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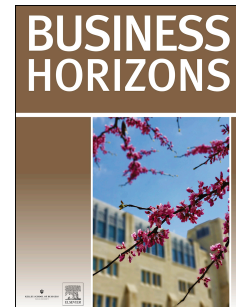
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Mastering hybrid worlds through digital leadership:
The role of agility in fostering innovation

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Abstract

We live in a complex and hybrid world in which the digital and physical realms have never been so closely intertwined. Managerial practices are increasingly merging to give rise to more agile approaches that align with the world we inhabit. In this study, we explore the case of xFarm, a scaleup that has developed a unique form of digital leadership to manage the innovation process. This approach allows for the coexistence of both physical and digital dimensions. We identify the key drivers and specific practices that facilitate this hybrid approach. Digital leadership is thus defined as the ability to navigate such complexity and to adapt to the evolving needs of hybrid situations. This study offers three main takeaways that digital leaders can use to manage hybrid environments. These serve as reference points for setting a direction, while specific behaviors should be tailored to the particular field, in line with agile principles.

1. The rise of hybrid approaches

We live in a hybrid world where the digital and physical realms interact continuously, enabling enormous opportunities while increasing the complexity of our professional lives (Bellis et al., 2022). How did we end up in this hybrid world? It's difficult to pinpoint a single driver, but various antecedents can be highlighted. We exist in a VUCA—volatile, uncertain, complex, and ambiguous—world (Schoemaker et al., 2018). Even though this concept originated in the 1980s, it is often deemed appropriate for describing our times. We also live in the era of Big Bang Disruption (Downes & Nunes, 2013), in which innovation can spring from anywhere and have a disruptive impact on multiple competitive dimensions in a short time. These are just several examples of the digital revolution's impact on our daily lives, allowing technologies to evolve and spread at an unprecedented rate, often giving rise to hybrid worlds.

And now, we also inhabit a postpandemic world. The COVID-19 pandemic demonstrated how rapidly our worlds can be remade—as when many people were suddenly compelled to remain at home at length (McGonigal, 2022). Remote working soon became a reality, even for companies that previously claimed it would never happen (Fayard et al., 2021). We have navigated through it, and now we live in what has been labeled the new normal. Some of us yearned to return to the old world (in which people went to company spaces daily and worked specific schedules), while others envisioned a completely new world (in which people are entirely free from any constraints in terms of time or space; Chaudhry & Rosenbloom, 2021). Many of us have settled into a hybrid world, seeking a balance that takes into account both recent events and the legacy of decades past. Many companies now allow partial or full work from home or other locations. Meetings are often hybrid; conferences are hybrid. Many companies have moved away from a fully digital world, as experienced during the pandemic, to explore new ways of organizing, interacting, and collaborating in a challenging and continuously evolving environment.

This evolution demands new professional and personal skills, as well as novel approaches to leadership to remain relevant. Recent studies have explored emerging leadership practices and behaviors, which we will refer to as *digital leadership*. This term signifies the set of behaviors, values, and norms that emerge among people when interacting through a digital medium, applicable in both completely digital and hybrid environments (Bellis et al., 2022). These emerging leadership practices are naturally aligning more closely with agile approaches and mindsets. At the heart of the agile manifesto is the capability to adapt and react nimbly to a fast-changing environment (Beck et al., 2001), making it ever more relevant as the world has only increased its pace of change.

In the present study, we aim to explore how digital leadership is applied in the search for a new balance in a hybrid world, and especially how it supports innovation activities. These activities are crucial for a company's survival and relevance, and they are expected to be fraught with uncertainty and complexity. Thus, the study aims to answer the following question: How can digital leadership support innovation activities in hybrid and complex scenarios?

2. The emergence of new leadership practices and the emergence of hybrid approaches

2.1. Leadership in the post-COVID-19 world: Digital leadership as a new breed of leadership

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Digital technologies have significantly impacted organizations by bridging the gap between the virtual and physical worlds, providing a seamless experience (Schwarzmüller et al., 2018). This transformation has led to major shifts in firms, affecting business processes, value creation models, and stakeholder interactions (Larson & DeChurch, 2020). The widespread adoption of digital technologies has also changed how people work and perform, necessitating the development of new competencies (Barley, 2015).

The COVID-19 pandemic furthered digitalization trends within organizational activities, compelling actors at all levels to reconsider how they relate and interact (Empson & Howard-Grenville, 2021). Even though the pandemic has eased, it has forced a radical shift from physical to digital, leading to new norms and values (Frisch & Greene, 2021) and the emergence of new activities, skills, and behaviors (Mysirlaki & Paraskeva, 2020). According to a 2020 study by Deloitte[1] conducted across Europe, 85% of workers have adapted to remote work, indicating a genuine transformation.

The shift toward the hybridization of work activities means that teamwork and interactions among colleagues now primarily occur through virtual communication tools such as video calls, instant messaging, and knowledge-sharing platforms (Schwarzmüller et al., 2018). This shift has both benefits and drawbacks. On the one hand, digitalization offers increased flexibility in terms of location and time, allowing for remote work and better balancing of personal and professional responsibilities (Liao, 2017). Additionally, digital tools facilitate global collaboration on problem-solving tasks, overcoming traditional limitations such as time and location (Colbert et al., 2016). On the other hand, digitalization hampers the natural flow of human interactions (Iannotta et al., 2020), reducing opportunities for serendipity and informal gatherings, which negatively impacts trust-building and communication (Frisch & Greene, 2021). These drawbacks can limit knowledge exchange among colleagues, potentially hindering innovation and organizational performance (Putra et al., 2020). In a virtual environment, trust and communication are crucial for overcoming skepticism and judgments arising from limited and fragmented interactions (Schilke & Huang, 2018) and for creating mental and emotional connections (Zamani & Pouloudi, 2021).

In such an environment, new leadership practices seem to emerge. As digital leadership has arisen, the very concept of human well-being has shifted entirely (Klebe et al., 2021). Human relationships are crucial for creating the social support necessary for cohesion, autonomy, and alignment (Lee et al., 2020). In the new environment, the perception of human interactions has shifted from being solely functional exchanges for organizational purposes to being drivers of personal development and motivation, as well as means for maintaining business performance (Collings et al., 2021). Further, the ability to express and welcome personal emotions emerges as fundamental, helping to create a more inclusive atmosphere that promotes diverse ideas (Bierema, 2020; Maak et al., 2021). Finally, the role of top leaders in maintaining clear alignment on goals and performance has emerged as essential (Newman & Ford, 2021).

In a recent study, Bellis and colleagues (2022) recognized that these emerging practices are naturally aligning more closely with agile approaches and mindsets, which have been adopted not just in the software industry but across various sectors (Birkinshaw, 2018; Magistretti et al., 2019).

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[1] https://www2.deloitte.com/content/dam/Deloitte/sg/Documents/human-capital/sg-hc-remote-work.pdf

2.2. Managing innovation at the crossroads of the stage-gate and agile approaches

In 1990, Robert Cooper introduced the stage-gate approach, an innovation-management framework that has since become famous. Cooper's framework set a standard that would influence project and innovation management for the following decades.

2001 is generally accepted as the start of the agile revolution, marked by the publication of the Agile Manifesto (Beck et al., 2001). Seventeen practitioners active in the world of software development outlined the guidelines and principles that would lead to a revolution still taking place. For years, traditional and agile approaches to innovation were considered almost like two different religions. The agile approach was seen as relevant only to the software world, while the traditional approach was considered a best practice suitable for all other situations.

In 2014, Robert Cooper published an article that synthesized the two approaches. "What's next? After Stage-Gate" opened the possibility that agility could fit within the rigid structure of the traditional approach (Cooper, 2014). The article described the hybrid approach as the key to reaping the benefits of both worlds: the chance to control the overall innovation project, drawing from the traditional world while embracing changes in operational dimensions thanks to agile approaches.

It has been almost a decade since Cooper's work was published, and many studies have followed, exploring how agility can extend beyond the software world and how traditional approaches might embrace agility. Cooper's original proposal has evolved, suggesting new ways to incorporate organizational routines from agile approaches into the logic of traditional ones (Cooper & Sommer, 2016; Sommer et al., 2015). These methods have been tested in various settings, moving from B2B to B2C, and even involving physical products (Cooper & Sommer, 2016). Others have tried to shift the perspective by switching the roles of traditional and agile approaches in a hybrid setting. For example, Magistretti and colleagues (2019) suggest considering agile approaches as a possible prestep in an innovation project to assist in defining its scope.

A new set of hybrid approaches, influenced by the lean startup methodology, is becoming increasingly prevalent in proprietary processes (Ries, 2011). For instance, General Electric has implemented the FastWorks process, which blends agile principles to speed up development. This process prioritizes fast deliverables and continuous learning and has transformed how GE manages its suppliers and finances development projects (Power, 2014).

Similarly, Johnson & Johnson's Pilot, Pivot, and Pitch process incorporates lean startup and agile principles to foster a startup-like mindset and to drive innovation through experimentation and customer-centricity. Amazon's Working Backward method also draws inspiration from these principles: Ideas are first visualized and then presented before entering traditional development (Dyer & Gregersen, 2017).

These examples demonstrate how companies are integrating traditional and alternative processes to meet their specific needs and cultural constraints. Despite these and other successes, some managers still resist hybrid models, while others are not provided the resources needed to implement them. Cooper and Sommer (2018) noted that management skepticism and resource allocation are the biggest challenges in implementing a hybrid between agile and stage-gate models.

All these examples illustrate the attempts of established organizations to move toward a hybrid process that embraces agility while fitting into traditional organizational structures. One of the biggest challenges such firms must face is the cultural fit of these new mindsets (Birkinshaw, 2018).

Indeed, most of the literature cited in the previous paragraphs focuses on a process level, referring to phases, steps, and roles, but seldom to culture and behaviors. But recent studies in leadership have shown that digital leaders are embracing agile approaches and mindsets to manage the complexity of the environment and to support digital collaboration (Bellis et al., 2022). Therefore, we pose the question: How can digital leadership support innovation activities in hybrid and complex scenarios?

To answer the proposed research questions, we interviewed the top management team of a scaleup in the agricultural technology sector: xFarm Technologies. The interviews were conducted between June and October 2022. In total, we collected more than 500 minutes of recorded interviews. We also benefited from direct observation of work practices and behaviors as they occurred in the workplace.

3. xFarm technologies

xFarm Technologies—hereafter referred to as xFarm—is a Swiss scaleup established in 2021 through the merger of two startups: xFarm and Farm Technologies, both founded in 2017. xFarm offers digital services for a variety of processes in the agribusiness sector. Its namesake app provides administrative tools and recommendations based on agronomic algorithms and artificial intelligence. Additionally, xFarm offers business intelligence tools to food companies and OEMs looking to leverage the value of agribusiness big data in their supply chains. Currently, the company operates in six countries—Italy, Spain, France, Poland, Germany, and Turkey—and employs over 100 people.

Like many organizations worldwide, xFarm faced the demands of full digitalization during the COVID-19 pandemic. Today, xFarm's working methods rely heavily on digital and hybrid interactions and collaborations. While the company provides physical workspaces, its policy allows employees the flexibility to work from anywhere. Consequently, physical and digital interactions have become integrated, facilitated by digital tools such as Microsoft Teams and Slack.

The company's innovation activities can generally be categorized into two broad phases: ideation and execution. The ideation phase involves identifying opportunities and generating preliminary ideas that could evolve into new products, services, or processes. These opportunities can arise internally, through research and development, or externally, caused by new market technologies, competitors, or sociocultural trends. This phase aligns with the process of problem framing, whereby xFarm team members attempt to define the problem space and to generate ideas for future product or service concepts. Typically, the management team responsible for defining the company's strategic direction takes the lead in these activities.

The execution phase, on the other hand, focuses on the development and implementation of these raw product concepts into market-ready products and services. This phase is mainly operational and centers on problem solving. It engages the entire organization: Top managers

provide direction and monitor for deviations, while the rest of the organization handles implementation.

4. Integrating physical and digital worlds in the innovation process: Drivers and practices

Agility is increasingly becoming a part of corporate life, but its integration can be challenging. Moreover, in the post-COVID-19 landscape, it's evident that agility is not just about processes but also involves tools and behaviors. The focus has shifted from asking which process to follow to asking how to work, where work now encompasses new behaviors, capabilities, and norms for interaction and collaboration (Bellis et al., 2022).

[Insert Figure 1 About Here]

Our study with xFarm concentrated on identifying emerging behaviors and norms, thereby outlining drivers and practices for effective digital leadership. The framework presented in Figure 1 illustrates that digital leadership involves a hybrid approach to innovation. On the one hand, activities related to the ideation phase are best conducted through in-person, face-to-face meetings. On the other hand, activities related to the execution phase are more suitably carried out digitally to enhance agility. Despite this tension, because ideal circumstances seldom arise in practice, both phases are hybrid and thus flexible. This flexibility means that ideation meetings can still occur digitally or in a hybrid format if circumstances necessitate it. Similarly, some activities in the execution phase may require physical interactions, such as the installation or testing of products and prototypes at a client site. Nevertheless, managers at xFarm concur that it's essential to organize activities to maximize physical interactions for ideation and digital interactions for execution whenever possible.

The dual nature of these two phases primarily stems from the types of activities involved. For instance, idea generation and product or service design are collective efforts requiring diverse individuals to interact. Conversely, execution tasks often consist of individual tasks performed in parallel, possibly at different paces. These tasks mainly require alignment and coordination, which can be efficiently achieved through digital tools. As reported by one of the cofounders:

> If I have to work with the team on something breakthrough we never thought about before, such as entering a new sector, designing a new business model, or envisioning breakthrough applications for emerging technologies. I prefer to set meetings in which I can see people in their eyes, perceive their feeling, and foster collaboration among different competencies and perspectives. No matter if it implies taking a plane and traveling to a different place. While, once the direction is set, it is just a matter of doing and executing, which can be done even, and preferably, digitally.

In other words, agility in digital leadership stems primarily from the ability to transition from a more traditional and structured approach (as seen in the ideation phase) to a more agile one (as in the execution phase; Bäcklander, 2019). This creates a hybrid environment that is more

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a matter of agile culture than of processes (Conforto et al., 2016). During this transition, there is a point of interchange that seamlessly integrates both the digital and physical worlds, as well as the ideation and execution phases. Leaders are mindful of this ideal point, often considering which tools and behaviors can help their companies approach it.

Toward that end, xFarm uses Slack; the software facilitates asynchronous, nonintrusive communication, allowing everyone to read messages at their convenience. Slack enables at least three behaviors at xFarm. First, it ensures alignment across the organization. All meeting reports—both in-person and digital—and updates are posted on the platform, allowing everyone to stay up-to-date on major projects and activities across the company, as explained by an xFarm manager:

> We use Slack as a tool, which is sort of our digital
> headquarters, and because of the way it's used and the way
> it's structured, we're all aligned, at least by area; certainly,
> this is a way to reach everyone a little bit more easily,
> which would be more complex to do only in-person.

This becomes crucial to guarantee alignment between different teams working across ideation and execution:

> Slack allows for instant alignment between the top
> management team, who set the directions, and the different
> teams in the organization who will take care of service and
> product development, implementation and selling.

This alignment is crucial not only for the different phases of innovation (ideation and execution) but also for deploying work across various parts of the organization. While ideation activities might involve only a few individuals, typically members of top management, execution requires the engagement of different organizational departments, encompassing various competencies and geographical areas. The use of a single tool as a common platform enables instant alignment across both the organization and the innovation process.

Second, Slack serves as a management tool, facilitating rapid alignment and the handling of both daily operations and activities on the go. This is achieved by enabling rapid feedback and input, as reported by an xFarm manager:

> We use Slack a lot, which is a tool for interaction that is
> somewhere in between, in the sense that it is technically
> asynchronous, but we use it almost in real-time. It's almost
> a real-time chat and very convenient, fast, and effective.

Working in this manner ensures fast and continuous monitoring and updates on the implementation and execution of what was developed during the ideation phase:

> It happens that we need to review the direction set. This
> might occur because what we envisioned was
> inappropriate, or the environment suddenly changed. Slack
> supports us in receiving rapid feedback from the field and

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adjusting our strategy nimbly. For example, it recently
happened that the execution team held a meeting with a
new French client to deploy a set of new services. During
the meeting, the client requested unforeseen features. By
reporting on Slack, it became immediately clear that we
needed to review the initial strategy, and two days later, an
internal physical meeting was scheduled.

Third, Slack serves as a knowledge generation tool. Managers tend to set aside time in the
evening to review all the Slack channels to stay abreast of things and to time their
contributions so they can be more thoughtful, in-depth, and hence useful for their colleagues.
As one manager said,

> You can reflect on what you are saying when you are not in
> sync. Usually, all the processing part happens on Slack.
> Slack allows me to have a private space during the day to
> read and reflect on what emerged. This increases the
> quality of the contribution I can make. I take the time to
> reread what others have written and what I have written,
> increasing the quality of my response. Quality means
> articulating the discourse better and ensuring I have tagged
> all the necessary people. The response becomes more
> articulate and more precise.

Slack acts as the point of interchange between physical and digital that enables the
management of both worlds from within a hybrid framework.

4.1. Drivers for ideation: Starting from "why" and the need for a human touch

Ideation involves idea generation, opportunity identification, and setting a direction for the
company's subsequent innovation efforts (Eling & Herstatt, 2017). In essence, it aims to
define what is meaningful in the context of new opportunities for the reference context, for
the user, and most importantly, for the company. Thus, the operative question for managers in
this phase is why, not how (Verganti, 2017). From a human interaction perspective, focusing
on the why necessitates engagement in collective sensemaking processes, where both
emotional and cognitive dynamics come into play (Maitlis & Christianson, 2014). Ideas and
conversations often emerge as half-baked, fragile thoughts and gut feelings that require
physical interactions to become fully realized and durable (Weick et al., 2005). Therefore, the
human touch is another key driver for ideation activities. By this, we mean people's ability to
sense others' needs and emotions and to respond appropriately. It involves skills such as
active listening, empathy, and constructive criticism, which help to better support the idea-
development process and the emergence of novel and unexpected insights. This means that
during ideation activities, individuals must find a safe and open environment where they can
freely and genuinely share their ideas and feelings without fear of judgment or evaluation
(Farrell, 2003).

In order to focus on the why and to cultivate human touch, managers must consider carefully
how they interact in order to foster intimacy and team dynamics. Intimacy serves as a
transformative tension during interactions among a few individuals (Zeedyk, 2006). It is
rooted in the interactions between people and allows for the free disclosure of one's
innermost thoughts. This fosters mutual listening, understanding, and complete reciprocity

(Marar, 2014), enabling deeper reflection and sensemaking (Bellis et al., 2023). In other words, ideas shared in an intimate environment can be safely elaborated upon by the engaged individuals, gaining robustness and reliability before being presented to the rest of the organization. This is evident in the following quotes from managers:

> It is the human side that makes the difference. So, a good empathic relationship must be established with the person on the other side to ensure a successful outcome of the creative process.
> [Insert Blank Line Here]
> In-person, there is a very different kind of interaction, almost a bit more chaotic, in the sense that it's more "on the go": what happens, happens, and you can immediately go up to people and discuss things.
> [Insert Blank Line Here]
> For the emergence of ideas, meeting in person is crucial. I feel that not being in person would prevent me from taking out the best from others' reasonings.

Furthermore, team dynamics play a significant role in effective ideation (Guinan et al., 2019). Merely being in the same location with the right people for effective ideation is not enough. Various factors need to be considered: To facilitate the sharing of half-baked ideas and gut feelings, individuals must feel welcomed and safe (Prager & Buhrmeter, 1998). This involves carefully observing how people interact and identifying emerging synergies to prevent potential pitfalls, such as fear of judgment. Ensuring the free flow of both ideas and emotions is crucial. Therefore, attention to the quality of in-person interactions is vital for enabling such dynamics, as indicated in the following quotes:

> During in-person meetings with colleagues, I can better understand the dynamics behind things and the team, what words to use, what relationship there is, when to be careful, etc.
> [Insert Blank Line Here]
> When people meet each other live and face-to-face, the most interesting ideas arise precisely because the interaction is direct and unfiltered.
> [Insert Blank Line Here]
> The fellowship, the team understanding, and the synergy yield the most creative and best results.

4.2. Practices for ideation: Time box, physical space, and creative problem solving

In pursuit of effective ideation, a defined time frame and physical space are essential. Activities for nurturing ideation cannot be performed in haste or managed in micromoments; they require time, immersion, and reflection (Wu et al., 2019). To achieve this, managers must identify the appropriate space and time. At xFarm, managers commonly dedicate 3 to 4 hours at a time to meet in person and engage in creative problem solving. In the words of the sales manager,

> Every three months, I meet with my direct reports (channel managers and country managers) at our headquarters in

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> Switzerland. We spent an entire day envisioning novel
> business model opportunities, re-defining our sales
> strategies, and rolling out a plan to pursue them. It is
> crucial that everyone contribute and that the meeting close
> with everyone owning the defined strategy to be deployed.

Physical meetings foster intimacy, as people can look into each other's eyes, allowing emotions and ideas to flow simultaneously—almost enabling people to read each other's minds (Sinclair & Dowdy, 2005). From a cognitive perspective, physical meetings provide a better understanding of others, enabling unclear ideas to be clarified immediately (Zeedyk, 2006). Moreover, face-to-face interactions are essential for building empathy and facilitating the transmission of emotions and ideas. Compared to digital interactions, ideas flow more smoothly in physical meetings, as people do not have to wait their turn to speak, resulting in a more inclusive environment. Additionally, managers can better judge from posture, expression, or other cues whether someone is uncomfortable with the discussion, allowing for on-the-spot management.

[Insert Table 1 About Here]

The intimacy created in face-to-face meetings also nurtures creative problem solving. Such meetings facilitate the flow of ideas, provide for immediate feedback, and reduce concerns about being judged, which helps employees to feel confident and empowered.

4.3. Drivers for execution: Working on "how" and focusing on productivity

If ideation is about determining the direction, execution focuses on how to get there (Dell'Era et al., 2020). While managers engage in problem-framing activities during the ideation phase, operating in the realm of the unknown, they transition to the realm of the known during execution. Here, the focus shifts from what to do and why, to how to make it happen most effectively and efficiently. Hence, another crucial driver for execution is productivity, defined as the organization's ability to transform ideas and concepts into real products and services and bring them to market. As one manager put it,

> Implementation and execution are all about doing. We must
> be quick to deliver the maximum value in the shortest time
> possible.

From a human perspective, as production is emphasized, physical interaction declines, as people rely more on technical competencies so as to work at speed. Digital interaction is often more efficient, as it can be conducted from anywhere at any time, offering greater flexibility and ensuring alignment. As one manager explained,

> The advantage of a web call is that it allows for quicker and
> more agile discussions. So, it's a matter of timing and
> timeliness […] Web calls are always preferred for that
> reason.

Interestingly, we noticed that at xFarm, people tended to communicate via digital tools even when they were in the same room. Sending someone a quick message can be less disruptive and distracting than a conversation, as it doesn't interrupt people in their work.

4.4. Practices for execution: Continuous alignment, individual reflection time, and accountability

Three practices are key to agile ways of working: continuous alignment through brief meetings, individual reflection time, and accountability.

Continuous alignment is crucial for keeping the organization on track and boosting productivity (Bäcklander, 2019). Alignment can be fostered through both fast and slow practices. For instance, fast practices at xFarm include brief alignment meetings lasting no more than 30 minutes, involving individuals from a specific business unit. These meetings are vital for keeping everyone updated, facilitating knowledge sharing, and identifying potential issues for further discussion in smaller teams. As one manager explained,

> I meet my team every morning for a 30-minute meeting at
> 8:30. In this meeting, everyone shares the status of the
> projects and activities they are overseeing. This practice
> promotes transparency, knowledge sharing, and the
> identification of any challenges.

Additionally, xFarm employees use chat software for quick responses that don't interrupt the workflow but are still essential for providing and receiving rapid feedback. Among the slow alignment practices, we found that managers also use chat software for issuing general announcements, allowing everyone to stay updated at their own pace.

[Insert Table 2 About Here]

Valuing and fostering individual reflection is also crucial, as execution still involves innovative approaches (Bellini & Castellazzi, 2020). One practice to encourage individual reflection involves creating digital spaces in which everyone can share ideas, proposals, or thoughts. Such spaces make it more likely that any good ideas that crop unexpectedly, such as outside of working hours, will come to fruition.

Accountability is another key factor for effective execution (Rigby et al., 2018). To promote accountability, xFarm employs various practices. For example, it encourages active participation in meetings, ensuring that attendees contribute meaningfully. It also stresses inviting only those who are essential for the meeting's objectives, thereby limiting passive attendance. This approach enhances motivation and engagement, empowering individuals to feel valuable and competent. Additionally, xFarm discourages multitasking, urging people to concentrate on small, iterative tasks to achieve excellence, which is in line with agile principles (Sutherland & Schwaber, 1995). Lastly, the company monitors participation and interactions through chat software, which allows for informal and spontaneous responses. The use of emojis and memes has been found to encourage people's willingness to participate in conversations.

5. Takeaways: Embracing agility in hybrid approaches for innovation

We started the article with the question: How can digital leadership support innovation activities in hybrid and complex scenarios? The framework emerging from the xFarm case shows how hybrid and complex scenarios can still be the perfect foundation for innovation—if managed with a strong, agile culture.

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Our framework shows the coexistence of digital and physical activities among the two main innovation phases—ideation and execution—supported by specific drivers transformed into specific practices. The framework represents the main managerial contribution of this study, aiming to learn from the xFarm case how to manage innovation in hybrid situations.

We hope that our framework and the following takeaways can be of value for all those organizations and managers facing leadership challenges in the digital world brought on by COVID-19.

5.1. Takeaway #1: Innovation activities in hybrid scenarios require digital leadership enabled by an agile culture

Innovation is, by definition, a complex activity. Aiming to foster it while dealing with a complex and hybrid environment makes the challenge even greater. Therefore, digital leadership requires embracing an agile mindset. Leaders must now become ambidextrous, nimbly shifting across different settings and adapting their behaviors and styles while maintaining consistency in values and norms. These settings can differ in nature. For example, in transitioning from digital to physical environments, leaders need to switch from being empathic and dedicated in face-to-face interactions to being more direct and to-the-point in digital settings. Similarly, when moving from ideation to execution, leaders must shift their focus from human interactions and team dynamics, which enable a free flow of ideas and emotions, to creating settings that allow for rapid alignment and feedback during execution. The ability to move smoothly across different settings requires a strong, agile mindset, which includes adaptability, or the ability to reestablish fit with the environment (Chakravarthy, 1982), proactivity, or the ability to anticipate problems related to changes and to offer dynamic and competitive solutions (McCann, 2004), and resilience, or the ability to keep pace with new developments while maintaining a positive attitude and even creating new opportunities (Lengnick-Hall et al., 2011).

5.2. Takeaway #2: Tools and practices to support and enhance digital leadership

We often construe hybrid worlds as fluid, free from any constraints of time and space. But the reality is that both hybrid and purely agile approaches are based on a few clear and stringent rules.

Just as agile approaches establish a few but rigid boundaries, such as the duration of stand-up meetings or sprints, the xFarm story shows us that fostering innovation in a complex hybrid environment also requires agreeing on a few but rigid rules. For instance, we found that ideation activities are preferably conducted in person, while execution activities are best suited for digital platforms, each supported by specific tools designed to enhance the experience. The ideation phase requires dedicated time and space, with minimal external disturbance. Conversely, the execution phase calls for short and frequent meetings to ensure continuous alignment and learning without sacrificing productivity.

These practices support and enhance digital leadership. They represent a few explicit norms and tools that activate the behaviors described in Takeaway #1. While hybrid environments can be somewhat chaotic, leading with a few clear rules can help. This aligns with the value-focused principles outlined in the Agile Manifesto, which sets priorities to guide behaviors (Beck et al., 2001).

5.3. Takeaway #3: Interchange points are needed to let the two systems work together

Hybrid systems aim to combine the best of both worlds, offering clear benefits, but digital leaders must ensure a seamless transition between these worlds. For xFarm, the crucial point of interchange is found in the software Slack. This platform supports the team throughout the innovation process, aligning both ideation and execution phases while facilitating a bidirectional exchange of ideas, information, and team alignment. Moreover, it bridges the gap between the physical and digital realms. This interchange point serves as a tool for alignment, knowledge management, urgency management, informal exchanges, and community building, acting as a boundary object around which the team can align (Press et al., 2021; Trabucchi et al., 2022).

It is a singular tool, a unique reference in the narrative, that plays a crucial role in the overall framework. So the third takeaway is this: Either design or choose a tool or method to bridge the physical and digital worlds.

We conclude by considering this study's limitations. The main limitation of our work concerns the generalizability of the results, since they are based on a single case study. We consider the results mainly applicable to scaleups, like xFarm, or more broadly to companies that are familiar with digital innovation. Therefore, startups, scaleups, and innovation-oriented companies in all sectors should consider these results carefully, while future studies may explore similar research questions for traditional organizations.

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Figure 1. The framework integrating physical and digital worlds in the innovation process
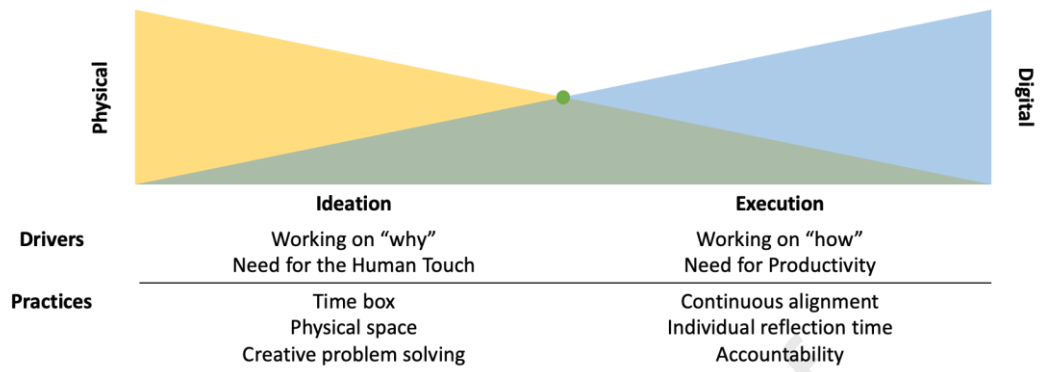
Table 1. Practices for ideation in the hybrid world

Innovation phase	Main levers	Example of effective practices
Ideation	Timebox	Managers created dedicated sessions of 3–4 hours each to guarantee immersion and reflection.
		Meetings for ideation happened usually in the morning, when minds were still fresh.
	Physical space	Employees preferred to meet in physical spaces, limiting external disturbances (whether digital or physical) as much as possible
		To ensure maximum isolation, teams tended to meet out of the office.
		Physical space allowed for the use of tools such as whiteboards for sketching out ideas.
	Creative problem solving	Managers limited the number of people in meetings to ensure free flow of ideas and effective feedback.
		Managers ensured all meeting attendees could contribute and be heard.

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Table 2. Practices for execution in the hybrid world

Innovation phase	Main levers	Example of effective practices
Execution	Continuous alignment	Employees used special hashtags on Slack to signal different things (i.e., if something is urgent, if something needs to be planned)
		Employees used Slack to share meeting minutes.
		Managers ensured short meetings (under 30 minutes) at planned times. Meeting etiquette required that each attendee speak up and contribute.
		Meeting etiquette required that meetings start on time, that each attendee speak up and contribute, and that cameras always be turned on.
	Individual reflection time	People self-organized and found their own time to work on their tasks.
		Digital spaces on Slack allowed people to propose ideas as they come up. These could then be considered later in dedicated meetings.
	Accountability	Employees felt motivated in building upon their own competencies.
		Behavioral practices were considered in annual job evaluations.
		Managers discouraged multitasking so people could focus.
		Managers encouraged informal communication through chat software, encouraging team camaraderie.