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NAVIGATING CULTURAL RESISTANCE: SUCCESSFULLY IMPLEMENTING AGILE METHODS IN THE TELECOM

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Abstract

Objective: This article presents the application of an agile and cultural transformation framework to mitigate the impact of implementing agile methods in an environment of cultural resistance within organizations.
Methodology: Product Owner and Scrum Master training were carried out, totaling 62 employees. We used semi-structured interviews with open questions, and a questionnaire with 93 questions was applied to diagnose the level of agile knowledge. In addition, there was detailed documentary research, which involved managers and consultants from the business area and project managers, in addition to the profiles that comprise the agile teams considered.
Results: We point out that implementing agile methods in organizations lacks adequate planning. The proposed agile and cultural transformation framework with its various stages, "Training," "Adapting," "Monitoring", and "Evaluate," was implemented in a large mobile telecommunications company. The framework was presented in detail and represented schematically.
Originality: This technological article contributes by bringing practical guidance on implementing agile methods in environments with a different culture, with a low degree of Cultural Fit, reducing cultural resistance and reaping benefits more quickly throughout the change process. We point out that implementing agile methods in organizations lacks adequate planning. The proposed agile and cultural transformation framework with its various stages was implemented in a large mobile telecommunications company. The framework was presented in detail and represented schematically. This technological article contributes by bringing practical guidance on implementing agile methods in environments with a different culture, with a low degree of Cultural Fit, reducing cultural resistance and reaping benefits more quickly throughout the change process.

Keywords: Project management. Agile Methods. Cultural Resistance to Change. Telecom company.

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NAVEGANDO PELA RESISTÊNCIA CULTURAL: IMPLEMENTANDO MÉTODOS ÁGEIS COM SUCESSO NA INDÚSTRIA DE TELECOMUNICAÇÕES

Resumo

Objetivo: Este artigo apresenta a aplicação de um framework de transformação ágil e cultural para mitigar o impacto da implementação de métodos ágeis em um ambiente de resistência cultural dentro das organizações.
Metodologia: Foram realizados treinamentos de Product Owner e Scrum Master, totalizando 62 funcionários. Utilizamos entrevistas semiestruturadas com perguntas abertas, e um questionário com 93 perguntas foi aplicado para diagnosticar o nível de conhecimento ágil. Além disso, houve uma pesquisa documental detalhada, que envolveu gerentes e consultores da área de negócios e gerentes de projeto, além dos perfis que compõem as equipes ágeis consideradas.
Resultados: Apontamos que a implementação de métodos ágeis em organizações carece de planejamento adequado. O framework de transformação ágil e cultural proposto com suas várias etapas, "Treinamento", "Adaptação", "Monitoramento" e "Avaliação", foi implementado em uma grande empresa de telecomunicações móveis. O framework foi apresentado em detalhes e representado esquematicamente.
Originalidade: Este artigo tecnológico contribui trazendo orientações práticas sobre a implementação de métodos ágeis em ambientes com cultura diferenciada, com baixo grau de Ajuste Cultural, reduzindo a resistência cultural e colhendo benefícios mais rapidamente durante o processo de mudança. Apontamos que a implementação de métodos ágeis em organizações carece de planejamento adequado. O framework de transformação ágil e cultural proposto com suas várias etapas foi implementado em uma grande empresa de telecomunicações móveis. O framework foi apresentado em detalhes e representado esquematicamente. Este artigo tecnológico contribui trazendo orientações práticas sobre a implementação de métodos ágeis em ambientes com cultura diferenciada, com baixo grau de Ajuste Cultural, reduzindo a resistência cultural e colhendo benefícios mais rapidamente durante o processo de mudança.

Palavras-chave: Gestão de projetos. Métodos Ágeis. Resistência Cultural à Mudança. Empresa de telecomunicações.

NAVEGACIÓN POR LA RESISTENCIA CULTURAL: IMPLEMENTACIÓN EXITOSA DE MÉTODOS ÁGILES EN LA INDUSTRIA DE LAS TELECOMUNICACIONES

Resumen

Objetivo: Este artículo presenta la aplicación de un marco de transformación ágil y cultural para mitigar el impacto de la implementación de métodos ágiles en un entorno de resistencia cultural dentro de las organizaciones.
Metodología: Se llevaron a cabo capacitaciones para Product Owner y Scrum Master, con un total de 62 empleados. Utilizamos entrevistas semiestructuradas con preguntas abiertas, y se aplicó un cuestionario con 93 preguntas para diagnosticar el nivel de conocimiento ágil. Además, hubo una investigación documental detallada, que involucró a gerentes y consultores del área de negocios y gerentes de proyectos, además de los perfiles que componen los equipos ágiles considerados.
Resultados: Señalamos que la implementación de métodos ágiles en las organizaciones carece de una planificación adecuada. El marco de transformación ágil y cultural propuesto con sus diversas etapas, "Capacitación", "Adaptación", "Monitoreo" y "Evaluación", se implementó en una gran empresa de telecomunicaciones móviles. El marco se presentó en detalle y se representó esquemáticamente.
Originalidad: Este artículo tecnológico contribuye al proporcionar orientación práctica sobre la implementación de métodos ágiles en entornos con una cultura diferente, con un bajo grado de Ajuste Cultural, reduciendo la resistencia cultural y obteniendo beneficios más rápidamente durante todo el proceso de cambio. Señalamos que la implementación de métodos ágiles en las organizaciones carece de una planificación adecuada. El marco de transformación ágil y cultural propuesto con sus diversas etapas se implementó en una gran empresa de telecomunicaciones móviles. El marco se presentó en detalle y se representó esquemáticamente. Este artículo tecnológico contribuye al proporcionar orientación práctica sobre la implementación de métodos ágiles en entornos con una cultura diferente, con un bajo grado de Ajuste Cultural, reduciendo la resistencia cultural y obteniendo beneficios más rápidamente durante todo el proceso de cambio.

Palabras clave: Gestión de proyectos. Métodos Ágiles. Resistencia Cultural al Cambio. Empresa de telecomunicaciones.

INTRODUCTION

Within the core of the telecom sector's transformation lies the intricate tapestry of organizational culture, defined by interconnected beliefs that shape patterns of thought, communication, and behavior (Barley, 1983; Martin, 2002). Central to this transformation is the process of sensemaking, where individuals collectively interpret and give meaning to their experiences (Weick, Sutcliffe, & Obstfeld, 2005). Conversely, sensebreaking represents the decomposition of existing meanings (Pratt, 2000), while sensegiving involves influencing others towards a preferred organizational reality (Gioia & Chittipeddi, 1991).

As organizations embark on the strategic journey towards digital transformation, understanding and navigating the hierarchical nature of this culture, intertwined with the dynamics of sensemaking, sensebreaking, and sensegiving, becomes paramount. The relentless push for digital transformation in the market (Scholkmann, 2021; Tronvoll et al., 2020) has compelled organizations, especially those in the telecom sector, to adapt or risk obsolescence.

Agile methodologies, celebrated for their transformative potential in the digital realm, have become the gold standard for software and technology development projects (The Standish Report, 2020; Conforto et al., 2016). However, despite their anticipated superiority over traditional project management methods, a significant portion of agile projects either fail or underperform. The predominant challenge stems from an ingrained resistance within organizational culture to the adoption of agile methodologies (Bosch & Bosch-Sijtsema, 2011; The Standish Group International, 2020).

Agile practices, with their promise of flexibility and adaptability, often clash with entrenched bureaucratic governance, especially in large-scale entities (Dybå & Dingsøyr, 2008). While agile and traditional project management can coexist harmoniously, especially in hybrid projects (Lappi & Aaltonen, 2017), the cultural resistance to agile's disruptive nature remains a significant hurdle (PMI, 2017).

Recognizing this gap, this article proposes a comprehensive framework tailored for a Telecom company on the cusp of digital transformation. Our framework, designed to mitigate cultural resistance and technical mismatches, emphasizes the strategic need for a profound cultural transformation towards agility. A top-down approach, while often cited as a reason for agile implementation failures (Bosch & Bosch-Sijtsema, 2011; The Standish Group International, 2020), is reimagined here with a focus on organizational alignment.

Brazilian telecom giants, grappling with the challenges of a regulated environment and shifts in consumption patterns, find themselves at the epicenter of this digital upheaval (Evens,

2010; Lanzolla & Anderson, 2008; Leong et al., 2017; Brosseau et al., 2015). With the universal adoption of cell phones, these companies face dwindling customer bases and squeezed margins, even as they diversify into internet and pay TV services. Traditional telecom stalwarts now face stiff competition from digital-native companies, which have ushered in shifts in both B2B and B2C consumption patterns (Possebon, 2018).

This study delves into one of Brazil's top three telecom companies, renowned both nationally and globally. Amidst the burgeoning demand for digital transformation, this hierarchical organization took a pioneering step in 2016 by adopting agile methods in project management. This top-down approach, championed by the company's C-level executives, aimed to seamlessly integrate digital services into its commercial offerings, enhancing connectivity and customer experience. The company's strategic choice, coupled with the inherent challenges of implementing agile practices in a traditionally rigid setting, offers a compelling backdrop for examining the broader implications of agile adoption, especially in the unique context of Brazil's telecom industry.

Our study focused on the application of an agile and cultural transformation framework in a specific business sector of the company, aiming to mitigate cultural resistance and optimize agile outcomes. From March to April 2022, we employed a detailed questionnaire and engaged with key stakeholders, including business managers and agile team members, to gain a comprehensive understanding of the current agile practices. This research informed our tailored framework, which begins with a Training phase to introduce agile principles, followed by an Adapting phase to refine existing workflows. The Monitoring phase ensures the effective implementation of agile practices, while the Evaluating phase assesses the transformation's impact, with outcomes such as improved inventory management serving as indicators of success.

The framework, rooted in literature, comprises four pivotal steps: Training, Adapting, Monitoring, and Evaluating. Applied to Scrum within a Telecom company, it operates in continuous adaptation cycles. This article serves as a practical guide, offering insights into agile implementation in environments with a low Cultural Fit, aiming to diminish resistance and expedite the transformation journey.

LITERATURE REVIEW

Strategic Transformation: Cultivating an Agile Organizational Culture

At the heart of a strategic transformation to become an agile organization lies the intricate tapestry of organizational culture, defined by interconnected beliefs that dictate patterns of thought, communication, and behavior (Barley, 1983; Martin, 2002). As organizations embark on this strategic journey, the processes of sensemaking, where individuals collectively interpret and give meaning to their experiences, sensebreaking, representing the decomposition of existing meanings, and sensegiving, involving influencing others towards a preferred organizational reality, play crucial roles. Both formal and informal agile practices are reflections of behavioral standards deeply rooted in beliefs about the optimal ways to approach tasks and challenges (Cooke & Rousseau, 1998; Martin & Siehl, 1983).

An important aspect of this transformation is the concept of Cultural Fit. As highlighted by Ansari et al. (2010), Cultural Fit gauges the alignment between widespread agile practices and the inherent values, beliefs, and cultural norms of potential adopters. For a successful strategic transformation, it's imperative to tailor the adoption of agile practices to the unique characteristics of the organization, ensuring a deep and effective implementation, while also considering the dynamics of sensemaking, sensebreaking, and sensegiving.

However, the road to strategic transformation is fraught with challenges. Research indicates a resistance when there's a low Cultural Fit between the existing organizational culture and the agile practices being introduced. This resistance can be understood through the lens of sensebreaking, where existing meanings are challenged or decomposed. Organizations might postpone the adoption of agile methodologies until external pressures demand a shift (Love & Cebon, 2008). As they integrate agile quality management practices, organizations often mold these practices to better align with their existing culture (Baird, Hu, & Reeve, 2011; Prajogo & McDermott, 2005; Zu, Robbins, & Fredendall, 2010). This adaptation, driven by a lack of Cultural Fit and the process of sensegiving, can significantly influence the outcomes of the strategic transformation process (Naor, Goldstein, Linderman, & Schroeder, 2008).

This resistance is further supported by studies showing that employees often resist practices misaligned with their cultural values (Kirkman & Shapiro, 2001). Such resistance underscores the challenges of strategically transforming and fully adopting new agile practices that might conflict with established cultural values.

Forcing practices that don't resonate with the prevailing culture can be disruptive. It introduces members to new behavioral norms associated with agile methodologies and the values they embody (Detert et al., 2000). Moreover, members are exposed to narratives crafted to rationalize and facilitate the introduction of these new practices. Such forced exposure can lead to 'coercive learning', potentially catalyzing a significant cultural shift, essential for the strategic transformation towards agility, and emphasizing the importance of sensemaking in this journey.

Framework

While the effectiveness of agile methods in project management is increasingly recognized (Gemino, Reich, & Serrador, 2021), significant challenges arise from cultural resistance or inadequacy (Bosch & Bosch-Sijtsema, 2011; The Standish Group International, 2020). This resistance, often a result of sensebreaking where existing meanings are challenged, is not unique to agile but is observed in the implementation of other practices as well (Ansari, Fiss, & Zajac, 2010). The agile mindset and routines often challenge the deeply ingrained cultures of organizations, especially larger ones with traditional, bureaucratic governance (Dybå & Dingsøyr, 2008).

The telecom sector, undergoing significant digital transformation challenges, has seen companies like the one studied in this article turn to agile methods as a primary tool for transformation. These companies, while acknowledging the benefits of agile, often face cultural barriers when trying to implement it alongside traditional methods. The coexistence of agile and traditional methods, especially in hybrid projects, is essential for optimal results (Lappi & Aaltonen, 2017). However, the resistance to agile in organizational settings, instead of its combined and hybrid use, is evident (PMI, 2017).

In the face of these challenges, strategic planning becomes fundamental. It's not just about the technical aspects of implementing agile but also about understanding and addressing the cultural barriers (Almeida, 2021; Sheffield & Lemétayer, 2013). Preliminary planning can enhance agile implementation by evaluating cultural barriers (Hobbs & Petit, 2017; Lappi & Aaltonen, 2017) and accelerating the benefits of its use (Sithambaram, Nasir, & Ahmad, 2021). This planning, infused with sensegiving efforts to influence the perception and understanding of agile, is especially critical for top-down organizational transformations where a strategic change and cultural adaptation are expected, necessitating the engagement of middle managers (Stettina & Hörz, 2015).

To address these challenges, we introduce the Agile and Cultural Transformation Framework, as depicted in Figure 1. This framework, designed to accompany any agile method or practice, aims to minimize the impact of implementing agile in a dissonant organizational culture. The framework comprises four stages: Training, Adapting, Monitoring, and Evaluating. Each stage is crafted to ensure that the implementation of agile methods leads to organizational change and the development of new organizational capabilities stemming from digital transformation.

The first stage, "Training," focuses on familiarizing the organization with agile methodologies and the required mindset. Senior management and managers actively participate, emphasizing the strategic importance of agile methods. The objective is to create a workforce that understands the basics of agile and is prepared for its implementation, reducing the maladjustment to the new practice and mitigating the impacts of sensemaking to reduce resistance (Alderman et al., 2005).

Following training, the "Adapting" stage tailors agile methodologies to the organization's unique needs. By analyzing existing processes and routines, specific agile methods are recommended, ensuring they align with the organization's strategic goals. This step seeks to form a perception of value concerning traditional methods in situations where they should be used (Serrador & Pinto, 2015). The outcome is agile practices that fit seamlessly into the organization's existing workflows.

Once the methods are adapted, the "Monitoring" stage ensures the consistent and effective application of agile methodologies. Continuous observation of the newly implemented agile practices ensures they lead to the desired outcomes and help in cultural change (Catino & Patriotta, 2013; Rerup & Feldman, 2011). This stage identifies areas of improvement and allows for immediate course correction, ensuring agile practices are yielding the desired results.

Lastly, the "Evaluating" stage assesses the effectiveness of the implemented agile methodologies. Regular reviews of the agile practices in place, measuring against previously established KPIs (Maitlis & Lawrence, 2007), allow for the adaptation of the practice through continuous improvement. The insights gained provide a clear picture of the success of the agile implementation, areas of improvement, and the overall impact on the organization's strategic goals.

RESEARCH METHOD AND PROCEDURES

Our study aimed to present the intervention using the agile and cultural transformation framework within a specific business area of the company, with the objective of diminishing cultural resistance and enhancing the outcomes of agile practices.

Initially, a management team was established to oversee the programs in the area, with the aim of promoting and executing agile and cultural transformation in a specific business area, namely the post-sales department. This department serves large companies, thus the relationship is characterized as Business-to-Business (B2B). The strategy was to pilot the approach in two out of the seven segments of the post-sales department, with the goal of encouraging agile teams to execute processes and/or projects, implementing agile methods to achieve and surpass existing results. To accomplish this, the steps of the previously detailed agile and cultural transformation framework were executed, which include: Training, Adapting, Monitoring, and Evaluating.

Regarding the Training phase, Product Owner and Scrum Master training sessions were conducted, with a total of 62 employees trained. These employees were divided into two groups over the months of January and February 2022. Concurrently with the training sessions, weekly workshops focused on agile practices were held, with incentives provided to encourage employee participation. This served as an additional means of acculturation on agile topics. At the end of the training sessions, a self-assessment was conducted in each group to measure maturity in relation to agile practices.

To delve deeper into the "Adapt", "Monitor", and "Evaluate" phases, we utilized a comprehensive questionnaire containing 93 questions, designed to gauge the depth of agile understanding. In-depth documentary research was undertaken, encompassing interactions with key stakeholders such as business area managers, consultants, project managers, and members of the agile teams in focus. These insightful sessions spanned from March to April 2022, laying the foundation for the subsequent study presented.

In our strategy to shepherd organizations towards an agile and cultural change, we adopted a crafted framework, fine-tuned for the nuances of the company domain. The journey commences with the Training phase, where the emphasis lies in acquainting the organization with the tenets of agile methodologies. This stage is pivotal in addressing and alleviating any discord arising from the introduction of new practices, with senior leadership playing a proactive role in underscoring the strategic value of agile paradigms. A rich array of training

resources, inclusive of Scrum Framework simulations, is dispensed to foster hands-on comprehension.

Post the foundational training, the trajectory shifts to the Adapting phase. The spotlight here is on dissecting and re-evaluating existing workflows, leading to informed suggestions on either embracing or tweaking specific agile practices. An integral component of this phase is the "Framework/Tools" segment, instituted to champion the adherence to agile best practices. Cutting-edge technological tools are harnessed, acting as vaults for artifacts and assisting in metrics formulation and seamless orchestration of agile ceremonies.

With the organization now attuned to the new methodologies, the Monitoring phase takes center stage. This segment is dedicated to the vigilant oversight of the agile metamorphosis in action. Periodic ceremonies, rooted in the Scrum Framework, such as sprint planning, daily scrum rendezvous, sprint reviews, and retrospectives, become the norm. These rituals are meticulously designed to bolster team empowerment and alignment.

Concluding the journey is the Evaluating phase. The lens here is on gauging the ripple effects and achievements of the agile transformation. Tangible outcomes, like dips in inventory levels and streamlined processes, are keenly observed and chronicled. Insights and takeaways from this phase are synthesized, poised to serve as a beacon for subsequent transformation endeavors.

The Setting

The need for digital transformation in the Telecom sector has long been recognized. Digitization has changed the ways of accessing networks, and technologies have changed business models (Evans, 2010). Lanzolla and Anderson (2008) indicated three specific trends for telecommunications and technology companies: digital interactions, digital distribution, and ubiquitous digital reach. Although they are explored as opportunities, digital transformation, despite the power of incumbents in the Telecom sector, brings considerable organizational complexity and challenges.

Significant investments were and are made in mobile communication infrastructure with cellular. But this specific service has stopped growing, and their margins fall even in an emerging country like Brazil with the provision of Internet access (Possebon, 2018). In other emerging countries, increased agility brought positive impacts, such as operational excellence (Wageeh, 2016).

The Telecom company in this article recognizes this challenge. It is a leading company in the Brazilian market. It is among the 20 largest in the world and participates in an international group in Europe and Latin America. The company is listed on the stock exchange in Brazil and New York. Its product portfolio includes: Voice services (landline and mobile); Mobile data service; Fixed broadband; Ultra-broadband; Cable TV. Information technology services; Digital services (which include financial services, cloud, entertainment, and security).

The Telecom company, amidst the pressing need for digital transformation, pioneered in 2016 by adopting agile methods. This top-down, coercive approach received robust backing from the company's highest echelons. The central aim was to enhance connectivity, ensuring optimal customer experience and value perception. Through its reports and communication strategies, the company consistently emphasized its ambition to weave digital services into its commercial propositions. The push for agile adoption was spearheaded by the company's C-level executives, who not only identified the digital transformation imperative but also kept a vigilant eye on its progression.

This study examines a notably rigid and hierarchical organization—one of Brazil's top three telecom companies with global significance—as it grapples with market and business shifts while adopting flexible practices, specifically agile methods in project management. The challenges posed by the rapid expansion and implementation of these methods appear to have fostered a deeper understanding of agile's role in the context of the sought-after digital transformation. This understanding contrasts with the traditional project management approach typically employed in such a controlled, hierarchical setting. Consequently, there are evident cultural challenges, stemming both from unfamiliarity with agile practices and the inherent cultural shifts they introduce, such as increased team autonomy and a move towards shared leadership.

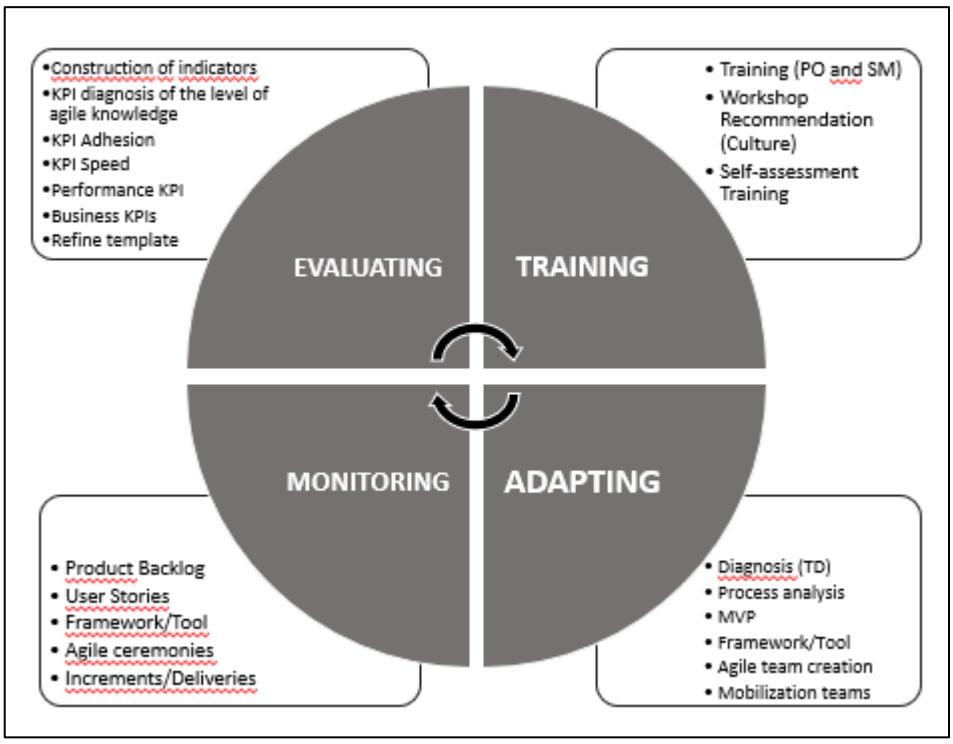
Aligned with Gerring and Seawright's (2007) concept of a typical case study, this research offers insights into the broader implications of adopting agile methods in project management. The narrative underscores the challenges of such a top-down approach and its impact on organizational sensemaking (Maitlis & Christianson, 2014, p. 67). Contrary to Canato, Ravasi, and Philips (2013), this investigation spotlights a firm navigating market dynamics while integrating agile methodologies. The choice of this firm also highlights the Telecom industry's challenges in Brazil, shaped by its distinct consumer market and regulatory nuances, a sentiment echoed by several industry stakeholders (Convergência Digital, 2022; HSM Management, 2021; Matsu, 2021).

APPLICATION OF THE FRAMEWORK

In Figure 1, we present the Agile and Cultural Transformation Framework proposed to accompany any agile method or practice, which will be used in applying the Scrum Framework in this technological article. As previously mentioned, the objective is to minimize the impact of implementing agile methods in an environment with a dissonant organizational culture. That is a more flexible, less bureaucratic practice that gives autonomy, implemented in a rigid, bureaucratic, and hierarchical environment to bring about change.

Figure 1

Framework for agile and cultural transformation



The framework includes four stages: Training, Adapting, Monitoring, and Evaluating. The "Training" stage focuses on reducing maladjustment to the new practice and mitigating the impacts of sensemaking to reduce resistance (Alderman et al., 2005). Senior management and managers participate and support the stage with sensegiving actions (Maitlis & Lawrence, 2007; Gioia & Chittipeddi, 1991). The "Adaptating" step aims to analyze existing processes and routines to potentially recommend using an agile method, seeking to form the perception of value concerning traditional methods in situations in which they should be used (Serrador &

Pinto, 2015). The "Monitoring" stage contributes to keeping new practices in operation and helping cultural change through the implementation of agile methods (Catino & Patriotta, 2013; Rerup & Feldman, 2011; Sonenshein, 2010; Christianson et al., 2009).

The “Evaluating” stage allows for the adaptation of the practice through the process of review, adapting, and continuous improvement, in addition to measuring previously established KPIs (Maitlis & Lawrence, 2007). The Agile and Cultural Transformation Framework emphasizes a continuous cycle to promote adaptive cycles for continuous improvement and adapted agile processes and practices. Each step is detailed to disseminate knowledge on the approach used by the Framework, particularly when fast and sustainable results in the use of agile methods are measured by the company's top echelon. Next, we will detail each step before presenting the application.

Training

Initially, the “Training” step introduces the agile concepts and culture through training that leads to agile practices for the Product Owner (PO) and the Scrum Master (SM). Then a self-assessment is applied to diagnose the level of agile knowledge about the practice and the agile method. Parallel to the training, participation in workshops encouraged and recommended, which discuss the agile culture to complement the agile and cultural transformation. Training is based on previously prepared support materials on agile best practices, as shown in Table 1.

Table 1

Training material to the agile and cultural transformation

Document	Description	Justification
PO Material	It includes a presentation that contains the tools and techniques. It allows the Product Owner to apply Design Thinking in practice to identify problems and seek the best solution. The MVP that will give rise to the Product Backlog is generated based on the solution. User stories are written. Between one topic and another, dynamics are carried out during training to ensure the application of theory in practice considering real cases.	Document used in the process of agile and cultural transformation, helping to learn the practices that involve the role of the Product Owner. The material is shared in the .pdf version at the beginning c the training..
SM Material	It includes a presentation that contains the tools and techniques allowing the Scrum Master to apply the Scrum Framework in practice. It is based on the user stories written in the Product Owner training so that the Planning Meeting can be held (using the Planning Poker technique and Kanban construction of activities). Then, the Sprint is simulated with the application of the Daily Meeting and updating the Kanban activities to generate the Burndown chart. Ceremonies called Review and Retrospective are also taught, thus complementing the complete cycle. Between one topic and another, dynamics are carried out during training to ensure the application of theory in practice considering real cases.	Document used in the process of agile and cultural transformation, helping to learn the practices that involve the role of the Scrum Master. The material is shared in a .pdf version at the beginning of th training.

In Table 1, we present the training materials with a detailed description, contributing to the application of agile practices and the search for an agile culture. A self-assessment is applied after the training step to assess the level of knowledge about the agile method. This self-assessment is detailed in the "Evaluating" step and will be used for comparison after the "Adapting" step ends.

Adapting

The "Adapting" stage involves a comprehensive survey of the company's existing processes, procedures, and routines to identify opportunities for adapting agile practices, either

in the entire process or part of it, thereby creating a hybrid approach, if required. A diagnostic report is prepared to support this stage, presented in a format that highlights the studies conducted and recommendations for adapting the chosen agile method for the identified process(es). Figure 2 provides an overview of the sub-steps involved in the "Adapting" stage, which represents the critical step-by-step process. This stage involves problem discovery and process analysis, defining the MVP (minimum viable product), determining the required artifacts, roles and responsibilities, tools, ceremonies, and selecting an appropriate agile model/framework, or a combination of models/frameworks, followed by the mobilization and preparation of agile teams (Maitlis & Lawrence, 2007; Serrador & Pinto, 2015).

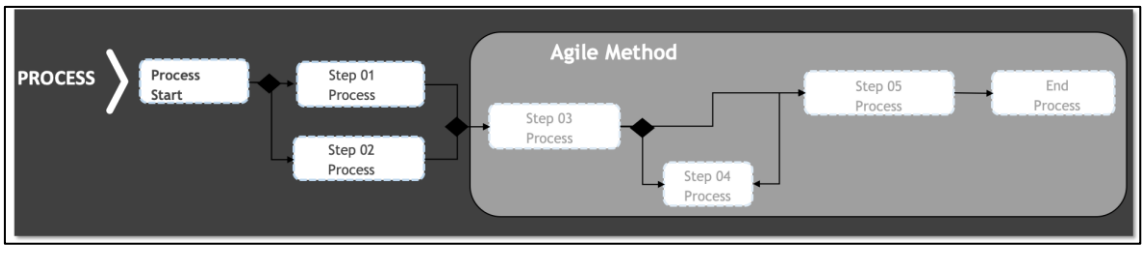
Figure 2

Substeps od the Adapting step

The “Diagnosis (DT)” sub-step employs Design Thinking and group dynamics to find solutions for various problems faced by the company, regardless of their nature or magnitude. Through an immersion process, points for improvement and those that can be left as they are are identified, and relevant ideas are produced. The next step is to create prototypes before investing in execution to reduce the risk of failures during the development phase. Once the problem/solution is identified, a detailed process mapping is carried out (Figure 3) to determine which points of the process or complete process will use agile methods and which points will continue with traditional methods, allowing a hybrid approach. This concludes the sub-step “Process Analysis” (Serrador & Pinto, 2015).

Figure 3

Example of detailed mapping of eligible processes



Adapting processes to agile methods involves analyzing and determining their eligibility for adaptation. In Figure 4, the process is deemed partially eligible, leading to the construction

of the MVP. The MVP sub-step tests the idea with minimal investment by defining only necessary functionalities. Standard MVP attributes and previous problem/solution definitions inform hypotheses, value, functionality goal, target audience/personas, and expected benefits. After creating the MVP, the "Framework/Tool" sub-step selects agile methods, defines artifacts and ceremonies, and chooses a technological tool for governance and control. Companies can decide on manual control via electronic spreadsheets and text files or select an agile repository based on their policies.

The "Creating Agile Teams" sub-step is formed by the identification of the target audience/personas who will participate in the agile teams, allowing for a functional structure to accommodate the work. However, prior alignment is required to ensure understanding and consent of these areas, as the team is often multidisciplinary. This alignment will also occur in this sub-step to ensure effective collaboration. Following this, the final sub-step of "Mobilization of Agile Teams" will occur, formalizing the participants' availability to work on initiatives or projects that will use agile methods. After completing the "Adapting" step, the agile and cultural transformation framework recommends starting the "Follow-up" step to track the progress of the work, including the development of agile artifacts and the performance of agile ceremonies, as detailed below.

Monitoring

The “Monitoring” step focuses on monitoring and supporting the creation of the Product Backlog or the list of user needs for a product or service resulting from the MVP. This involves elaborating user stories, which are then inserted into the selected tool while respecting the cadence of agile ceremonies established by the previously chosen framework for the analyzed process. The result of this stage is expected to be product increments, translated into value deliveries to customers. The sub-steps of the “Follow-up” stage are presented in Figure 4 below, representing the step-by-step process.

Figure 4

Sub-steps of the "Monitoring" phase

The Product Backlog sub-step involves preparing a list that documents all requirements prioritized from the established MVP, along with improvements and errors found throughout the project. This list gives visibility to the product being developed and will be constantly revised and reordered to add value to the business. However, it needs detailing, leading to the "User Stories" sub-step. In the “User Stories” sub-step, needs are detailed from the perspective of the user who will use the product being delivered. This detailing considers both a functional and technical approach to explain the context and the necessity of the functionality, along with acceptance criteria, for better understanding and development. Both the Product Backlog and the User Stories are part of the agile artifacts generated based on the selected framework. They can be included in the tool defined in the Adapting stage, as well as in the selection of the framework.

The “Framework/Tools” sub-step is an integral part of the Monitoring step and ensures the correct application of good practices in agile methods and the use of technological tools. These tools act as a repository for artifacts, supporting the preparation of follow-up metrics and the holding of ceremonies during the agile life cycle. The “Agile Ceremonies” sub-step comprises ceremonies that are monitored to ensure the proper execution of the product increment.

The "Agile Ceremonies" sub-step were based on the Scrum Framework and delimit this sub-step by composing the following rites, which will be applied throughout the agile life cycle, namely: (i) sprint planning; (ii) daily scrum meetings; (iii) sprint review; and (iv) retrospective. These ceremonies provide the framework for agile teams to get work done in a structured way, helping to set expectations, empower the agile team to collaborate effectively, and ultimately drive results, also known as Increments/deliver, giving rise to this substep. Ceremonies need to be properly managed, so they don't overwhelm calendars and drown out their intended value.

Finally, the “Increments/deliveries” sub-step has the objective of monitoring the sum of all items completed and which have increased a potentially usable product, delivered during the

end of each agile cycle, and which will thus guarantee the addition of value to the business, for through continuous and constant deliveries.

In the "Monitoring" stage, a weekly follow-up report is prepared, which consolidates the vision of the progress of each squad and sprint. In addition, during all stages of the agile and cultural transformation framework, it will be possible to monitor and evaluate, through metrics or KPI (Key Performance Indicator), built and adapted for the company, this being the last stage, called Evaluate, which will have, among others, this objective.

Evaluating

The objectives of the "Evaluating" step include aspects that involve the sub-steps of "Building Indicators", application of the KPIs "Agile Knowledge Level Diagnosis", Adherence, Speed, Performance, and Business. In addition, there is the possibility of "Refining" the existing model so that it can, based on the learning of the current cycle, be more efficient and adapt to the company's culture, aiming to meet the challenges imposed by the board, adapting agile practices, so that reflects their processes. Figure 6 illustrates the sub-steps, which will be clarified below.

Figure 5

Sub-steps of the "Evaluating" step

The "Construction of Indicators" sub-step falls under the Monitoring stage, and its purpose is to make complex phenomena quantifiable and understandable by constructing indicators (Kligerman, 2007; Monteiro & Falsarella, 2007). The indicators, also known as KPIs, are divided into two groups: indicators of agile and cultural transformation (KPI Diagnosis of the level of agile knowledge, KPI adherence, KPI speed, KPI performance of the agile team), and business KPI indicators.

The KPI Diagnosis of the Agile Knowledge Level sub-step is associated with three axes that diagnose the level of agile knowledge in the company. These axes are the Agile Team, Agile Management, and Agile Method, as shown in Table 2. The goal of this sub-step is to provide a basis for the indicator, which will measure the knowledge gained and how it translates into results when agile methods are applied in the organization. This helps the company

understand its deficiencies and how to address them in the process of agile and cultural transformation, aligning with senior management's expectations for results.

Table 2

Table KPI Agile knowledge level diagnosis

		Goal	Evolution
Origin	**Axes**	**0-100%**	**0-100%**
1	1 – Agile Team	0-100%	0-100%
1	2 – Agile Method	0-100%	0-100%
1	3 – Agile Management	0-100%	0-100%
Origin	**SubAxles**	**Goal**	**Evolution**
2	1.1 – Communication Level	0-100%	0-100%
2	1.2 - Self-organizing team	0-100%	0-100%
2	1.3 - Self-motivated team	0-100%	0-100%
2	1.4 - Relationship between areas	0-100%	0-100%
2	2.1 - Frequency of deliveries	0-100%	0-100%
2	2.2 - Functionality of deliveries	0-100%	0-100%
2	2.3 - Excellence in design and technique	0-100%	0-100%
2	2.4 - Continuous improvement	0-100%	0-100%
2	3.1 - Customer satisfaction	0-100%	0-100%
2	3.2 - Acceptance of changes	0-100%	0-100%
2	3.3 - Sustainability	0-100%	0-100%
2	3.4 - Simplicity	0-100%	0-100%

Table 2 shows the KPI Diagnosis of the Agile Knowledge Level sub-step, which is organized by origin. Origin 1 refers to the axes, while origin 2 breaks down each sub-axis by Communication Level, Self-Organizing Team, Self-Motivated Team, Relationship between Areas, Delivery Frequency, Functionality in Deliveries, Excellence in Design and Technique, Continuous Improvement, Customer Satisfaction, Acceptance of Changes, Sustainability, and Simplicity. Origin 3 represents the questions to operationally identify and diagnose the sub-axis relationship when compared to agile practices. These questions can be adapted based on the company, and the answers will compose the consolidated information level indicator per axis for each origin. Initially, a target ranging from 0-100% will be defined based on the board's definition and the agile team's responses regarding assessing the evolutionary criterion. The

results will be compared to the goal, and graphical views will be generated. This sub-step aims to provide insight into the company's agile knowledge level and how it translates into results, helping senior management understand deficiencies and improve the company's Agile and cultural transformation process.

Complementarily, to check whether the agile team is really using the agile method that was established and adapted, there is the sub-step "KPI Adherence", which is measured and evaluated, in relation to the adherence categories, such as: (i) Communities, (Product Owner, Scrum Master and Development Team), which communicate and exchange knowledge and information, in relation to agile practices; (ii) the application of roles and responsibilities, according to each agile profile (Product Owner, Scrum Master and Development Team) and within the best agile practices; (iii) adherence to the occurrence and constancy of agile Ceremonies must be evaluated, as well as their correct application; (iv) if somehow Visual Management is being carried out, through Kanban boards, Canvas and others; (v) the creation and application of Metrics and Indicators that reflect the evolution of the agile practice outlined by the results that this practice provides; and (vi) finally, the use of technological tools is checked for adherence, to ensure that the repository that supports the artifacts and ceremonies is constantly being used and updated.

Table 3

Table "KPI Adherence"

ID	Adherence Categories	Interval	Result	Contour Action
1	Communities	0-3	Low, Medium or High	Evaluating according to each company
2	Roles and Responsibilities	0-3	Low, Medium or High	Evaluating according to each company
3	Visual Management	0-3	Low, Medium or High	Evaluating according to each company
4	Metrics and Indicators	0-3	Low, Medium or High	Evaluating according to each company
5	Ceremonies	0-3	Low, Medium or High	Evaluating according to each company
6	Tools	0-3	Low, Medium or High	Evaluating according to each company

The "KPI Adherence" sub-step is measured within a range of 0-3 points, as shown in Table 3. It means that the score approaches the lower end and will offer low or no adherence, with the center of adherence representing adherence middle. The upper end will show high or significant adherence to the practice related to the agile method, depending on the result. These

values can be adjusted to each company or area undergoing agile and cultural transformation and, according to the company's expectations and goals and the proposed contouring action, to adjust the course of agile evolution. It is suggested to create comparative graphical views between the Adherence Categories to facilitate the evaluation.

The "Velocity KPI" sub-step aims to establish the measurement of the time required for a product or service to go through all stages of the process or value stream from the beginning to the end of the agile life cycle. In this case, the indicator known as Lead Time will be used, which manages to Evaluating, among other things, the identification of bottlenecks, reliability, and productivity. However, in this specific case, it will be used to measure the final delivery speed of the product from the beginning to the end of the agile lifecycle. The Lead Time Chart by Squad (agile team) represented considers an agile life cycle from start to finish to deliver a product, going through the stages of the process or value stream from product development, formed by two axes: the axis Y (vertical), which represents each Sprint (agile life cycle) and the X axis (horizontal), which means the work, that is, the number of days or hours of work to accomplish each step.

To validate the performance over time, about the expected product/delivery increment, the "Performance KPI" sub-step is applied through the Burndown chart (which means, in free translation, burning down) and is formed by two axes: the Y axis (vertical), which represents the demand for work to be worked or "burned"; and the X axis (horizontal), which means time, that is, the number of days or hours of work to work or "burn" the demand. The Burndown Chart helps collect time- and work-related data, showing how the team is performing on user stories for a given client, showing the effort put in relative to the total amount of work each iteration. The measurement is carried out by sprint (agile life cycle), and it is recommended that the measurement frequency be daily to allow for contouring actions, as agile cycles are generally short and cannot exceed four weeks.

The indicators that are related to each type of business complement the previous KPIs. However, the KPIs as mentioned earlier are specifically used to track project management results. Meanwhile, the "Business KPI" substep is used to create business indicators such as quality of services; revenue growth; product stock; customer satisfaction; the number of sales; revenue by customer segment, among others, seeking to assess organizational performance, according to the strategic goals and challenges established by the company.

Finally, the last sub-step, "Refine Model", aims to improve processes adapted to agile methods and improve agile practices and tools. In addition to keeping its participants updated and in permanent contact with new training and workshops, with the exchange of information

between areas, through effective communication and constant reflection on the positive and negative points. Thus, accelerating the model refinement process. All this is to promote continuous improvement and achieve the results expected by the company's top management, who support and yearn for better results through agile methods.

Table of Roles and Responsibilities X Framework for Agile and Cultural Transformation

So that we can apply the agile and cultural transformation framework in practice in companies, it is necessary to define some roles which will facilitate the application and use of the agile and cultural transformation framework. The aim is to mitigate the impact of low Cultural Fit in implementing agile methods when coercive action takes place in project management. Among these roles, there is the participation of an Agile Specialist, who will be responsible for applying the agile and cultural transformation framework in the company, with the help of the agile coach, who, during all stages of the agile and cultural transformation framework, will support the other roles involved in this process. Additionally, there will be the participation of the three roles inherent to the Scrum Framework, the basic example of this study, Product Owner (PO), Scrum Master (SM), and Development Team (Team Dev).

The Agile Specialist must know the main agile approaches and frameworks on the market. It includes the usual practices and tools, in addition to depth in the agile and cultural transformation Framework, as he will be primarily responsible for the applicability and implementation of the supposed framework in the company, having participation paramount in the Training and Adapting stages.

The Agile Coach has the same skills as the Agile Specialist, but in this case, will strongly support the Adapting, Monitoring, and Evaluating steps, being a facilitator to ensure successful results and deliveries, as well as helping the Product Owner, Scrum Master, and Development team in the execution of agile processes and practices.

The Product Owner (PO) is responsible for defining requirements and prioritizing the sprint backlog to expedite the execution of product priorities while maintaining conceptual and technical integrity; Scrum Master (SM) is the guardian of the framework, ceremonies, and rituals. The SM is the link between the PO and the team, and the Development Team (Team Dev) are the professionals responsible for transforming the Product Backlog into a functional product. They are the ones who develop the incremental versions of the “Ready” product that are delivered at the end of each Sprint and, like the others, will be mapped in Table 4.

Table 4 was inspired by the concept of the RACI Matrix, which, according to Bezerra (2010), is used in the definition and distribution of responsibilities and roles involved in a process. This tool helps understand each person involved, either directly or indirectly, in each process step.

Table 4

Table of Roles and Responsibilities X Framework for Agile and Cultural Transformation

Activities \ Roles	Agile Specialist	Agile Coach	Product Owner (PO)	Scrum Master (SM)	Development Team (TD)
ENABLING					
Develop Product Owner training material	R	I			
Develop Scrum Master training material	R	I			
Prepare and send training agenda	R	I	I	I	I
Provide Product Owner Training	R	I	I	I	I
Provide Scrum Master Training	R	I	I	I	I
Apply self-assessment to Training classes	R	I	I	I	I
Assess results of self-assessment of Training classes	C	R			
ADAPT					
Diagnose problems/pains (Design Thinking)	A	C	R	R	I
Analyze processes and recommend solution/best practice	A	C	R	R	I
Define MVP (minimum viable product)	A	C	R	R	I
Define Framework	A	C	R	R	I
Define Tools	A	C	R	R	I
Create multidisciplinary agile teams (Squads)	A	C	R	R	I
Align multidisciplinary agile teams (Squads)	A	C	R	R	I
Mobilize multidisciplinary agile teams (Squads)	A	C	R	R	I
Prepare presentation ADAPT step	A	C	R	R	I
Present a process adapted to Stakeholders	A	C	R	R	I
MONITOR					
Define Product Backlog	I	I	R	C	C
Write user stories	I	I	R	I	C
Monitor Framework	I	R	C	R	R
Monitor Tools	I	R	C	R	R
Monitor Agile Ceremonies (plannings, dailys, review and retrospective)	I	R	C	R	R
Monitor increments/deliveries	I	R	R	I	R
ASSESS					
Build indicators	R	R	I	I	I
Measure maturity KPI	R	R	I	I	I
Measure adherence KPI	R	R	I	I	I
Measure KPI performance (BurnDown)	R	R	I	I	I
Measure speed KPI (Lead time)	R	R	I	I	I
Measure business KPI	C	C	R	R	I
Present agile program KPI (PowerBI)	R/C	R	I	I	I

R (Responsible) A(Approver) C(Consulted) and I (Informed)

The RACI Matrix is presented in the form of a table, registering the relationship between activities and roles, indicating: (i) who is responsible for performing an activity; (ii) who should answer for the activity; (iii) who must be consulted and participate in the decision or activity at the time it is carried out; and (iv) who should receive the information that an activity has been performed, that is, presents the person responsible (R), authority (A), consulted (C), and informed (I) (Rivero, 2019). The benefits of using the RACI Matrix include: a) contributing to

the division of tasks between people and teams; b) assisting in tracking information easily; c) preventing key people from being ignored or forgotten; d) improving task accountability (Rivero, 2019).

Application of the Agile and Cultural Transformation Framework

Data collection

Regarding the "Training" stage, Product Owner and Scrum Master training were carried out, totaling 62 employees trained and divided into two groups throughout the months of January and February 2022. The "Adapting" stages, " Accompanying" and "Evaluating", were considered semi-structured interviews, with open questions, and the application of a questionnaire, with 93 questions for the diagnosis of the level of agile knowledge. In addition, detailed documentary research in the real case involved managers and consultants from the business area and project managers, in addition to the profiles that comprise the agile teams considered. These meetings took place from March to April 2022 and made it possible to report the following actual case.

Application of agile and cultural transformation framework

The agile and cultural transformation framework is being applied in a company that is one of the largest mobile telecommunications service providers in the southern hemisphere and the 20th largest in the world (in the number of customers). It was founded in 2003 and, since then, has been the Brazilian leader in the segment. The experience of the agile and cultural transformation framework is taking place in one of the company's business areas, with representative results. The application will be detailed, as well as the publication of data, respecting the commitment to secrecy and not revealing sensitive data that compromise the security of the company's information.

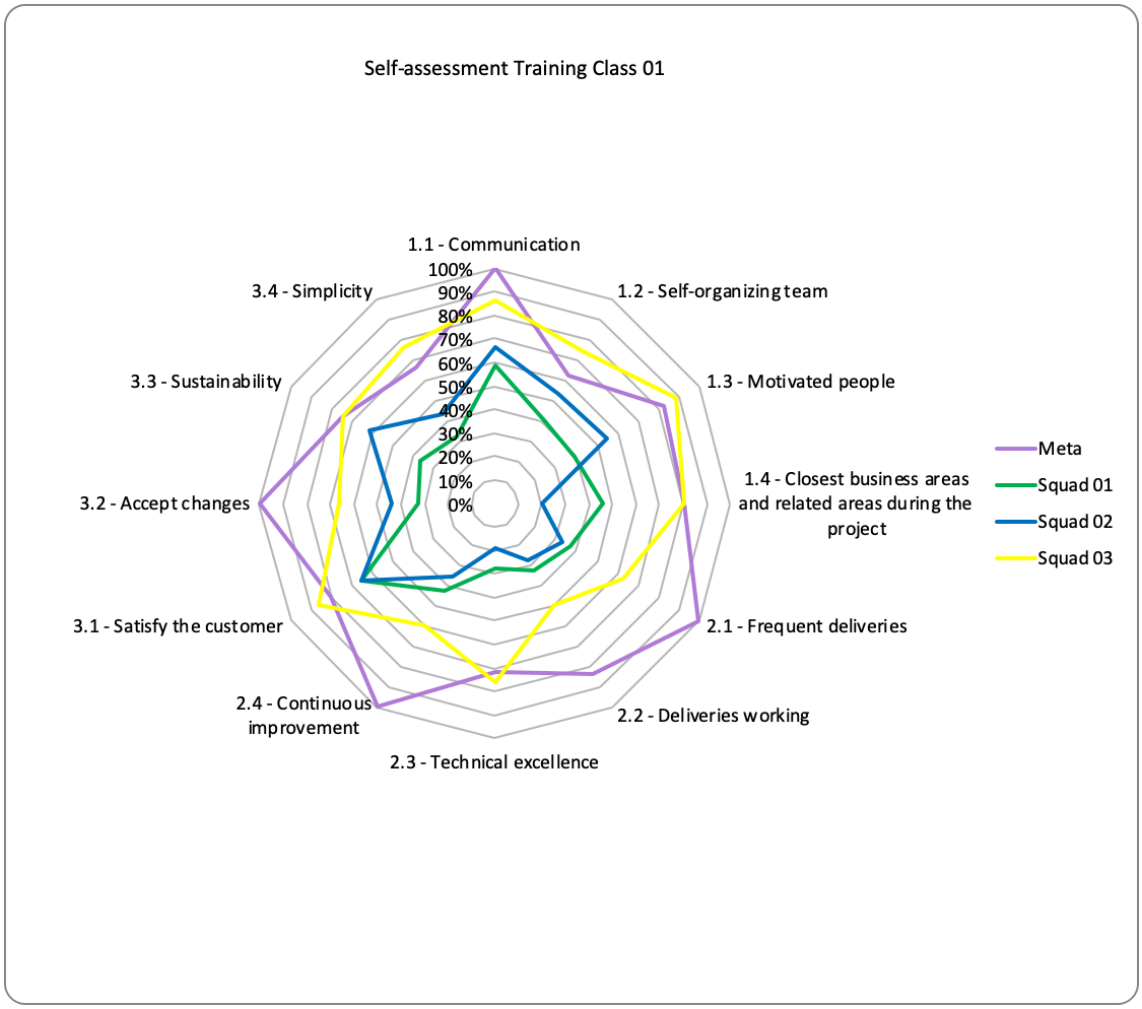
Initially, a management program was created to spread and carry out the agile and cultural transformation in a business area, specifically, the after-sales area, whose customers are large companies. That is, the relationship is determined as Business-to-Business (B2B). The strategy was based on piloting two of the seven segments to stimulate agile teams to execute processes and/or projects and implement agile methods to achieve and overcome existing

results. For this, the steps of the agile and cultural transformation framework detailed above were executed, which involve: "Training", "Adapting", "Monitoring" and "Evaluating".

Regarding the "Training" stage, Product Owner and Scrum Master training was carried out, totaling 62 employees trained and divided into two groups throughout January and February 2022. In parallel to the training, workshops were held weekly, focused on agile practices and with incentives for employees to participate, as an additional form of acculturation on the agile theme. At the end of the Scrum Master training, a self-assessment was carried out in each group to measure maturity about agile practices through the KPI Diagnosis of the level of agile knowledge. It is shown in Figure 7, which represents the Diagnosis Graph of the level of agile knowledge, carried out through post-training self-assessment.

Figure 7

Agile knowledge level diagnostic chart

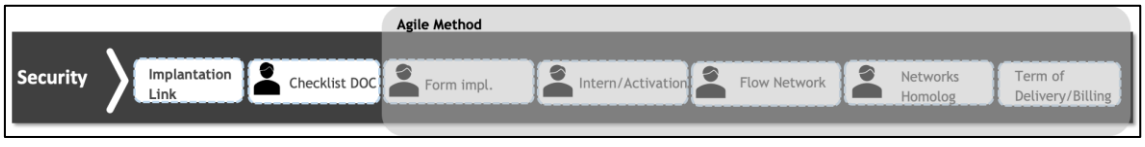


The questionnaire was applied to group 1, divided into three teams or squads, so that the participants self-evaluated the goal previously established by the management according to the lilac color Table 4). It considers the application of 93 questions, whose answers can vary within the presented weights of 0-100% and each sub-axis. In general terms, the goal establishes a performance of 100% about the sub-axes: 1.1 communication; 2.1 frequent deliveries; 2.4 continuous improvement, and 3.2 accepting changes. For the other sub-axes, averages between 63% and 83% are maintained so that they can be reached or exceeded. It can be seen that the participants of squad 1 and squad 2 self-Evaluate themselves far from the agile level of knowledge about the goal, according to the green and blue colors in Figure 7, which was expected, assuming that if it is, initially, a pilot of the agile and cultural transformation. Surprisingly, however, squad 3 self-assessed itself on some sub-axes higher than the established target, as shown by the yellow color in the graph. During the investigation of this deviation, it was verified that the team, assembled at random, was composed of experienced and senior people who performed above average during training and who occupied leadership positions in the company.

The real case stands out specifically between the two segments, whose pilot is still in progress, related to the process whose project delivers a logical security product to the customer. With the training carried out, this segment received the support of the program management to carry out the second phase of this agile and cultural transformation called Adapting. This phase was accompanied by the program management, represented by specialists in the agile method who, together with the business area responsible for delivering the logical security product to the customer, with their representatives in the role of Product Owner and Scrum Master already defined, gathered it if and mapped the process. After discussions and analyses, a process map was prepared, which was consolidated into a hybrid view and determined that part of the process would continue in the traditional and agile methods, as shown in Figure 8, which exposes the Process Mapping of the logical security product.

Figure 8

Logical Security Product Process Mapping



This mapping considered and applied agile techniques, such as the MVP, to understand what it was possible to "slice", adding value to the customer and considering the domain that this would imply in multidisciplinary teams. Information about the current process result was also regarded as necessary for its choice and redesign, such as workable stock and the average delivery time to the customer, considered an opportunity for continuous improvement of the process.

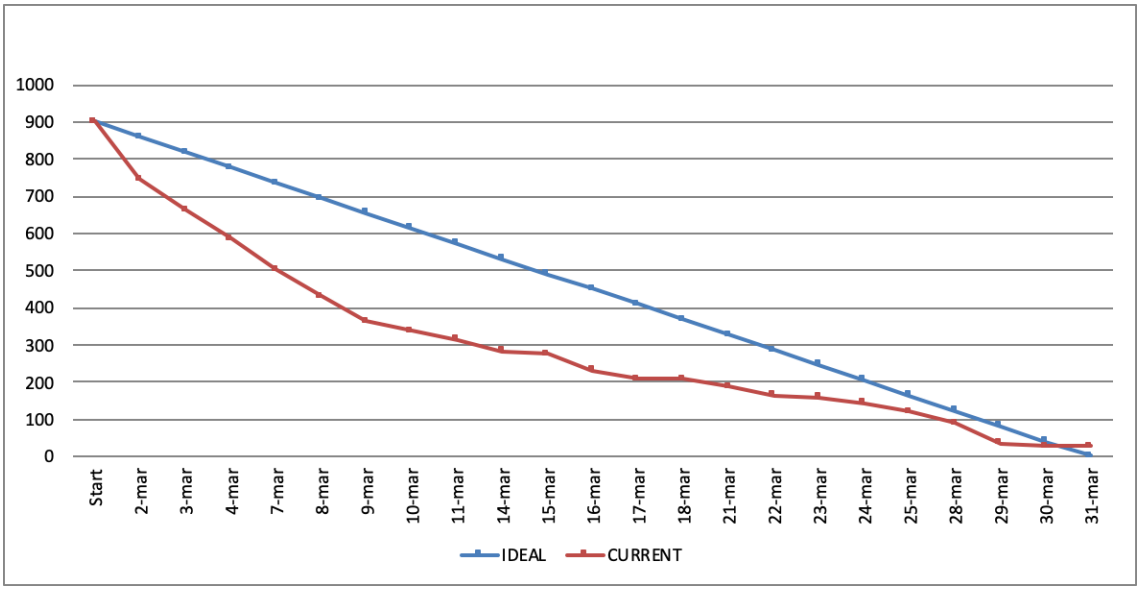
After designating the MVP to build the properly prioritized Product Backlog, the artifacts, ceremonies, and tools were defined, based on the Scrum and Kanban Frameworks, as well as the definition of the multidisciplinary agile team (squad), duly aligned and committed, involving areas, such as security, networking, provisioning, and product deployment.

Based on all the previous definitions and structuring, the model was ready to be executed, and it was possible to start the "Follow-up" step. This phase puts into practice the implementation of agile ceremonies and the use of agile artifacts and tools by the designated agile team, emphasizing the role of the agile coach and agile specialist in monitoring and supporting during this stage. In it, a weekly monitoring report will be prepared, which consolidates the vision of the progress of each squad and sprint, in addition to the parallel measurement of the metrics or KPI (Key Performance Indicator), built and adapted for the company, making it possible to monitor the evolution daily and the results accurately, which represents the last step: Evaluating.

During the "Evaluating" stage, KPI (Key Performance Indicator) were generated for monitoring and redirection to achieve the goals of each agile life cycle (sprint). The evolution of activities is measured daily by the Scrum Master to meet the sprint goals, according to the Performance KPI, represented by Figure 9.

Figure 9

Burndown Chart by Sprint

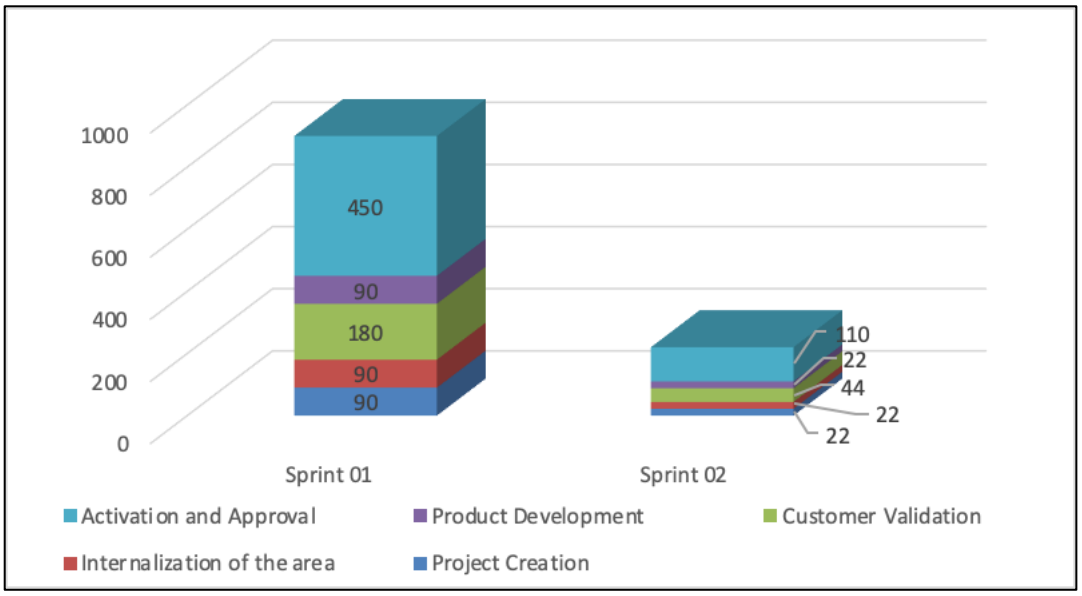


In the graph of Figure 9, it is possible to verify a positive daily evolution to the accomplished (current) compared with the planned (ideal). It is possible to see that the amount of work done is greater than the amount of work planned for each day until the moment of measurement in which the graph was generated, giving visibility and the opportunity to reorient the work and activities as needed.

Through the KPI Velocity, symbolized by the Lead Time Chart by Squad (agile team), the stages of the process or value stream are considered, from Product Development, Customer Validation, Area Internalization, and Project Creation to Activation and Approval consisting of two axes. These are the Y axis (vertical), which represents each Sprint (agile life cycle), and the X axis (horizontal), which represents the work, that is, the number of days or hours of work to accomplish each step, demonstrated in Figure 10.

Figure 10

Lead Time Graph per Squad

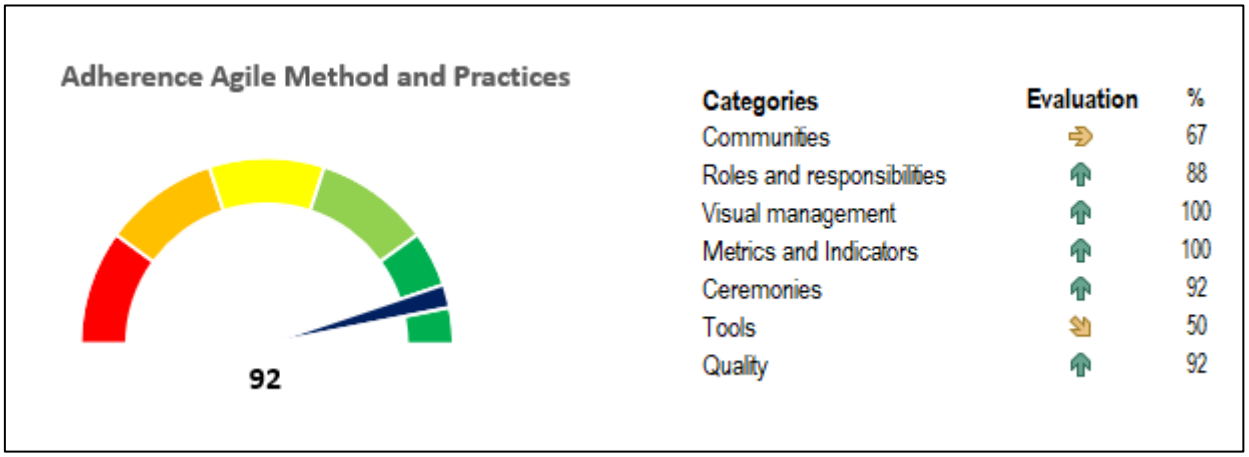


Based on the analysis shown in Figure 10, within a scenario of two sprints, two agile cycles with incremental deliveries were executed. It leads us to conclude an increase in the team's speed to deliver the Product Backlog items transformed into activities/tasks according to the least number of hours spent. However, it must be considered that the number of Product Backlog items is variable, instilling the possibility of carrying out smaller sprints in less time.

In addition to monitoring the speed and performance of squads in their sprints, another important KPI is Adherence indicator to the agile method and practices, previously explained and based on previously defined categories. The adherence speedometer chart, illustrated in Figure 11, was selected because it creatively represents which of the value ranges adherence falls into by consolidating the individual assessment of each category.

Figure 11

Squad Grip Meter



The final adherence of 92% was based on the median among the other percentages of each category (Figure 11). That is, there is adherence between 85% and 100% to the agile method and practices when considering the performance of roles and responsibilities, visual management, metrics and indicators, ceremonies, and quality. For the relationship between communities, the adherence measured is 67%, representing opportunities for improvement and adaptation, and tools category at 50%.

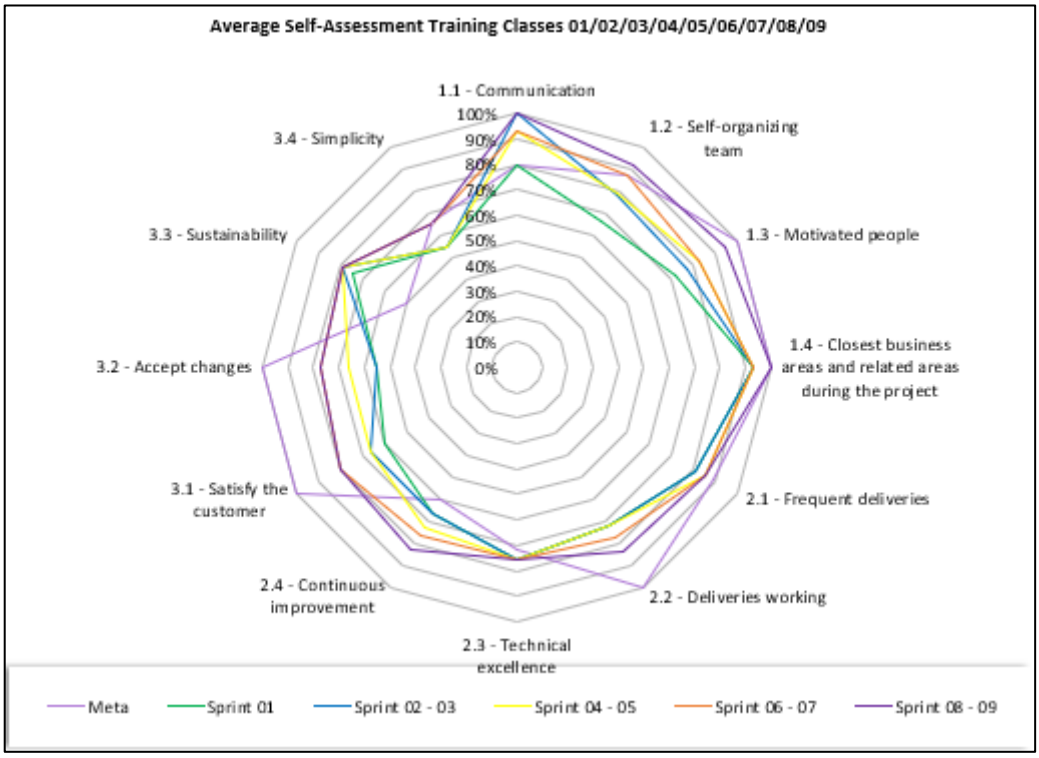
Except for the KPI Performance indicator, which is measured daily using the Burndown chart, the other KPI Diagnoses of the level of agile knowledge, KPI Velocity, and KPI Adherence are measured monthly at the end of each agile cycle (sprint) to update the metrics strategies with the board. In this way, it analyzes and reviews processes in the search for continuous improvement and better operational results.

Evolution of results over the sprints

The evolutionary results considering the implementation of the adopted framework were significant for learning. Figure 12 indicates the evaluation of the training with the evolution of the sprints. Progress can be seen for sprints 8 and 9.

Figure 12

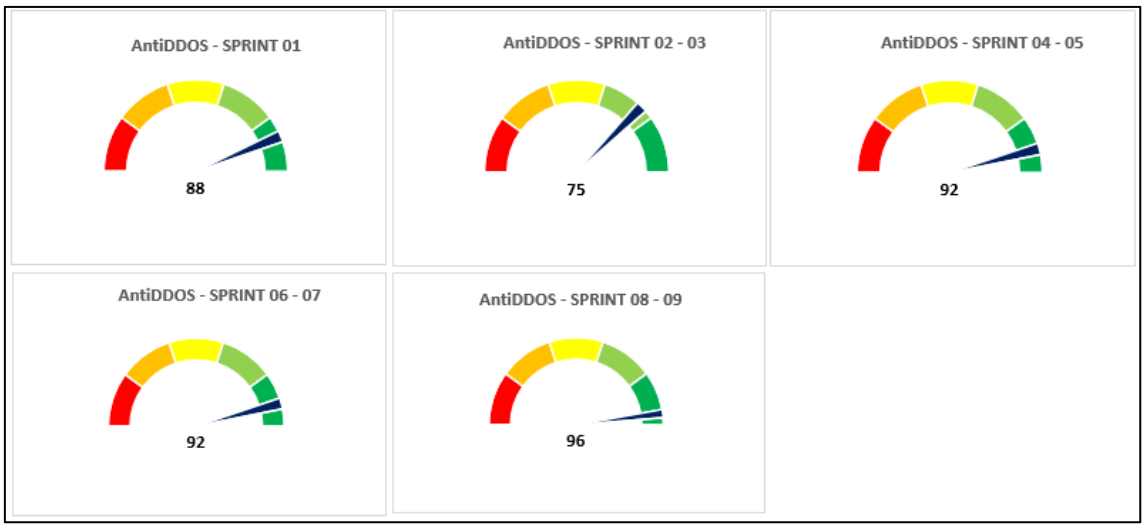
Evolution of learning in sprints



The figure 13 shows the evolution of agile practices over sprints.

Figure 13

Evolution of adherence to agile practices throughout the sprints



The learning results indicated inventory reductions between 13% and 50% in the different squads about previous practices.

FINAL CONSIDERATIONS

This technological article presents the application of a structured framework to guide the agile transformation within a Telecom company during its digital transformation journey. The narrative aligns with the organizational cultural perspectives (Barley, 1983; Martin, 2002), emphasizing the role of cultural alignment in agile adoption (Ansari et al., 2010). The company faced challenges with bureaucratic processes and the demands of their project management systems. Despite starting their agile journey in 2016, efforts to expand beyond IT faced cultural resistance and the presence of traditional project management methods.

The framework, designed to address cultural resistance and technical challenges, consists of four stages: "Training," "Adapting," "Monitoring," and "Evaluating," reflecting the importance of strategic planning (Almeida, 2021; Sheffield & Lemétayer, 2013). This approach provides a clear plan for integrating agile in project management, addressing cultural challenges in line with the sensebreaking and sensegiving dynamics.

Implementing agile requires thorough planning and support, integrating change management and aligning with organizational values, consistent with the sensemaking process (Alderman et al., 2005). Support from senior management is essential for successful top-down transformation, and having an initial team that aligns with strategic objectives can help reduce resistance.

The framework effectively addresses the needs of initial analysis and planning for adopting agile practices, offering a different perspective compared to other similar situations. The activities within the framework highlight the importance of support beyond just senior management, emphasizing the need to address challenges arising from unfamiliarity with agile and promoting open communication and showcasing results.

The application of the framework within the telecom company led to improvements. Comprehensive support, including from management, was key in addressing challenges related to unfamiliarity with agile. The process highlighted the importance of open communication about the new methodologies and consistently demonstrating results to stakeholders. The reduction in inventories and obsolescence, along with the framework's recognition as a model for future agile teams within the company, attests to its effectiveness. The main takeaway is that while agile methodologies are effective tools for achieving strategic goals, the insights

gained during the transformation process are valuable in their own right. This work contributes to the practical field by offering a structured framework, facilitating a smooth agile transformation journey amidst the cultural and technical challenges typical in large organizations.

In summary, regarding the final assessment of the results, it's important to note that to protect the publication of the company's sensitive data, further details cannot be disclosed. However, it's worth mentioning that in the first sprint, there was a 39.4% reduction in inventory and a 13% decrease in inventory aging. These figures are significant to the business and the company's strategy and are being surpassed in subsequent sprints.

Beyond the more tangible and objective results of agile, such as costs or timelines, agile methods are also expected to achieve other objectives, such as delivering value to the customer. This successful real-world case is being established as a benchmark model for the formation of future squads within the company.

This technological article focuses on the challenge faced by a major corporation, which can be viewed as an extreme case due to its rigid, bureaucratic, and hierarchical nature. Such characteristics might inherently present greater resistance to the implementation of agile methodologies. The study was conducted within one of the largest telecommunications companies in the southern hemisphere, specifically in one of its business areas, and the significant results are detailed in this work.

While the success of this case study within such a prominent company is noteworthy, it would also be intriguing to evaluate the framework in other contexts where the implementation of agile methods challenges the prevailing culture. In many situations, the adoption of agile becomes essential for a strategic organizational shift. Future research could explore how the Agile and Cultural Transformation Framework adapts and proves effective in smaller companies, as well as in different sectors and cultural realities.

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APPENDIX

Adherence Questionnaire - AntiDDoS Security	Sprint 01	Sprint 02 e 03	Sprint 04 e 05	Sprint 06 e 07	Sprint 08 e 09
Overview	**2.63**	**2.25**	**2.75**	**2.75**	**2.88**
Communities	**2.00**	**2.25**	**2.50**	**2.50**	**3.00**
PO Communities	**2.00**	**2.25**	**2.25**	**2.25**	**3.00**
Are best practice experiences being addressed within the community?	2.00	2.25	2.25	2.25	3.00
SM Communities	**2.50**	**2.60**	**2.60**	**2.60**	**3.00**
Are best practice experiences being addressed within the community?	2.50	2.60	2.60	2.60	3.00
DEV Communities	**1.50**	**2.00**	**2.50**	**2.50**	**3.00**
Are best practice experiences being addressed within the community?	1.50	2.00	2.50	2.50	3.00
Roles and Responsibilities	**2.63**	**2.73**	**2.73**	**2.73**	**2.75**
PO	**2.63**	**2.73**	**2.73**	**2.73**	**2.80**
Responsible for ensuring the release backlog is visible and clear to everyone.	3.00	3.00	3.00	3.00	3.00
Responsible for making content decisions and prioritizing the product backlog, having autonomy to do so.	3.00	3.00	3.00	3.00	3.00
Responsible for writing and detailing user stories according to DoR - Definition of Ready.	0.00	0.00	0.00	0.00	0.00
Clearly expresses the product backlog items.	3.00	3.00	3.00	3.00	3.00
Co-responsible for the project's ROI (return on investment).	3.00	3.00	3.00	3.00	3.00
Decides when a feature (or set of) should have its release.	2.00	2.25	2.25	2.25	2.50
Understands business needs.	2.50	2.60	2.60	2.60	2.60

Inspires and helps orchestrate the team around the company's purpose.	3.00	3.00	3.00	3.00	3.00
Responsible for maximizing product value.	2.00	2.25	2.25	2.25	2.50
Responsible for writing and detailing product backlog items according to DoR - Definition of Ready.	2.50	2.50	2.50	2.50	2.75
Orders backlog items to achieve better goals and missions.	2.00	2.25	2.25	2.25	2.50
Collaborates to ensure the development team understands the product at the necessary clarity level.	2.50	2.50	2.50	2.50	2.75
Construction, management, and delivery of the product roadmap.	2.75	2.85	2.85	2.85	2.85
Constant alignment with other technical teams, business, and other stakeholders.	3.00	3.00	3.00	3.00	3.00
SM	**2.75**	**2.75**	**2.75**	**2.75**	**2.75**
Works together with the Agile Coach to build the process, discuss adopted practices, and create alignment with the proposed process.	2.50	2.75	2.75	2.75	2.75
Collects baseline data for metrics and fosters the importance of these for work improvement within the team	3.00	3.00	3.00	3.00	3.00
Guides the Development Team in self-management and interdisciplinarity.	2.50	2.60	2.60	2.60	2.60
Removes obstacles and promotes an environment for high-performance team dynamics, continuous flow, and continuous improvement. Many obstacles will be beyond the team's authority or may require support from other teams. The Scrum Master actively addresses these issues so the team can remain focused on achieving objectives.	2.50	2.60	2.60	2.60	2.60

Protects the team from external interferences that negatively impact their commitment to deliver.	2.50	2.60	2.60	2.60	2.60
Facilitates the ceremonies of the established process always seeking the best efficiency of invested time (any need without a responsible person, the SM should address).	2.75	2.50	2.50	2.50	2.50
Creates and adapts agile practices in accordance with what is defined/aligned by the Vivo organization and agile coaches, to address team specifics and boost agile transformation.	2.75	2.75	2.75	2.75	2.75
Supports the PO in understanding agility concepts.	3.00	3.00	3.00	3.00	3.00
Constant alignment with other technical teams.	2.75	2.75	2.75	2.75	2.75
DEV	**2.50**	**2.60**	**2.60**	**2.60**	**2.60**
Organizes their work, coordinating with peers.	2.50	2.60	2.60	2.60	2.60
Builds and understands the concept of "Done" (DoD) agreement between Squad and PO.	2.50	2.60	2.60	2.60	2.60
Keeps updated not only in their skills but in other value chain activities.	2.75	2.75	2.75	2.75	2.75
Works with their team as peers, always collaborating towards the goal.	2.50	2.50	2.50	2.50	2.60
Understands and fosters the concept of shared responsibility within the team.	2.50	2.50	2.50	2.50	2.60
Actively participates in the ceremonies provided in the process, contributing to the team's continuous improvement.	2.50	2.70	2.70	2.70	2.70
Supports the PO in refining and technical understanding of backlog items.	2.50	2.75	2.75	2.75	2.75
Co-responsible for product results.	2.50	2.60	2.60	2.60	2.60
Gestão Visual	**3.00**	**3.00**	**3.00**	**3.00**	**3.00**
Agile Board (Kanban)	3.00	3.00	3.00	3.00	3.00

Metrics and Indicators	**3.00**	**3.00**	**3.00**	**3.00**	**3.00**
Business	3.00	3.00	3.00	3.00	3.00
Technical	3.00	3.00	3.00	3.00	3.00
Ceremonies	**0.00**	**1.50**	**2.80**	**2.80**	**2.88**
Refinement	**2.25**	**2.50**	**2.70**	**2.70**	**2.75**
Was the backlog refined by the PO?	2.25	2.50	2.70	2.70	2.75
Sprint Planning	**0.00**	**1.50**	**1.75**	**1.75**	**2.00**
Are the US's refined for Planning?	0.00	1.50	1.75	1.75	2.00
Do the US's meet the DoR before entering Planning or selecting the Sprint Backlog?	0.00	1.50	1.75	1.75	2.00
The ceremony took place within a maximum of eight hours.	3.00	3.00	3.00	3.00	3.00
Daily	**2.75**	**2.80**	**2.80**	**2.80**	**2.88**
What is the average duration (preferably <= 15min)?	2.50	2.60	2.60	2.60	2.60
How many people participate (maximum 10 people)?	3.00	3.00	3.00	3.00	3.00
Team participation in the daily.	2.50	2.50	2.50	2.50	2.75
Was it discussed what they did, what they are doing, and the impediments?	3.00	3.00	3.00	3.00	3.00
Sprint Review	**0.00**	**0.00**	**3.00**	**3.00**	**3.00**
Participants include the Scrum Team and the main stakeholders invited by the Product Owner.	0.00	0.00	3.00	3.00	3.00
The Product Owner explained which Product Backlog items were "Completed" and which were not "Completed".	0.00	0.00	3.00	3.00	3.00
The Development Team demonstrated the work they "Completed" and answered questions about the Increment.	0.00	0.00	2.25	2.25	2.25
Was there feedback from the sponsor during the ceremony?	0.00	0.00	3.00	3.00	3.00
The ceremony took place within a maximum of four hours.	0.00	0.00	3.00	3.00	3.00
Sprint Retrospective	**0.00**	**0.00**	**3.00**	**3.00**	**3.00**

The team inspected how the last Sprint went in terms of people, relationships, processes, and tools.	0.00	0.00	2.50	2.50	2.75
The team identified and ranked the main items that went well and potential improvements.	0.00	0.00	3.00	3.00	3.00
The team created a plan to implement improvements in the way the Squad does its work.	0.00	0.00	3.00	3.00	3.00
The Scrum Master acted as a facilitator to make the meeting productive and efficient.	0.00	0.00	3.00	3.00	3.00
There was adherence from mandatory participants in the ceremony.	0.00	0.00	3.00	3.00	3.00
The ceremony took place within a maximum of three hours.	0.00	0.00	3.00	3.00	3.00
Were Action Plans raised from the improvements identified in the ceremony?	0.00	0.00	3.00	3.00	3.00
Ferramentas	**1.50**	**1.50**	**1.50**	**1.50**	**1.50**
Planner	3.00	3.00	3.00	3.00	3.00
ISIS	0.00	0.00	0.00	0.00	0.00
Qualidade	**2.75**	**2.25**	**2.75**	**2.75**	**2.75**
Are there quality metrics?	2.50	2.50	2.50	2.50	2.50
Do teams use process metrics to analyze process health?	3.00	3.00	3.00	3.00	3.00
Is there clarity on the main sources of rework?	3.00	2.00	3.00	3.00	3.00
Is there a process that measures the team's rework?	0.00	0.00	1.50	1.50	2.00

	Variation	Example
Note	Between 2,5 a 3	3
	Between 2 a 2,5	2,5
	Between 1,5 a 2	2
	Between 1 a 1.5	1.5
	Lower than 1	0