2 respondents mentioned that they do not like the **lack of transparency** in the feedback process, especially regarding which actions are being evaluated. Still, in the field of transparency, 5 respondents mentioned that they do not like receiving

**“dishonest” feedback**, explaining that fear or shame may lead to not sharing in the feedback moment all the information about what can be improved, as commented by one of the survey’ participants: *“Sometimes in the feedback given orally, people tend to give a “relief” and do not say what they think the person can improve for fear of sounding impolite, I believe that the feedback could be more honest in these cases.”*. Associated with it, respondents also mentioned that they do not like when feedback has **only positive comments**: *“I don’t like it when there are only “positive” things, no matter how much a person is going in the right way, I think that there is always something to improve. So good feedback can bring points beyond just praise.”*.

Still associated with the quality of the information shared in the feedback, 6 respondents mentioned that they do not like when the feedback has a judgmental sense, bringing a **subjective vision** regarding the personality or personal and aesthetic facts. 5 respondents also mentioned that they do not like when the feedback is **delivered without examples of the actions in practice**, which increases the feeling that the information shared and the topics brought to discussion were all subjectively chosen. Another characteristic of feedback pointed out by 2 participants that may be associated with these aspects mentioned before, also not approved by respondents, is that sometimes it is **given by someone who is not part of the teams routine**, as highlighted in one of the participants’ answers: *“[I don’t like] When those who will give feedback don’t know me well and don’t even know my activities correctly. That is when he is not properly prepared to give feedback.”*.

Another aspect that 4 of the participants mentioned among the answers was the fact that sometimes the feedback is **treated as a mandatory thing** that only needs to be done. This may lead to **feedback full of non-constructive criticism**, without bringing an improvement point in fact, as well as to the use of **aggressive language**, both aspects mentioned by 2 participants each as characteristics that they do not like in feedback. One of the participants highlighted the effects of aggressive language: *“[I don’t like] When they point out mistakes aggressively because it makes the environment heavy and you withdraw to receive constructive and even positive feedback.”*. Other participants’ answers regarding what they do not like in the feedback process were the adoption of a formal process without first preparing the team to give and receive feedback, the lack of anonymity, and when the feedback delivered is based on metrics results comparisons between employees.

Finally, 2 of the respondents answered that they do not identify any points that they dislike in feedback. 4 of the participants highlighted that what they do not like about feedback is the lack of feedback actually, mentioning that this makes it hard to improve and evolve in their careers. One of the participants commented that “[I don’t like] *When it doesn’t occur. I get lost, not knowing if I’m doing the job correctly or not.*”

## 6.6 RECOMMENDATIONS TO IMPROVE THE FEEDBACK PRACTICES

Similar to what we have done in the conduction of other research methods in this study, we also aim to get a broad vision regarding the good practices that could improve the feedback practices from the participants’ perspective. To identify the good practices commonly recommended by the participants, we created two different questions in our survey instrument. In the first of them, “What would the participants like to have in your feedback?”, we asked participants what they like to have in their feedback, providing some options in a multi-box selection, aiming to get their preferences regarding the feedback frequency, location, and structure in general. In the second question, “What are the good practices that would improve participants’ experience throughout the feedback process?”, we asked the participants what good practices they considered as possible improvements of their experience along the feedback process. Aiming to not limit the participants’ answers, we decided to provide a text box so they could share their opinions freely. The first question was mandatory, so every participant in our sample contributed to it, but the second one was optional, and, because of that, 52 participants answered, corresponding to 62,65% of the entire sample.

### 6.6.1 What participants would like to have in your feedback?

First, we want to better understand which are the participants’ preferences for the feedback practices adopted, regarding its structural characteristics. To map these preferences most quantitatively, we decided to use a close-ended question with a multi-box selection, but we also left one open-ended option in which the participants could add characteristics that were not covered in the given options.

We observed that 55,4% of participants would like to have **access to a development plan** after feedback, meaning that there is a need for guidance about

what actions must be taken to improve the points discussed in feedback. 41% of participants mentioned that they would like to have more **incentives for informal feedback**, such as vouchers and discounts. Regarding the frequency of feedback, 36,1% of participants said that they preferred that the intervals between feedback sessions be shorter, while only 4 respondents (4,8%) said that they would prefer this interval to be longer - which 2 of them mentioned in the previous questions that the feedback was delivered in the daily meetings.

Other aspects of the feedback that were chosen by several participants were the **previous definition of the evaluated points** (33,7%) and the **register of each feedback session** (30,1%), pointing out that there is a need for participants to understand the improvement points that are brought to discussion and to follow up how they are evolving on these points. 14 participants (16,9%) signaled the need to use **a tool dedicated to feedback** in the process, which can also help with the follow-up of employees' evolution.

Regarding the feedback delivery moment itself, the participants' opinions were very balanced and divided. Regarding whom must participate in the feedback, 18 participants chose the "Entire team participation" option, while 13 participants chose the "Only leader participation" option. Because of that, we cannot determine which model will be more accepted by a specific team, but we can infer that **including the entire team**, on the evaluation that precedes the feedback or in the feedback moment itself, it is important to employees. One participant mentioned in the open-ended option that it would be great to alternate between group and individual feedback. Regarding how the feedback meeting must happen, if it must be conducted remotely or in person, the participants' opinions had also been divided: 10 of the participants chose remote meetings, while 6 participants chose face-to-face meetings. Similar to who must be involved in the feedback process, how the meeting will be conducted depends on the teams and employees' needs, but based on the results we observed a preference for **remote feedback meetings**.

4 participants chose the open-ended option to share their opinions. One of them said that there is nothing to be added to the current feedback process adopted by his team, and the other two mentioned that it is important to invest in **informal feedback** and in the **quality of the material** used for feedback, especially by collecting information with the entire team to avoid biases.

### 6.6.2 What are the good practices that would improve participants' experience throughout the feedback process?

We have also asked participants which good practices they consider would improve their experience and results if incorporated into the feedback process adopted. To do so, we created an open-ended question aiming to let the respondents be free to share their opinions. Similar to what we did on semi-structured interviews, we organized all the data collected through this question and grouped similar answers into categories, allowing us to present the good practices recommended by participants more clearly.

52 respondents answered the question proposed, which corresponds to 62,65% of our sample. Among the answers, we identified that the most mentioned good practice was to **keep the feedback regular**, which was highlighted by 14 respondents. The respondents said that this could be done by defining an interval for feedback delivery and planning the feedback accordingly, **scheduling a specific time for the delivery**, as one of them pointed out: *“Continuous and stimulating feedback, not only for the big things but for the small day-to-day victories.”*. Associated with it, 2 respondents said that the interval defined for feedback must be smaller, to avoid the loss of information and timing.

2 participants mentioned that **planning the feedback and structuring** it before the delivery moment is a good practice that could improve the quality of the feedback because the information will be more organized. Besides that, another good practice mentioned by 9 respondents was previously **defining the evaluative rule**. It was the second most mentioned recommendation, and the respondents said that it is important to know how they are going to be evaluated to better understand what needs to be improved and what has already been achieved in the feedback moment. One of the respondents mentioned that presenting the evaluative rule to all the people involved in the feedback practices would improve its quality: *“The company has to present how its feedback culture works, so that leaders and other employees better understand the evaluation criteria and, consequently, provide more truthful and engaged feedback.”*.

Still, regarding the preparation for feedback, 2 respondents mentioned that it is important to constantly work to **create a trusted environment in the team**, as one of the participants said, *“Fostering a relationship of respect and trust between leaders*



*and subordinates.*”. In the participants' opinion, it will lead to more effective feedback since the people involved will feel more comfortable sharing their opinions in the feedback moment and collaboratively discuss how to improve. This trust environment will also directly impact other two aspects mentioned by respondents as good practices, which were to do feedback with **transparency** and **honesty**, mentioned by 2 and 1 respondent respectively. Related to these aspects, 3 respondents mentioned that it is important to have **bilateral feedback**, by treating it as a conversation in which who is giving and receiving feedback can clarify the points that had been brought to the feedback moment. To reinforce the trust inside the team, 2 respondents mentioned that it is important to **prioritize individuals' feedback**, especially when they contain more improvement points rather than accomplishments, avoiding giving it in meetings that include the entire team.

Another good practice mentioned by 5 respondents was to do **objective feedback**, that emphasizes a specific problem to be resolved or a new goal to be achieved. As one of the respondents said: *“I think it's important that the feedback emphasizes a problem that needs to be worked on, that is, it is objective and oriented towards what the employee wants. (...) The leadership must say objectively the points that need to be worked on, and how far the employee is from reaching his goal. Be that point a soft skill, hard skill, or a set of concrete factors.”*. Associated with this, 6 respondents mentioned that it is important to give this information with **clarity**, especially the improvement points, so the employee can easily understand what the feedback is about. To help on that, 7 respondents recommended **bringing practical examples** when creating the feedback, to illustrate the improvement points identified, as well as the impacts that the actions taken have caused on the entire team or a specific team member. One of the respondents mentioned the use of SBI feedback, which means that the feedback must be built based on situation, behavior, and impact. Those examples must not only be focused on the past, describing only the improvement points, but 2 respondents said that it is important to **provide suggestions to improve** in the mentioned aspects also, as one of the respondents commented: *“I believe that for good feedback, it is necessary to say the points that are good and those that need to be improved with some example of how to improve, otherwise the person can enter a loop and continue making the same mistakes.”*.

To help the participants on applying the suggestions in their daily activities, 4 of them mentioned the **creation of a development plan** as a good practice. In their

opinion, by building a plan that focuses on the actions that need to be taken to improve, the evolution of the employee will be facilitated and potentialized. 3 participants mentioned that a good practice that could improve the feedback process is to **keep a register of the feedback** sessions, to keep all the topics discussed on track. One of the participants mentioned that the **use of a tool dedicated to feedback** may help on this and other mentioned points. Another suggestion from 4 participants' answers is to **follow up on the evolution of the points discussed**, which will be facilitated by the registration of what is discussed in the feedback, as well as the development plan creation. One of the participants highlighted that: *"Keeping a linear form of feedback for me would be better, always talking about all the points that were mentioned earlier so we can see an evolutionary line."*, which means that by doing this follow up the evolution of improvement points and towards the established goals will be easily perceived and act as a motivator to keep the pace. Another good practice mentioned in the questionnaire was **rewarding employees for good results**, by giving them vouchers with discounts in stores and restaurants, which can encourage them to achieve more positive results.

Two participants pointed out good practices that must be adopted by who is receiving the feedback. One of them mentioned that it is important to **be open to listening to what** other people are saying, and then use this information to extract your next steps. In parallel, other participants mentioned that it is important to **not take the improvement needs as personal criticism**, considering that the feedback is supported by examples from routine, the improvement points discussed were observed in daily activities, and may be impacting the team or individuals negatively. So, it is important to be critical and open, listen carefully, and then plan the next steps to evolve.

## 6.7 CHAPTER SUMMARY

This chapter presented the findings from the survey questionnaire conducted with members of remote software development teams. First, we presented the characteristics of the sample that answered our questionnaire. Then, we presented the characteristics of the feedback conducted in the participant' teams. We also presented the feelings generated by the feedback, benefits and challenges commonly perceived by the participants. Finally, we presented the best



recommendations they suggested, based on their experiences with this process, by asking them about what they like and what they miss in the current process adopted in their teams.

## 7 SYNTHESIS OF RESULTS

### 7.1 COMPARATIVE ANALYSIS OF RESULTS

#### 7.1.1 Overview of Study Phases

In this chapter, we synthesize the results obtained from the mixed research to get different viewpoints of the feedback process adopted by remote software development teams. The Multivocal Literature review provided information on the benefits, challenges and recommendations described in both gray and academic literature, allowing us to answer RQ1, RQ2 and RQ3. The qualitative interviews provided valuable insights on the perspective of leaders and managers regarding the feedback practices adopted in their teams. Throughout the interviews, we could get answers for RQ4, RQ1 and RQ2. Finally, the survey questionnaire allowed us to answer RQ1, RQ2 and RQ5 by getting the perspectives from employees.

We triangulated the data collected in each research method application and summarized all the findings in three categories: **Benefits of Feedback**, **Challenges of Feedback** and **Recommendations to Improve Feedback**. Each section presents the main findings from the research methods applied, identifying the sources (e.g., multivocal literature review, interviews, survey).

#### 7.1.2 Benefits of Feedback

Different benefits were identified showing that the feedback practices impact the organization, the team, and the individuals, in different levels and aspects.

Table 6 – Benefits of Feedback

Legend: MLR - Multivocal Literature Review, I - Interviews, S - Survey

Benefits	Overview	
Improvement of team performance	Feedback is associated with an increase in productivity and delivery quality, and to the reduction of delivery time. It also leads to an enhancement of technical skills and a better personal organization to self-manage daily activities.	MLR, I, S
Improvement of individual engagement	Feedback makes it possible to create a development plan for each employee, in a way that the good behaviors are reinforcing and stimulated, and the improvement points	MLR, I, S

	worked with more attention.	
Increase of team empowerment	It was observed by a change in employees' behavior, who started to act more autonomously and proactively, leaving their comfort zone to deep in new experiences. Feedback also generates an improvement on employees' self-confidence and resilience.	MLR, I, S
Increase of employees' motivation and job satisfaction	It is generated by the feeling of visibility caused by feedback delivery and the constant follow up after that to check the evolution towards the established goals.	MLR, I, S
Improvement of teamwork	Feedback promotes a greater team connection and inspires the team members to work together to achieve team and individual's goals.	MLR, S
Improvement of communication	It is noted both inside and outside the team, and it has positively contributed to connect the employees to other team members as well as to the business, by changing ideas and good practices with different teams within different contexts.	MLR, S
Better alignment of the team with the company's objectives	Feedback gives a clear vision for the future and the actions needed to keep improving.	MLR, I
Facilitation of business decision-making processes	Feedback allows assessing what do employees expect for their future and, based on that, allocate them on projects that have a better fit on their specific career or personal goals.	MLR, I

Source: The author (2023).

### 7.1.3 Challenges of Feedback

The findings presented in this section summarize the challenges involved in the feedback process. This allowed us to map actions to minimize or eliminate them from the feedback process adopted by remote software development teams.

Table 7 – Challenges of Feedback

Legend: MLR - Multivocal Literature Review, I - Interviews, S - Survey

Challenges	Overview	
Use of digital communication channels	It is associated with the reduction of employee's comfort, because in their opinion, the use of an open camera for daily communication and feedback meetings creates an invisible pressure for a quick reaction to all the information received from their leader or manager.	I, S
Communication gaps	The remote work model naturally leads to the reduction of face-to-face interactions, making it hard for employees to share all their activities and impediments faced, creating a distance between leader and employee, as well as among the team members.	MLR, I
Limited access to information	The information that becomes available is usually restricted to what is shared from employees themselves, making it hard to build feedback that really reflects all the activities and challenges faced by employees.	MLR, I
Give the feedback in front of the entire team	It makes the employees feel uncomfortable enough to share their opinions and receive feedback in front of the entire team. It leads to dishonest feedback that only includes positive comments and does not mention any improvement points.	MLR, I, S
Lack of mechanisms to measure the employees' evolution	This may include in the employee' performance evaluation a subjective bias from the person who does this evaluation, which is commonly its leader or manager.	I, S
Generic feedback	When employees are evaluated by leaders and managers of other teams inside the organization, which do not know the employee's actual activities, it may lead to superficial feedback.	I, S
Maintenance of the cadence of the feedback delivery	The routine in remote context makes the team leaders and managers lose opportunities to give feedback as soon as the action happens, and also postpone feedback meetings to prioritize other demands.	MLR, I, S
Information loss	The absence of a feedback-specific tool where employees' activities, improvement points and great behaviors could be registered, leads to the loss of useful information to build feedback. This loss of information generates generic feedback, without practical examples of the actions in the past and suggestions for the future, that sometimes is not enough to create an action plan.	I, S
Lack of a previous structuration and expectations alignment	In some teams and organizations, the employee does not have access to the evaluative rule and because of that, does not understand the feedback received. There is also an absence of a previous preparation of the people responsible for creating the feedback report and delivering it at the feedback meeting.	I, S

Delivering negative feedback	It is considered one of the most challenging aspects of the feedback practices, especially because it can be demotivator for employees. It is challenging to choose a language that does not sound aggressive and keeps the motivation of employees even after receiving this feedback.	MLR, I
Ensure a great acceptance of feedback	It is associated with the choice of the right moment to deliver the feedback, aiming to reduce the employee's anxiety and the possible misunderstandings.	MLR, I

Source: The author (2023).

#### 7.1.4 Recommendations to Improve Feedback

In this section, we summarize the main recommendations to improve the feedback process in remote software development teams.

Table 8 – Recommendations to improve Feedback

Legend: MLR - Multivocal Literature Review, I - Interviews, S - Survey

Recommendations	Overview	
Creation of a trusted environment	It is important to make the employees feel comfortable to share their opinion and expectations, as well as safe enough to share his vulnerabilities.	MLR, I, S
Define the evaluative rule and calibrate it	It is important to previously define the rules that will be used as reference by leaders to conduct evaluations. It is considered even more important to share and explain how this rule is going to be applied to the employee's daily activities, and let them be aware of how they are going to be evaluated. It is important to constantly adjust this.	MLR, I, S
Use multidimensional indicators to evaluate employees	It helps to create a fair instrument and flexible enough to be applied to a lot of different employees. It is also important to gather insights about how a specific employee has performed on its activities, sometimes not supervised by the leader who is responsible for his performance evaluation.	MLR, I, S
Keep the feedback regular	It is important to include the feedback in the team's routine in a defined and regular period, by scheduling a specific time to do that. It includes considering the employee's particular conditions to mitigate any misunderstandings that may come, but also to be quick on giving positive or negative feedback right after the action occurred.	MLR, I, S
Plan the feedback and structure it before its delivery	This previous structuration will allow a better estimation of the time needed to deliver the feedback, making it easier to schedule the feedback and keep its regularity. It can be facilitated by the adoption of a template or the use of tools available in the market, such as the STAR framework, for example.	MLR, I, S
Adopt two-way digital	It is important to support remote feedback, which was	MLR, S

communication channels	indicated as the most accepted model by team leaders, managers, and especially by employees. Examples of this are the video calls. It is important to stimulate the opinion and perceptions' share about the actions discussed.	
Provide an objective feedback, with examples and orientations	Feedback must focus on the discussion of employees' actions and their impacts on the team, instead of blaming the employee for what has not been done well. It is also important to suggest actions that will make the employee change its behavior and evolve, and do not leave any doubts and misunderstandings that could be clarified still during the feedback meeting.	MLR, I, S
Balance positive and negative points	It is important to minimize the possibility of demotivating the employees by only bringing negative points or, otherwise, creating a false idea that all behaviors are aligned to what is expected and must be maintained.	I, S
Use feedback to recognize and reward employees	It can be done by giving gift cards to use in stores, discounts and other small gifts. This will be used by employees as inspiration to constantly seek for a better performance.	MLR, S
Do frequent notes of their performance	It is important to identify in which aspects the improvements are already happening, in which ones it is going to be required a harder work and which behaviors are already as expected - or even better than expectations.	I, S
Request a return feedback	It is recommended that the leader or manager requests feedback and use the information to analyze if the actions mentioned have positively or negatively influenced the employees actions.	I, S
Provide a tangible goal-oriented development plan	This plan will be used to track the progress of the employee, and it is a living plan: it can be changed, adapted and must fit to the employee's particularities.	MLR, I, S
Do a constant follow-up	It must be done to track employees' progress, and it can be done by integrating informal feedback practices to the teams' routine.	MLR, I, S
Encourage informal feedback practice	It is important to create a culture of feedback that goes beyond the organization goals and metrics, and is truly focused on employees' growth.	MLR, I, S

Source: The author (2023).

## 7.2 FEEDBASIC: GUIDE FOR FEEDBACK PRACTICES IMPLEMENTATION ON SOFTWARE DEVELOPMENT TEAMS

### 7.2.1 Overview of the guide

Aiming to improve the employees' satisfaction with the feedback process adopted by remote software development teams, we propose a guide called FeedBasic. The FeedBasic was created to serve as a guideline by leaders and managers to implement a new feedback process on their team's routine, as well as to improve the currently adopted one. The findings from the previous research phases were used as valuable inputs to design the proposed guide.

We used BPMN (Business Process Model and Notation) to design the model, because it is commonly used in software development to design processes and it also allows an easier understanding of the end-to-end process by providing simple graphical representations. The guide is divided into four stages that were inspired by Siebra et al. (2019), presented in Figure 7.1.

Figure 12 – Feedback process used in a case study

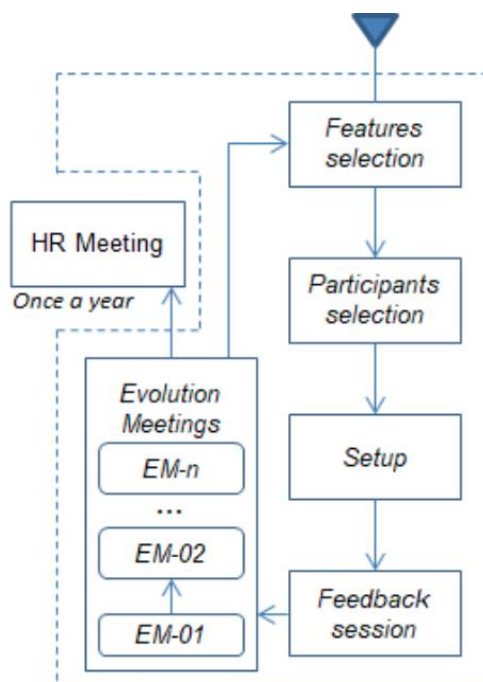


Figure 2- Feedback process used in the case study

Source: SIEBRA et al. (2019)

To give a brief overview of FeedBasic, this model is represented by a flow divided into 4 main stages: **Plan the feedback**, **Deliver the feedback**, **Develop an Action Plan**, and **Follow-up the progress**. We used a BPMN process model to represent our guide to facilitate the understanding of how the actors involved in the process interact in each stage and how the stages communicate, in order to guide

the development and improvement of feedback. Each stage generates a set of artifacts, which will be a product of the actions taken in a specific stage and then used as input in the next stage.

### 7.2.2 Stages of the guide

The FeedBasic guide was created based on the data gathered from multivocal literature review, interviews with leaders and managers and surveys with team members.

The FeedBasic is divided into 4 stages:

**Stage 1** - Plan the feedback

**Stage 2** - Deliver the feedback

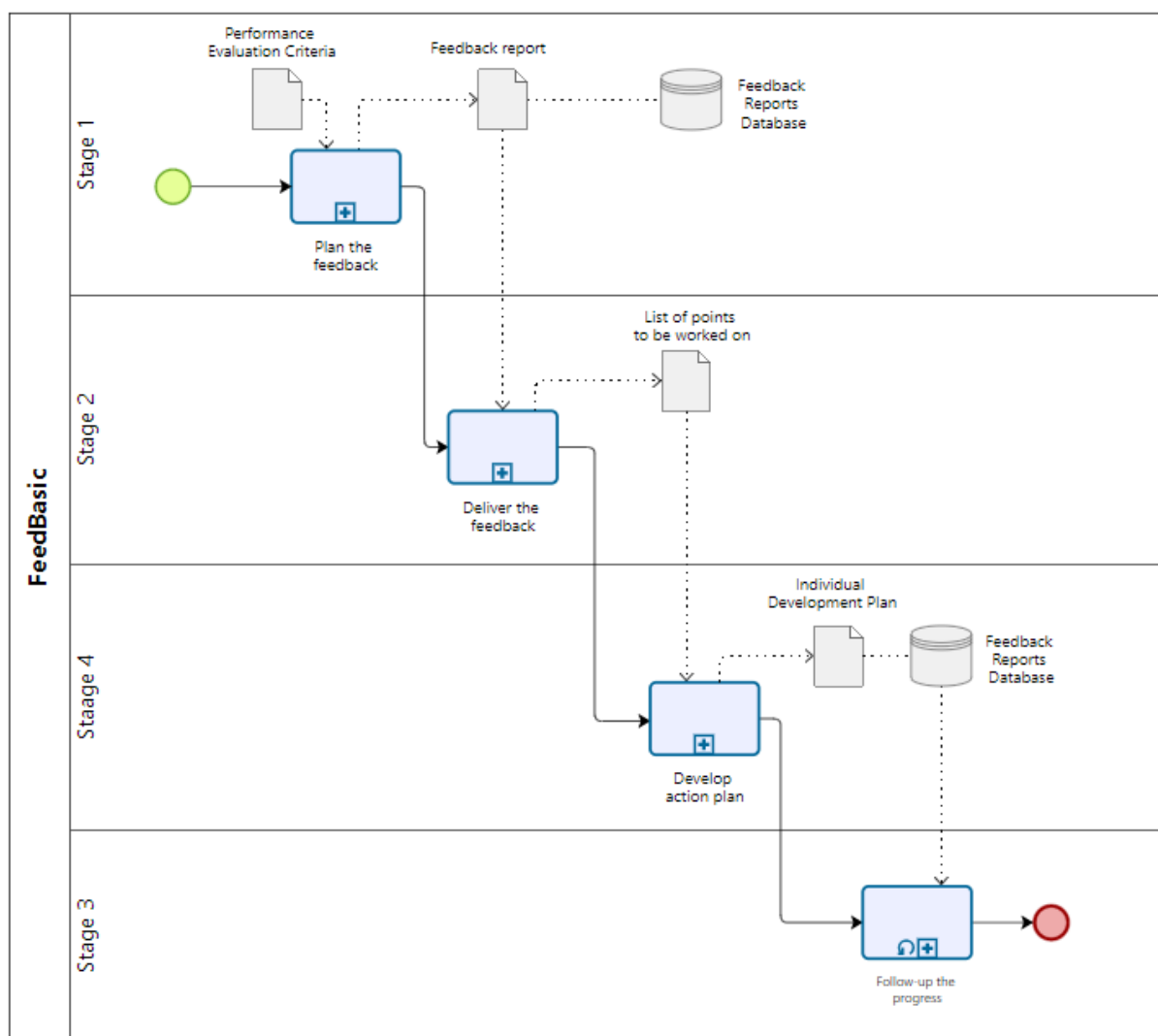
**Stage 3** - Develop an action plan

**Stage 4** - Follow-up the progress

We aim to represent our guide in a systematic manner to give a clear vision of the artifacts needed for the feedback process implementation, the activities needed to be implemented, and how each actor involved in the process will contribute to the feedback. In this guide, we present a feedback process in which only the leader and employee actively participates, we are not focusing on feedback approaches that include the entire team, such as Feedback 360. An overview of the FeedBasic guide is presented in Figure 7.2.



Figure 13 – Overview of FeedBasic Guide



Source: The author (2023)

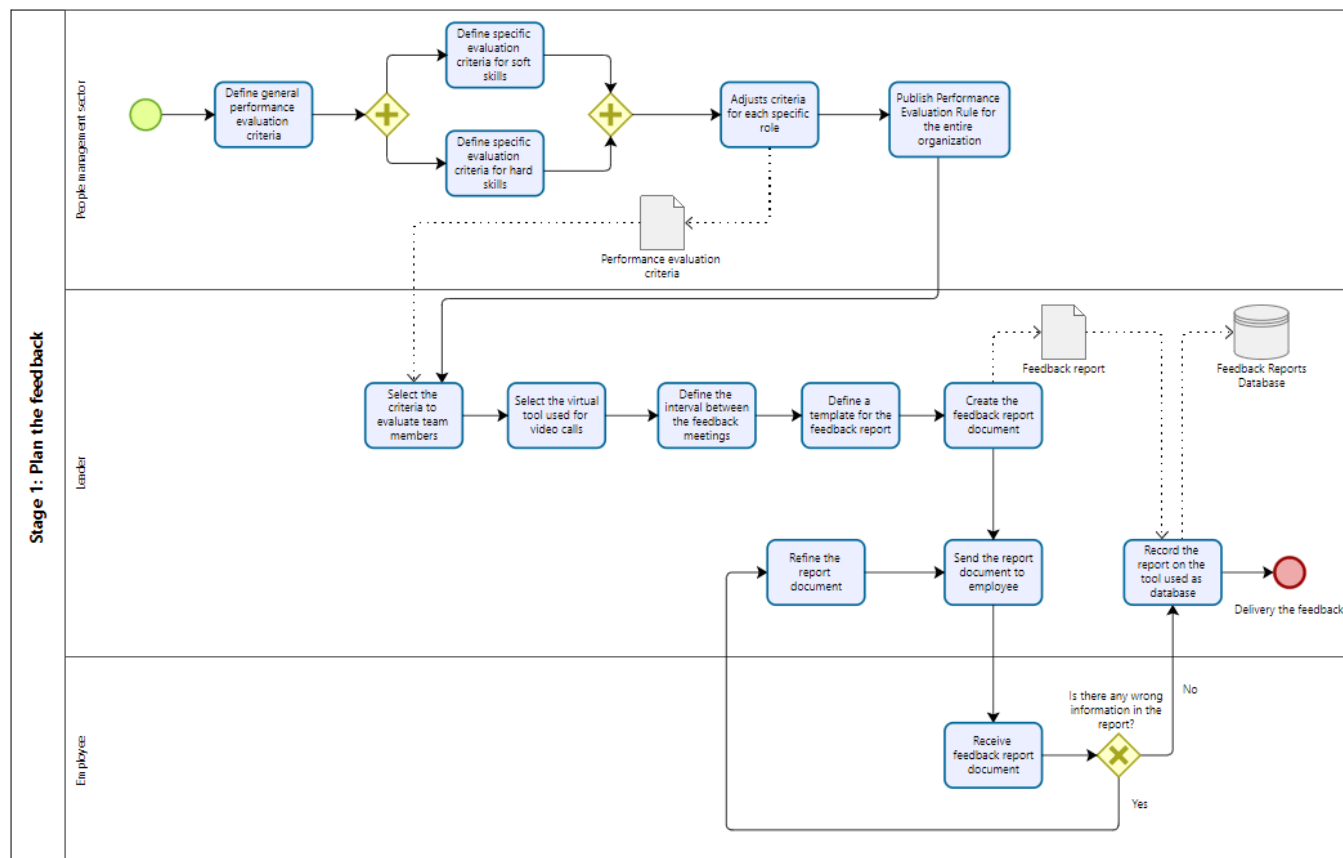
The artifacts presented in the guide are generic representations of each artifact used and produced by the specific team and organization that adopts the FeedBasic to design their own feedback process. The artifacts can be adjusted according to the needs and characteristics of the teams. The artifacts that are present in FeedBasic are: **performance evaluation criteria**, **feedback report**, **list of improvement points**, **individual development plan**, and a **feedback reports database**, used as support to manage and record the information gathered during the feedback process.

### 7.2.2.1 Stage 1: Plan the feedback

The first stage of the guide consists in planning the feedback to be delivered to the employee. The main objective of this stage is to define the criteria evaluation to be used on the performance evaluation of each employee, define the structure of the feedback by selecting the tool for the meetings, design the templates and its frequency. The result of this stage is generating an organized feedback report to be shared with the employees.

In this stage, it will be required the participation of three actors: a people management sector of an organization, a leader (who will be responsible for delivering the feedback) and an employee (who will receive the feedback). Also, during this stage it will be necessary for the organization to produce a performance evaluation criterion, responsible for guiding the leader's evaluation of each employee. This information will be included in the feedback report. The activities and artifacts used by each actor is presented with details in Figure 7.3.

Figure 14 – Stage 1: Plan the feedback



Source: The author (2023).

As described in Figure 7.3, there are several activities to be executed by each actor in the first stage. Following, we describe each activity:

1. **Define general performance evaluation criteria:** in this activity, the people management sector defines the general criteria used to evaluate the performance of employees, which must be aligned with its own vision, value and mission. This activity is aligned with Susanto et al. (2023), who suggests that key performance indicators must be set and evaluated at the beginning of each feedback round. It also makes the experience unitary and easier to apply to a larger group of people, which is reinforced in the research of Meyer-Leive (2022). One alternative for the criteria selection is the set of KSA competencies defined by Steves and Campion (1994), which provides 20 competences that may fit on your team needs and will help you to better track the soft and hard skills performances required.
2. **Define specific evaluation criteria for soft skills:** in this activity, the people management sector defines the soft skills to be evaluated and defines the criteria used to evaluate them.
3. **Define specific evaluation criteria for hard skills:** in this activity, the people management sector defines the hard skills to be evaluated and defines the criteria used to evaluate them.
4. **Adjusts criteria for each specific role:** in this activity, the people management sector defines the set of criteria to be used to evaluate each of the current roles present in the organization, creating an evaluation rule that can really be mapped to the actions performed in the daily's routine of the employees. They must consult leaders to validate if the criteria selected are aligned with the responsibilities and activities associated with each role.
5. **Publish Performance Evaluation Criteria for the entire organization:** in this activity, the people management sector shares the Performance Evaluation Criteria with the entire organization, letting all the employees be aware of the ways their actions will be evaluated. They must use the same channels currently used for daily communication, to ensure that the Performance Evaluation Criteria will be visible to all the employees. Also, the people management sector must request the leaders to encourage the members of their teams to read the evaluative parameters and clarify any doubts.

6. **Select the criteria to evaluate team members:** in this activity, the leader selects the criteria to be used on the employee's evaluation, considering the particularities of the project.
7. **Select the virtual tool to be used for video calls:** in this activity, the leader selects the virtual platform to be used to conduct the video call during the feedback meetings. This platform should be easily accessible by the employee, to facilitate the connection on the meeting day. The leader must ensure that the employee has access to microphone and audio.
8. **Define the interval between the feedback meetings:** in this activity, the leader defines the interval in which the feedback will be delivered, considering the activities of the team. It is highly indicated that the feedback period must not exceed one semester, since some information may be lost after this time.
9. **Define a template for the feedback report:** in this activity, the leader defines the template for the feedback report, aiming to better organize the information that will be shared in the feedback meeting and to structure how the time schedule will be separated for each topic that will be discussed. The definition of a template for feedback is also important to generate a standardization of the feedback report.
10. **Create the feedback report document:** after defining all the structural aspects related to the feedback, in this activity, the leader creates the feedback report document. Here, the set of criteria selected is used to evaluate the employees' performance, and then list the improvement points with useful examples and suggestions. It is indicated that the feedback report document also includes good behaviors noted from the employee, not only being a list of improvement points.
11. **Send the report document to the employee:** in this activity, after finishing the first version of the feedback report document, the leader must share it with the employee. This activity is important to allow the employee to read the information in their own time, without pressure, making it easier to receive feedback itself later. It is important that the leader reinforces the need to read the document before the feedback meeting.
12. **Refine the report document:** in this activity, the leader will analyze and change the details pointed out by the employee as requiring adjustments.

**13. Receive the feedback report document:** in this activity, the employee receives a feedback report document produced by its leader. It is important to read the document cautiously to identify any wrong or incomplete information, and then send it back to the leader. It is also important to note all the questions raised by the document and ask them to the leader in the feedback meeting.

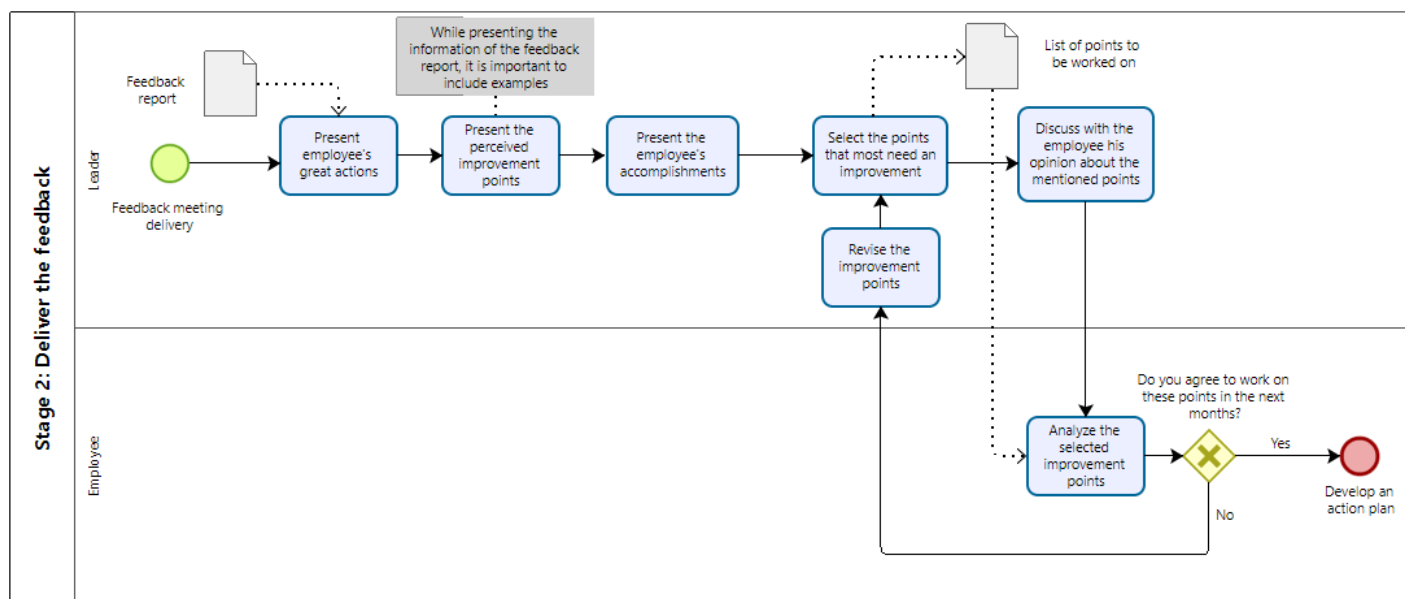
By the end of this stage, the leader should be able to generate a feedback report, which needs to be properly received and verified by the employee, that will allow them to move to the next stage which is the delivery moment of the feedback.

#### *7.2.2.2 Stage 2: Deliver the feedback*

The second stage of the guide consists in the delivery of the feedback. The main objective of this stage is to discuss the improvement points, congratulate the employee for her greatest contributions and achievements, and select the improvement points to be treated in the action plan, produced in the next stage of the guide. Aiming to balance positive and negative points, avoiding the feedback to act like a demotivator for employees but also ensuring that the message is clearly communicated, we adopted a format of feedback delivery inspired by the “Sandwich” approach (SILVA, 2022). This approach, mentioned for the first time in the 90’s in the book “Minute-Manager” and commonly used to deliver feedback to employees, is a technique in which the person responsible for the feedback aims to share a difficult orientation in the middle of two messages that are characterized as positive or praise.

In this stage, two actors interact during the activities’ execution: the leader or manager, and the employee. The artifact resulting from stage 1 - the feedback report, is used in this stage as a guide to the feedback delivery moment, since it contains the subjects to be discussed. As result of the activities in stage 2, a list of points to be discussed is produced as the final artifact, containing all the information necessary to build an effective and tangible action plan. The activities and artifacts of this stage are presented in Figure 7.4.

Figure 15 – Stage 2: Deliver the feedback



Source: The author (2023).

As presented in the figure above, most activities are performed by the leader, but the employee also participates actively in the feedback delivery. We describe each activity as follows:

1. **Present employee's great action:** in this activity, using the feedback report artifact as input and following the "Sandwich" approach, the leader starts the feedback delivery presenting the employee's great actions.
2. **Present the perceived improvement points:** in this activity, moving to the sandwich filling, the leader presents the improvement points perceived in employee's behavior. It is important that the leader gathers information regarding the improvement points with the employee's teammates and outsiders of the team that interacted with him, to get a more general vision.
3. **Present the employee's accomplishments:** in this activity, closing the "sandwich", the leader shares the last employee's accomplishments. Here it is also possible to reward the employee by his great performance.
4. **Select the points that most need an improvement:** in this activity, the leader selects the improvement points considered that must be relevant to the employee's evolution and the team dynamics, organizing them into a list, produced as final artifact of this stage.
5. **Discuss with the employee his opinion about the mentioned points:** in this activity, the leader shares the points selected with the employee, to see if

he agrees or disagrees with the mentioned points. It is important to promote active listening by paraphrasing and summarizing what is shared by the employee, to ensure comprehension and demonstrate your commitment to an open communication.

6. **Revise the improvement points:** in this activity, the leader reviews the list of improvement points based on the employee's observations.
7. **Analyze the selected improvement points:** in this activity, the employee verifies cautiously the points selected by the leader. After this verification, the employee can require some adjustments from the leader's ending.

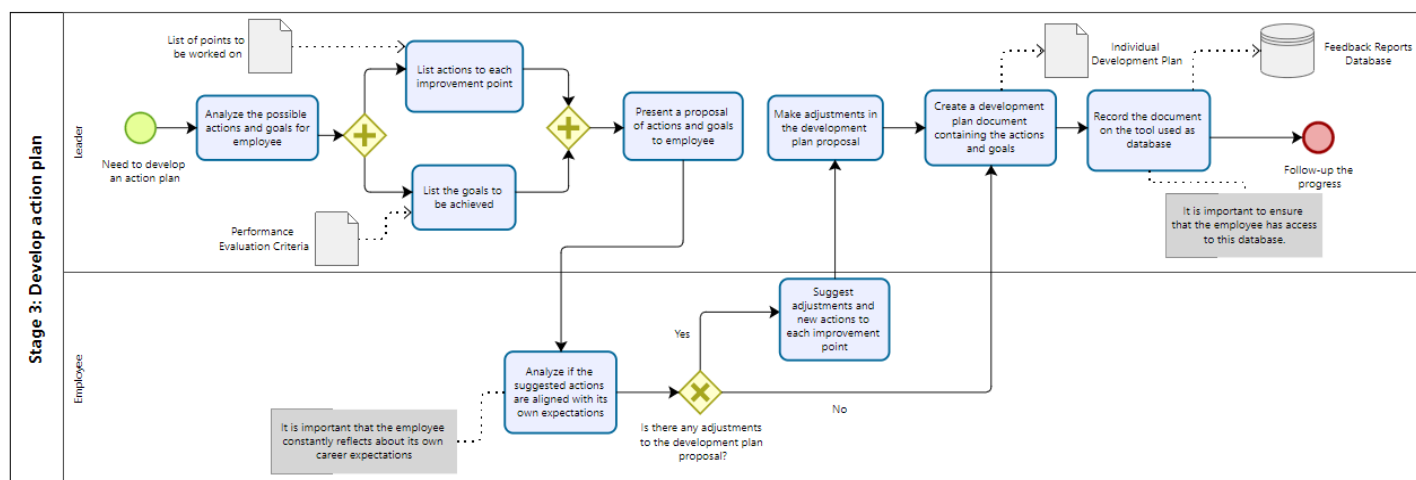
By the end of this stage, it is expected to have a defined list of improvement points selected collaboratively by the leader and employee, allowing them to follow to the next stage to develop a specific action plan for the employee.

#### *7.2.2.3 Stage 3: Develop an action plan*

The third stage focuses on the development of an action plan. Because the feedback provided is typically focused on learning and development rather than evaluation, rewards, and sanctions, employees may be more receptive to this form of help and guidance than they are to traditional performance evaluations (MURPHY, 2019). The main objective of this stage is to define the actions and goals aiming to help the employee to evolve on the key improvement points selected. The first responsibility of the leader when adopting the guide should be to help translate high level goals into individual action plans to help achieve these goals. This plan must be simple, tangible, effective, and, most of all, needs to be aligned with both leader expectations and employee's expectations as well.

The list of improvement points, selected on stage 2, is used here as input for the proposal of actions that can improve each of the listed points. In a similar manner, the Performance Evaluation Criteria, defined by the organization on stage 1, is used in this stage to support the definition of goals to be achieved by the conclusion of the action plan. The final artifact produced in this stage is a Individual Development Plan, that needs to be accessible at any time by the employee and recorded in the tool used as a database for all the information related to the entire feedback process.

Figure 16 – Stage 3: Develop action plan



Source: The author (2023).

As mentioned before, the creation of the Individual Development Plan must be a collaborative effort between the leader and employee. The team members become more engaged and motivated to execute their development plans if they participate in the definition of the actions of these plans. Moreover, the team members may be more confident in the feedback process because the decisions are transparent and based on the perspective of a group rather than a few persons. In Figure 7.5, we present the activities involved in stage 3 and further described as follows:

1. **List actions to each improvement point:** taking the list of points selected in the previous stage as input, in this activity the leader suggests actions to improve the performance of employees in the mentioned points.
2. **List the goals to be achieved:** in this activity, considering the Performance Evaluation Criteria established by the organization, the leader defines the goals to be achieved by the employee. The goals defined must also reflect what is expected of the employee performance in its current role.
3. **Analyze if the suggested actions are aligned with the own expectations:** in this activity, after receiving the goals and actions proposed by the leader, the employee analyzes if they are aligned to its own expectations, previously identified. It is important to encourage autonomy and ownership of their work and decisions fosters motivation and accountability to move forward the aligned goals. Also, it is important that the employee identifies which are his career expectations and what he wants to achieve as a professional in a short, medium and long-time basis.



4. **Suggest adjustments and new actions to each improvement point:** in this activity, after analyzing the leader' suggestions, the employee proposes adjustments to the plan. It is important that the employee contributes actively to the development plan, especially because it is focused on its own evolution, so it must be aligned with its own expectations.
5. **Make adjustments in the development plan:** based on the employee's feedback, the leader must adjust the actions and goals before creating the official development plan.
6. **Create a development plan document containing the actions and goals:** in this activity, after defining which actions will be taken and the goals to be achieved, the leader documents this information and generates the final artifact of this stage, an Individual Development Plan for the employee.
7. **Record the document on the tool used as database:** in this activity, the leader creates a register of the document produced in the tool used as database with the objective of keeping a version of the Individual Development Plan. Keeping records is important to avoid the loss of information between feedback meetings. It is important to ensure that the collaborator has access to the database used.

By the end of this stage, it is expected that the employee's Individual Development Plan has been finished, including actions and goals aligned with the expectations from the leader and employee's ending. It is important to say that this is a "living" document, meaning that it can be changed and adapted at any time, to be always adjusted to employees' new goals and objectives, as well as to better fit the actions on the activities currently performed. After saving this document in a platform that can be accessed for both actors, we can follow to the fourth and last stage of our guide, which is related to the continuous follow-up of employees' progress in the agreed points.

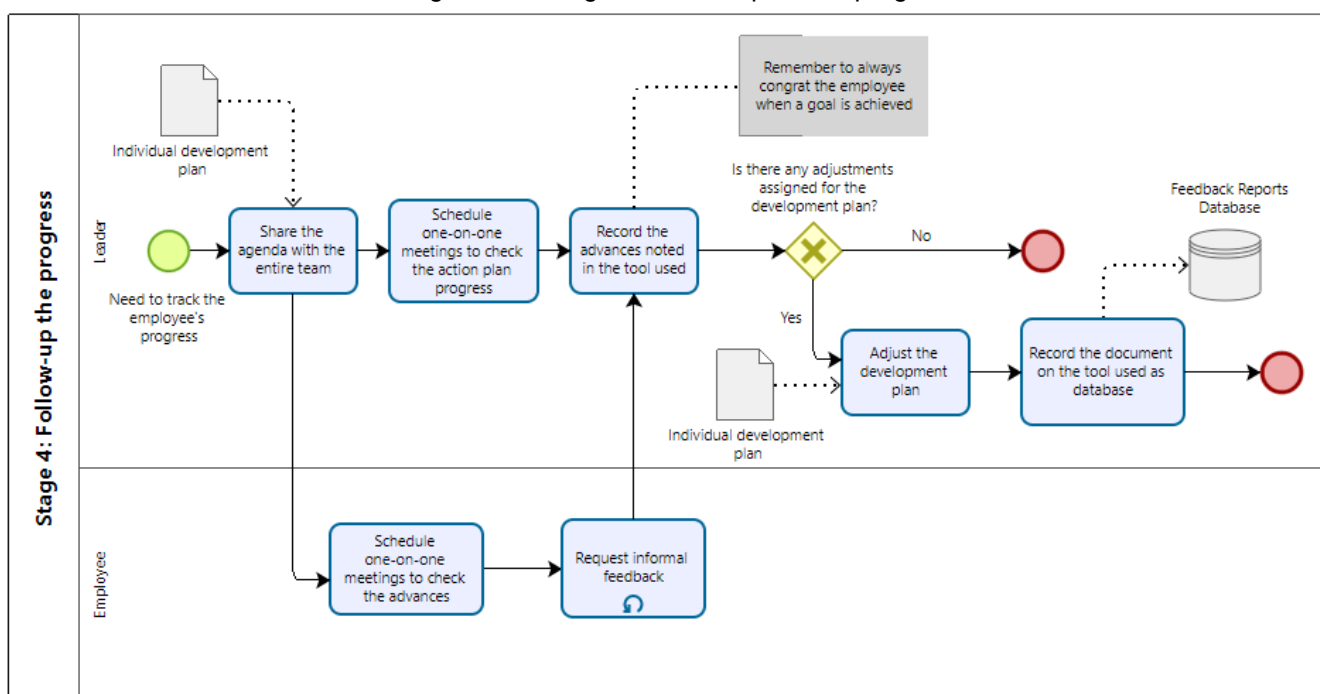
#### *7.2.2.4 Stage 4: Follow up on the progress*

The last stage consists in the follow-up of the employee's progress toward the established goals in the Individual Development Plan. The main goal of this stage is to define activities that help the leader and employees to constantly monitor how the actions are being carried out, re-evaluate if the goals still make sense and adjust the

plan whenever necessary. In this stage, we also reinforce the importance of informal feedback in this follow-up process, as well as the recognition of good actions performed by the employee.

Similar to stages 2 and 3, the leader and employees will be the actors to perform the activities of this stage. There is no new artifact produced by the end of the stage, the leader will just need to constantly query in the feedback database to get the last version of the Individual Development Plan to discuss what needs to be adjusted in the follow-up meetings. The activities executed by the actors in this stage are presented in Figure 7.6.

Figure 17 - Stage 4: Follow-up on the progress



Source: The author (2023).

As we mentioned in previous chapters, keeping the pace of the feedback delivery is important to not lose information nor keep doing actions that no longer is helping on the performance improvement. To help on that, the activities proposed in the stage 4 are:

1. **Share the agenda with all team members:** in this activity, the leader shared its agenda with the entire team, allowing them to schedule meetings to discuss their development plans, daily challenges and changes or their goals and perspectives.

2. **Schedule one-on-one meetings to check the action plan progress:** in this activity, the leader schedules one-on-one meetings with the leader, taking the last Individual Development Plan as input. It is not required a formal scheduling of the meeting, this can (and must) happen organically, within daily's routine, in a more natural way. It is important to schedule frequent one-on-one meetings to provide the team opportunities for open dialogue, clarification of expectations, and solve any impediments faced by team members.
3. **Record the advances noted in the tool used:** in this activity, the leader records points considered advances perceived on the employees' behavior. It is important to make the feedback more accurate and reliable, by including more inputs throughout the entire evaluative process.
4. **Request informal feedback:** in this activity, the employee requests informal feedback from its leader, motivated by a need of tracking its own progress. As represented in Figure 7.6, this activity is going to be repeated an undefined number of times, which means that there is no limitation for the employee's request for informal feedback.
5. **Schedule one-on-one meetings to check the advances:** in this activity, similar to the leader' activity, the employee schedules one-on-one meetings with the leader to track progress. It is important to mention that this one-on-one, even not represented in the figure above, may be scheduled with the peers too, to get a different perspective of the actions being performed.
6. **Adjust the development plan:** in this activity, based on the one-on-one meetings, the leader adjusts the Individual Development Plan.
7. **Record the document on the tool used as a database:** in this activity, the leader updates the Individual Development Plan in the database.

By the end of this stage, the Individual Development Plan must be completely adapted to the employee's reality and reflect its current personal and professional expectations. The end of this stage is also the end of a feedback round and the start of a new one, which takes us to stage 1 again. This cyclic feedback process ensures the continuous improvement of employees' competencies.

### 7.3 CHAPTER SUMMARY

In this chapter, we consolidated the findings from the three research methods used to answer the proposed research questions of this study. In section 7.1 we discussed a synthesis of the findings related to benefits, challenges, and recommendations to conduct the feedback process gathered by means of the multivocal literature review, interviews with leaders, and survey with team members. These results served as insights to create the guide FeedBasic, presented in section 7.2.

## **8 CONCLUSIONS, LIMITATIONS AND FUTURE WORK**

### **8.1 CONCLUSIONS**

With this research, we are helping to advance decades of research supporting how to optimally give feedback (BALCAZAR and SUAREZ, 1985; ALVERO et al., 2001; SLEIMAN et al., 2020). In our research, we are contributing more specifically to building the knowledge body on the feedback practices conducted within remote software development teams. Our study provides a mapping of the main benefits, challenges, and recommendations to conduct feedback proposed in the literature, evidenced by managers and leaders, and perceived by the other team members as well. Furthermore, differently from the previous studies that only evaluate the feedback impacts on specific characteristics of the team, such as motivation and innovation, we provide a systematic guide to be used by leaders and managers to implement or improve the feedback practices in their teams. By using the FeedBasic, leaders and managers may be capable of incorporating recommendations described in literature and evidenced in the interviews with leaders and survey questionnaire with team members. The guide aims to increase employee's satisfaction with the whole feedback process and ultimately improve the effectiveness of feedback for remote software development teams.

### **8.2 THREATS TO VALIDITY**

Throughout the entire research, we paid attention to the possible threats to validity of the research. We identified the following limitations when we were planning and executing this study. We decided to use a method triangulation approach to decrease the deficiencies and biases that come from any single method. Since we adopted a mixed research approach, each method needs specific evaluation, to define categories and judge which aspects we must consider relevant and consider assessing the threats to validity of our study.

To ensure the conclusion validity of the Multivocal Literature Review, we analyzed the set of sources and manipulated the data, following a systematic approach that can ensure the replicability of this study without major deviations on the results obtained. Regarding external validity, we treated it by including sufficient information in our set of selected studies representing the knowledge reported by

other researchers and practitioners. Our source selection process also made it possible to obtain findings useful for both academia and industry, but as our search focused on one specific area the findings are mainly related to feedback in the context of the software development field.

The qualitative interviews also have some potential threats to validity, as pointed out by Merriam and Tisdell (2015). To ensure the credibility (or internal validity) of our study, which is related to providing evidence that the findings are credible as the data is presented, we applied two techniques mentioned in Merriam's study. We used triangulation, by collecting data from participants from different organizations and by using multiple data collection methods to compare and validate the collected data. We were not able to use techniques to explore the credibility of results, such as member checking. The consistency of the study (or reliability) is another important question in qualitative research being associated with whether the study's findings are consistent with the data collected. To ensure consistency in our study, we used triangulation in data collection methods and analysis, and kept records of the entire research process that can be used as audit trails by external reviewers. All the findings were also peer examined by both researchers. The generalizability (or external validity), which concerns the application of the findings of a study to other situations, was increased by a detailed description of each research phase performed and their results, aiming to give enough information to readers to determine if the study is applicable to their own contexts. We used the Multivocal Literature Review to add evidence from other countries and organizational contexts to overcome the geographical limitations of our study, since all the interviews were conducted with leaders and managers from Brazilian organizations.

Finally, regarding the threats to validity associated with the use of survey research we must highlight three main aspects, based on Wohlin et. al (2012) study. Despite the validation of the questionnaire before its distribution, the way the questions are understood by the research participants can lead to inadequate results, constituting a limitation of this work. Another limiting factor is the number of answers collected with the survey, which was 85 in total, but only 83 considered valid and used for data analysis. This is a threat for generalization, since it is a small sample from the entire target public, and also restricts to the people who work in the same organization, studies in the same university, as it is a dependency added by the survey's means of distribution. To increase the internal and external validities of our

study, we used triangulation in data collection methods and peer-reviewed the findings that emerged from the data.

### 8.3 FUTURE WORK

In future work, we aim to investigate how the use of the FeedBasic guide impacts remote software development teams and measure this impact in terms of productivity, satisfaction, and motivation. In this study, we did not have the opportunity to apply in practice the guide proposed, so we were not able to evaluate the suitability to improve feedback practices for remote software development teams. This future study may be conducted using an action study approach, to go to the field and evaluate the selected parameters inside practitioners' routine. Another opportunity to be explored in a future work is to map the feedback aspects considered more important based on the specific needs of each different role performed within software development teams, adjusting the guide accordingly. We also aim to expand our study to organizations outside of Brazil, to gather different cultural perspectives of the feedback, as well as know how these practices are adopted in international companies.

Another possible future work is the application of the FeedBasic in a different context and evaluate if it is useful to improve the satisfaction of employees beyond the software development field, such as, public organizations. Also, it is possible to mention as possible future work the development of a new feedback-dedicated tool that provides a complete infrastructure for implementing feedback entirely based on FeedBasic.

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## APPENDIX A – PRIMARY STUDIES

This appendix provides the list of all 41 studies analyzed on the multivocal literature review.

Table A – List of analyzed academic literature studies

ID	Authors	Article title and link	Pub. year
A1	Peñarroja et al.	How team feedback and team trust influence information processing and learning in virtual teams: A moderated mediation model.	2015
A2	Gamage, B. J.	The Impact of Project Management in Virtual Environment: A Software Industry Perspective.	2016
A3	Bradley et al.	Five challenges to virtual team success: Lessons from Sabre, Inc.	2002
A4	Bradley et al.	Seven challenges to virtual team performance: Lessons from Sabre, Inc.	2002
A5	Ziek and Smulowitz	The impact of emergent virtual leadership competencies on team effectiveness	2014
A6	Winter, A.	Problems working in semi and full-time virtual teams: Comparison of virtual team problems pre and post-Covid 19 epidemic.	2020
A7	Tarim, T. B.	Managing technical professionals: managing remote teams.	2013
A8	Horwitz et al.	The promise of virtual teams: identifying key factors in effectiveness and failure.	2006
A9	Haines, R.	Activity awareness, social presence, and motivation in distributed virtual teams.	2021
A10	Geister et al.	Effects of Process Feedback on Motivation, Satisfaction, and Performance in Virtual Teams.	2006
A11	Staples and Webster	Exploring Traditional and Virtual Team Members' "Best Practices": A Social Cognitive Theory Perspective.	2007
A12	Patra et al.	Motivation and Team Effectiveness: A Comparison of Face to Face and Virtual Teams.	2021
A13	Gibson and Cohen	Virtual teams that work: Creating conditions for virtual team effectiveness.	2003
A14	Moe et al.	Coaching a Global Agile Virtual Team.	2015
A15	Castro-Hernandez et al.	Effects of cohesion-based feedback on the collaborations in global software development teams.	2014

A16	DeNisi and Kluger	Feedback effectiveness: Can 360-degree appraisals be improved?	2000
A17	Sach and Petre	Feedback: How does it impact software engineers?"	2012
A18	Garro-Abarca et al.	Virtual Teams in Times of Pandemic: Factors That Influence Performance.	2021
A19	Agarwal et al.	Effective Leadership in Virtual Teams during the COVID-19 Pandemic.	2020
A20	Siebra et al.	Collaborative Feedback and Its Effects on Software Teams.	2020
A21	França et al.	Motivation and Satisfaction of Software Engineers.	2020

Table B – List of analyzed gray literature studies.

ID	Authors	Article title and link	Pub. Year
G1	Tsipursky, G.	Hybrid and Remote Team Management Through Revising Performance Evaluations.	2022
G2	Arnold, E.	Performance Review: A Complete Guide for Remote Teams in 2022.	2021
G3	Malaga, P.	10 Tips to Evaluate Your Virtual Team Performance.	2020
G4	Bojic, C.	How to conduct a virtual performance review.	2022
G5	Von Alvensleben, L.	Feedback in remote teams: The gift that keeps on giving.	2017
G6	Know Your Team team	Performance Management In a Remote Team.	2022
G7	Small Improvements team	Enabling performance feedback in a 100% remote team.	2020
G8	Caruso, K.	8 Steps to Improve Performance Management for Distributed Teams.	2021
G9	Rossi, S.	How To Run A Goal Performance Review In A Remote Team.	2020
G10	Hernandez, L.	A Guide to Giving & Receiving Feedback on a Remote Team.	2020
G11	Kohnke, B.	6 ways HR can build a feedback culture with remote teams.	2020
G12	Mukherjee, S.	The 5 Best Real-life Examples of Employee	2021

		Feedback for Remote Teams.	
G13	Latour, I.	The danger of not giving feedback in a distributed team.	2020
G14	Fetcher, J.	How to Provide Effective Feedback to Your Remote Team.	2021
G15	MacLeod, L. E.	How to Give Great Feedback In A Virtual (And Uncertain) World.	2020
G16	Teeley, A.	How to Give Your Team Valuable Feedback While Remote.	2020
G17	Huston, T.	Giving Critical Feedback Is Even Harder Remotely.	2021
G18	Huxford, R.	Remote Performance Reviews: Challenges & Recommendations.	2022
G19	Ostrich, J.	Giving Constructive Feedback in a Virtual World.	2020
G20	Knight, R.	How to Do Performance Reviews — Remotely.	2020



## APPENDIX B – INFORMED CONSENT DOCUMENT

### Introduction

This form aims to inform respondents about the use of data in a safe and private way, only for academic purposes of the Master's in Computer Science by student Ana Beatriz Cavalcanti at the UFPE's Informatics Center.

### Informed Consent

You are being invited to participate in the research **“HOW TO MANAGE FEEDBACK PROCESS IN VIRTUAL TEAMS: A MULTIPLE CASE STUDY”**, under the responsibility of master's student Ana Beatriz Cavalcanti Ribeiro from UFPE, with professor Carina Alves as supervisor.

The objective of this research is to understand the different approaches of feedback, the benefits acquired and the common challenges faced by virtual teams members when implementing the feedback in practice, and the good practices already implemented on these teams. Therefore, I would like to ask you about your interest and willingness to cooperate with the interview.

You will receive all the necessary clarifications before, during, and after the research is completed, and I assure you that your name will not be divulged, and the strictest confidentiality will be maintained by omitting information that allows you to be identified. Data from your participation in the research, such as recording of the interview and documents provided, will be kept by the researchers responsible for the study.

Data collection will be carried out through interviews. It is for this procedure that you are being invited to participate. Your participation in the survey does not entail any risk.

It is expected that this research can contribute to identifying valuable practices that can be adopted to improve the feedback process for virtual teams and organizations.

Your participation is voluntary and free of any remuneration or benefit. You are free to refuse to participate, withdraw your consent or discontinue your participation at any time. Refusal to participate will not entail any penalty or loss of benefits.

If you have any questions regarding the survey, you can contact me by phone (87)9 9172-9214 or e-mail: [abcr@cin.ufpe.br](mailto:abcr@cin.ufpe.br).

The research team ensures that study results will be returned to participants who request access to the results. The results will be delivered electronically (applicant's email) and may be published later in the scientific community.

Thanks for your contribution!

## **APPENDIX C – INTERVIEW PROTOCOL**

### **Context and general vision of the project/organization**

1. Sua organização é considerada uma organização ágil? E o seu projeto?
2. Qual(is) são a(s) metodologia(s) ágil(éis) adotada(s) pelo seu time?
3. Atualmente, qual o modelo de trabalho adotado (remoto, híbrido, presencial) pela sua organização? Seu projeto segue o mesmo posicionamento?
4. Esse modelo já era adotado antes da pandemia do Covid-19 iniciada em 2020?
5. Você acredita que a cultura da sua organização foi impactada com essas mudanças? De que forma?

### **Identifying the characteristics of feedback processes in the projects/organization**

6. A cultura da sua organização apoia o feedback? O feedback já é uma prática adotada pelo seu time/organização?
7. A organização dá suporte e diretrizes quanto à adoção do feedback, ou todo o feedback é implementado de maneira isolada pelos times?
8. De maneira geral, como é realizado o processo de feedback no seu time?
9. Qual é a frequência que o feedback é dado para os colaboradores?
10. Quais são as principais etapas e resultados obtidos com o processo de feedback para o seu time?
11. O seu time/organização utiliza alguma ferramenta para dar suporte ao processo de feedback?
12. O processo de feedback utilizado inclui todo o time ou apenas líder-liderado?

### **Identifying topics considered main challenges/difficulties faced while adopting a feedback process**

13. Quais são as principais dificuldades ou desafios enfrentados durante o processo de feedback no seu time?
14. Você considera que há diferenças entre os desafios enfrentados durante o feedback no modelo de trabalho remoto e no presencial? Quais seriam elas?

### **Identifying main benefits acquired from feedback process adoption**

15. Quais são os principais benefícios obtidos pelo seu time a partir do processo de feedback?
16. Você considera que as mudanças de modelo de trabalho ocasionaram impacto na repercussão desses benefícios? De que forma?
17. Quais são as principais mudanças/resultados obtidos pela prática de feedback dentro do seu time?

### **Recommendations to improve the feedback process**

18. De uma forma geral, quais são os principais pontos positivos que a prática de feedback pode trazer para times de desenvolvimento de software?
19. De uma forma geral, quais são os principais pontos negativos que a prática de feedback pode trazer para times de desenvolvimento de software?
20. Na sua opinião, quais são as boas práticas ou recomendações que um time ágil deve seguir para ter bons resultados na adoção de um processo de feedback?
21. Você tem alguma consideração adicional para acrescentar?