# Integrating Digital Wellbeing into Enterprise Modeling

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**Abstract**

Contemporary society is characterised by the widespread adoption and rapid integration of technologies aiming to improve the capacity and productivity through the restoration or extension of human physical, intellectual and social capabilities. In this context, digital wellbeing has emerged as a novel concept that gives expression to the delicate balance between benefits and drawbacks that people experience in an ever increasing digital world. We posit that the digital transformation of society and the new modes of collaboration it enables requires a more thorough investigation of our conceptual understanding of wellbeing. Our research supports that digital wellbeing extends beyond the individual and encompass the collective dynamics of organisations, where human, technological and structural elements are deeply interdependent. This calls for approaches that capture the socio-technical complexity of organisational life. Enterprise modeling provides such a lens, offering methods to represent and analyse how socio-technical elements interact to shape both organisational behaviour and wellbeing. By embedding digital wellbeing considerations into enterprise models, organisations can move from reactive management of technological impacts to proactive design of healthier, more resilient digital ecosystems.

**Keywords**

digital wellbeing, capability approach, enterprise modeling, sociomateriality

## 1. Introduction

The rapid expansion of digital technologies has fundamentally transformed the ways in which people work, communicate, learn, and interact. From social networking platforms to health applications, and from artificial intelligence systems to the infrastructures of the internet, digital technologies have never been merely tools, but structural elements of everyday life and experience.

This new reality also brings forth new challenges concerning the notion of wellbeing. Traditional approaches, such as the distinction between hedonic and eudaimonic wellbeing [1], have provided important theoretical foundations; however, they are limited in capturing the dynamics of wellbeing as it is increasingly intertwined with technological mediation. The term digital wellbeing has been introduced to address this challenge and is defined as the impact of digital technologies on what it means to live a good life in the information society [2]. What constitutes a good life is itself being reshaped alongside the digital transformation of society "when the boundaries between online and offline life collapse, when we are constantly connected with one another and surrounded by smart things that respond to us, when we all become embedded within an infosphere" [3].

Across disciplines, however, dominant approaches to digital wellbeing remain largely individual-centred. In psychology and communication sciences, emphasis has been placed on indicators such as screen time or notions of "healthy use", while in engineering and computer science discussions often focus on issues of security, privacy, or usability. These perspectives tend to conceptualise digital wellbeing as an individual trait or as the outcome of individual behaviour. By adopting such individualised

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framings, they overlook sociomaterial perspectives that understand human experience as emerging through relations between people, technologies, and social contexts. Crucially, this also obscures ongoing shifts in agency within digitally mediated environments, where advanced digital technologies, such as machine learning algorithms, decision-support systems, AR interfaces, and hybrid cyberphysical infrastructures, actively participate in shaping action, decision-making, and experience. Autonomy and self-determination, central dimensions of psychological wellbeing, are therefore continuously constituted and negotiated within complex socio-technical networks.

The focus thus shifts from the digital era, primarily characterised by technological expansion and widespread adoption, toward what can be understood as a digital wellbeing era, in which the philosophical question of how to live well with technology becomes central [4]. This shift foregrounds the quality of human–technology relations and their implications for wellbeing, raising fundamental questions about how wellbeing and agency are constituted and negotiated in digitally mediated societies. Building on these concerns, our study was guided by the following research questions:

- RQ1: How is digital wellbeing defined and experienced in the digital era?
- RQ2: How is the notion of agency transformed in the age of digitalisation?

This paper approaches digital wellbeing from a *sociomaterial perspective*, in which the social and the material are not treated as separate dimensions but as inherently entangled. Adopting a *hybrid methodology* that combines literature review, cultural analysis, and empirical investigations, we propose a new definition of digital wellbeing as an emergent and relational phenomenon. In what follows, we outline the theoretical framework and methodological orientation that support this definition and subsequently introduce a conceptual model that articulates its dynamics while opening a focused discussion on how digital wellbeing may be meaningfully integrated within enterprise modeling.

## 2. Methodology

Our methodological orientation builds on constructivist grounded theory [5] while being informed by diffractive reading practices [6] [7], situating our approach within a postqualitative paradigm. We began by examining the empirical material, guided by the principles of constructivist grounded theory. As the analysis unfolded, extensive readings in philosophy of technology and posthuman studies progressively shaped our analytical lens, leading us toward a diffractive approach—that is, an orientation that enabled us to read insights from different disciplines and perspectives through one another by examining how they interact, overlap, or disrupt each other [8]. Overall, our methodology positions knowledge as emergent, relational, and co-produced through the intraaction of theoretical, cultural, and empirical materials. Rather than following a linear sequence from literature review to data collection and analysis, we treated these activities as mutually constitutive and diffractively entangled moments within a single iterative research process.

### 2.1. Diffractive research design

To operationalize this diffractive design, our inquiry unfolded across three entangled dimensions that developed in parallel and continuously informed one another:

- **Theoretical**: We engaged with philosophical and social theories of wellbeing and human agency throughout the research process. Rather than forming a preliminary, standalone literature review, this theoretical engagement evolved iteratively, shaping and being shaped by our empirical and cultural analyses.
- **Cultural**: In dialogue with our theoretical reflections and emerging empirical insights, we examined representations of the digital condition in film, literature, and media discourse. These cultural materials offered additional textures for understanding how societal imaginaries of digital wellbeing are constructed.

- **Empirical**: A total of 121 participants took part in two complementary qualitative investigations. All participants were situated subjects—Greek, white, European men and women, most of whom lived on the island of Lesvos.

**Phase A** involved intergenerational focus groups that encouraged open reflections on digital wellbeing across different life stages and levels of digital literacy. Four groups were conducted between April and December 2024, including people aged 15 and older from Generation Z, Millennials, Generation X, Baby Boomers and the Silent Generation. Differences in age, gender, occupation, digital skills, and place of residence helped us explore how everyday technological experiences intersect with social roles and routines. Insights from these discussions informed our ongoing theoretical and cultural reflections.

**Phase B** expanded the study through a conversational AI survey, conducted from 19 January to 19 February 2025. Participants from various age groups, educational backgrounds, and locations engaged in semi-structured dialogues with a chatbot, sharing personal definitions, emotions, challenges, and aspirations related to digital wellbeing. This approach enabled wider participation while remaining qualitative and exploratory, and it also functioned as a meta-investigation into the role of nonhuman agents in producing data.

## 2.2. Findings: a diffractive synthesis

The synthesis of the literature review, cultural analysis, and empirical findings clearly indicated that existing definitions of digital wellbeing remain limited. Most approaches focus either on mitigating the negative consequences of technology use (e.g., addiction, stress, excessive screen time) or on enhancing specific functional aspects (e.g., productivity, work–life balance). While these dimensions are important, they fail to capture the complexity of lived experiences within digital ecosystems.

Our research revealed that digital wellbeing:

- **is not static but continuously evolving**, as goals and practices are reshaped by the very technologies people use.
- **is not individual but relational**, emerging through interactions and intra-actions among people, technologies, and social contexts; and
- **is not one-dimensional but multifaceted**, encompassing cognitive, emotional, social, and ecological components.

### 2.2.1. The Capability Approach

Read diffractively alongside our empirical material, the Capability Approach does not merely frame our participants' views but emerges through them, revealing how digital wellbeing is lived and negotiated within evolving human–technology relations. The Capability Approach is one of the most influential theoretical perspectives in contemporary wellbeing studies. Initially, developed by Amartya Sen [9], [10] and further expanded by Martha Nussbaum [11], [12], this approach conceptualises human life as a set of "doings and beings" that people are able to realize and "relates the evaluation of the quality of life to the assessment of the capability to function" [10]. Within this perspective, quality of life can be assessed not simply by possessions, but by people's capability to achieve functionings that they have reason to value. Nussbaum [12] explains that "instead of asking about people's satisfactions, or how much in the way of resources they are able to command, we ask, instead, about what they are actually able to do or to be". This approach recognizes that even when two individuals have access to similar goods, their capacity to convert these into valued outcomes may vary significantly due to variations in personal, social, or/and environmental conversion factors [13]. Wellbeing depends not only on the resources available to a person or the outcomes they achieve, but primarily on the real capabilities they possess to live the kind of life they value.

Nussbaum [11] proposed a list of central human capabilities, including life, bodily health, bodily integrity, senses, imagination and thought, emotions, practical reason, affiliation, concern for other

species, play, and control over one's environment. Within this framework, wellbeing is not a one-dimensional state but a set of capabilities that should be available to all individuals, regardless of social or cultural background. Through this list Nussbaum introduces the idea of a threshold level, a minimum standard of capability necessary for a life of dignity. In our study, participants—situated subjects who are Greek-speaking and residing in Greece—described the "good life" in ways that aligned with several of Nussbaum's ten capabilities. This alignment does not validate the universalism of Nussbaum's list; rather, it indicates that, within the cultural context in which they live and think, references to values historically associated with classical humanism appear in how they describe what constitutes a "good life".

Although Sen and Nussbaum do not explicitly theorize the role of technology within the Capability Approach, this connection has been further developed by later scholars [14], [15]. As Coeckelbergh [16] argues, information and communication technologies should not be evaluated merely as technical tools or resources, but in terms of the capabilities they enable or constrain. Our participants' experiences similarly highlighted how digital technologies can simultaneously expand and restrict valued opportunities, depending on the sociotechnical conditions through which they are enacted.

The Capability Approach thus provides a strong conceptual foundation for understanding digital wellbeing. It invites us to examine how digital technologies contribute to or hinder the realization of essential human capabilities, offering a relational understanding of what it means to live well with technology.

### 2.2.2. Towards a sociomaterial and posthuman view of digital wellbeing

Our empirical material also made visible the ontological limits of the Capability Approach: participants' experiences showed that capabilities are not merely influenced by technology but materially enacted through human–technology intra-actions; that is, capabilities are neither a human attribute nor a technological function, but something realized within the sociomaterial relations through which humans and technologies co-constitute one another. This diffractive insight invites a shift towards a sociomaterial and posthuman perspective, one that explicitly challenges the human–technology dualisms embedded in traditional accounts of wellbeing. Rather than treating humans as subjects and technologies as external tools, this view understands digital wellbeing as an emergent effect of the entangled intra-actions through which both are continually constituted.

From a sociomaterial standpoint [17], [18], [19], technology can be neither a standalone input nor an external conversion factor. Instead, human capabilities are co-constituted within networks of human and non-human actors, institutions, and material arrangements. Technology is always already sociotechnical: it does not merely add to human capabilities but simultaneously constitute and is constituted by them. Following Orlikowski's [20], [21] seminal articulation of sociomateriality, we understand digital wellbeing as enacted through the inseparable entanglement of the social and the material. This perspective explicitly unsettles the dualistic assumption that humans act while technologies simply serve as passive tools or mediators, foregrounding instead their ongoing mutual constitution within everyday practices.

This perspective draws on Karen Barad's agential realism [8], a posthuman theoretical stance that provides a radical ontological account of how relations materialise. From a posthuman standpoint, Barad challenges anthropocentric notions of agency, arguing that entities and actions do not pre-exist their relations but emerge through intra-actions, that is the dynamic processes that simultaneously produce humans, technologies, and meanings. In this view, agency is distributed, not possessed; it is enacted through the entanglement of material and discursive forces.

Such an understanding offers a powerful foundation for analysing digital wellbeing as a relational and emergent condition. The user and the technology are mutually constituted through their ongoing intra-actions, while wellbeing itself is not a stable property of the individual but a dynamic state of becoming within sociomaterial assemblages.

### 2.3. Synthesizing the findings towards a relational definition

Building on the Capability Approach and extending it through a sociomaterial and posthuman viewpoint our diffractive synthesis leads us to the following definition:

***Digital wellbeing can be understood as the meta-capability of sociotechnical ecosystems to dynamically realize their capabilities into functionings and continuously reconfigure them.***

This definition shifts the focus:

- From an anthropocentric to a systemic and ecosystemic perspective.
- From a static property to a dynamic meta-capability, emphasizing ongoing adaptation and transformation.
- From individual outcomes to relational processes and interactions.

In this view, digital wellbeing is not a state to be achieved or maintained but a continually evolving capacity for co-existence and co-creation within sociomaterial assemblages.

## 3. The proposed Capability-Oriented metamodel

From the previous discussion it becomes evident that wellbeing is dynamic, relational, and multidimensional: it is constituted within networks of relations among humans, technologies, and organisational contexts, and it continuously evolves. As such, it cannot be adequately captured by traditional goal-oriented or service-oriented enterprise modeling approaches [22], as these methods are inherently static and thus ill-suited to representing a phenomenon that continually evolves. Capability-oriented modeling emerges as a more appropriate framework because it focuses on *what can be done* rather than merely *what exists*, captures possibilities that emerge and reconfigure dynamically, and bridges the strategic and operational levels of analysis. Moreover, it aligns with a sociomaterial perspective, according to which capabilities do not belong to individual actors but are constituted through relations and interactions/intraactions.

The proposed metamodel draws on research work in the field of capability-oriented enterprise modeling, included approaches such as CODEK [22], eCore [23], COMPASS and KYKLOS [24]. These approaches have highlighted the importance of capabilities as strategic units of analysis, providing methodologies for representing organisational potential in terms of adaptability and resilience. Our effort extends this line of thought by integrating the concepts of emerging capabilities and entangled choices (explained further in Section 3.1), as well as sociomaterial and posthuman perspectives. Rather than replacing existing methodologies, it complements them by offering a perspective particularly well suited to conceptualising and modeling digital wellbeing.

### 3.1. From concept to model: operationalizing Digital Wellbeing

To operationalise our conceptualisation of digital wellbeing, we developed a capabilityoriented metamodel (Figure 1) that depicts how digital wellbeing emerges from the dynamic interplay of agents, artifacts, and sociomaterial practices within sociotechnical assemblages. The metamodel shows how emerging capabilities, their materialisation in functionings, and their alignment shape the level of digital wellbeing produced in a given ecosystem. In Table 1, we provide an overview of the key concepts of the Digital Wellbeing metamodel, accompanied by brief descriptions and examples drawn from the university-based AImediated collaborative writing scenario that will be presented in detail below.

### 3.2. Concepts and instances of the Digital Wellbeing metamodel

An assemblage is a sociotechnical configuration constituted through the intra-actions of agents, artifacts, and sociomaterial practices. **Agents** can be human or nonhuman actors—such as individuals, institutions, or ecosystems—that enact intentionality. This intentionality may stem from human goals, adaptive behaviours, or organisational purposes. An **artifact** is a material or symbolic resource (e.g., tools, data,

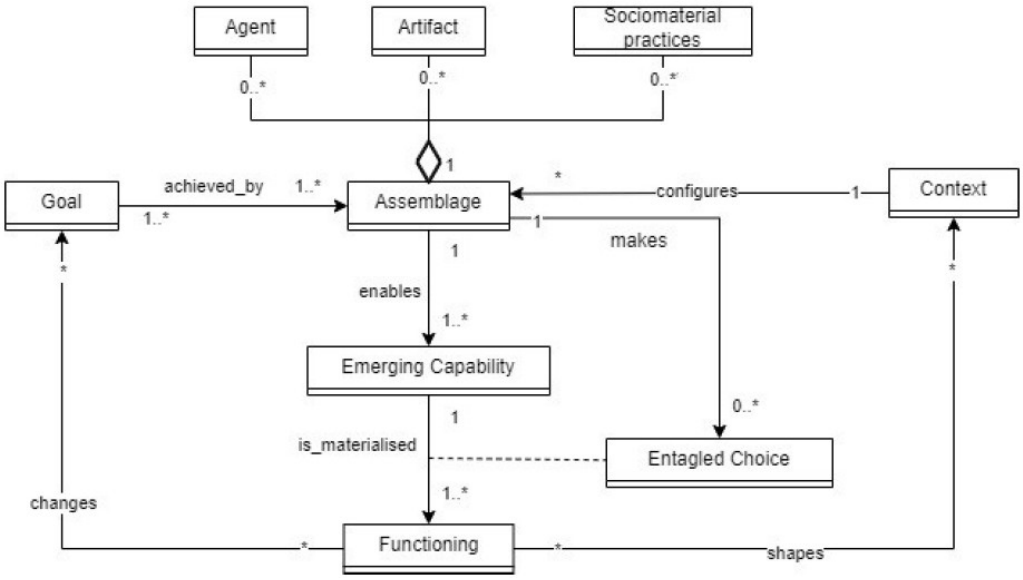


**Figure 1:** Capability-oriented metamodel for Digital Wellbeing

platforms). **Sociomaterial practices** refer to patterned ways of doing, the actions and routines through which artifacts are engaged and meanings are produced (e.g., data-sharing routines, the implementation of institutional policies). Agency is not an attribute of either humans or nonhumans; rather, it emerges through the ongoing reconfiguration of these relations. Artifacts actively participate in shaping the conditions of action, while sociomaterial practices pattern and stabilize the ways in which meaning, identity, and material effects are produced [25].

For example, in a university course, the **assemblage** consists of students and the instructor (agents), the LMS and the integrated AI writing tool (artifacts), and the ways they work together—co-editing, giving feedback, prompting the AI, and applying assessment rules (sociomaterial practices). As they use the LMS to draft, revise, and evaluate written work, these elements become entangled. The platform does not simply store assignments; it shapes what it means to "collaborate," to "contribute," and to "be assessed." In this way, the assemblage itself generates the possibilities for who can do what, when, and with what consequences.

Assemblages always take shape within and operate within a broader **context**, understood here as the macro-level institutional, cultural, and technological conditions that configure how their elements can interact. Contexts can be enabling or constraining, shaping which capabilities can emerge and how they can be enacted. In the university example, the wider context of higher education in Greece—including national regulations on assessment, institutional policies on AI use, cultural norms of collaboration, and available digital infrastructures—conditions how the LMS and AI tool can be used, how sociomaterial practices unfold, and ultimately which forms of teaching and learning become possible in practice.

Assemblages possess **emerging capabilities—capacities** for action that arise not from any single element but from the relational configuration of agents, artifacts, and sociomaterial practices. These capabilities orient themselves toward a goal, which has a dual status: an initial purpose may enable the assemblage to form, yet the assemblage also produces and reshapes its own goals through its sociomaterial dynamics. In the university example, the assemblage may produce and sustain goals such as effective teaching, fair assessment, or collaborative learning, while an emerging capability might be the ability to enable peer collaboration or the ability to support AI-mediated knowledge construction. In this sense, the assemblage simultaneously generates its goals and the capacities through which those goals can be pursued.

Following the Capability Approach [9], [10], [11], [12] we distinguish between **emerging capabilities and functionings**. **Emerging capabilities** refer to what an assemblage is able to do—its potential for action. **Functionings** refer to the concrete enactments of these capabilities in situated practice.

Thus, emerging capabilities denote possibilities, while functionings denote the actualization of these possibilities under specific contextual conditions. For instance, in the university assemblage, the emerging ability to enable peer collaboration becomes a functioning when students actually co-edit texts, exchange feedback, or use the AI tool transparently within the institutional and technological conditions that make such practices possible.

A capability's materialisation through specific functionings depends on the assemblage's **entangled choices**—that is, the distributed adjustments and decisions that emerge across its agents, artifacts, sociomaterial practices, and the broader contextual conditions within which they operate. An entangled choice is not a decision made solely by humans; rather, it is an outcome arising from the ongoing intra-actions among the assemblage constituents. It reflects how the assemblage itself nudges, constrains, or enables what becomes possible, preferable, or even thinkable. In other words, an entangled choice emerges from the distributed adjustments, affordances, and micro-decisions produced across the assemblage rather than from isolated individual intentions.

In the university example, **the same emerging capability**—such as the ability to enable peer collaboration—**may materialise in different functionings** depending on the assemblage's **entangled choices**. In **one trajectory**, students work together in a shared LMS document, engage in visible co-editing, and use the AI tool transparently to refine ideas. These practices arise from the LMS's collaborative affordances, classroom norms that support openness, and instructor prompts encouraging reflective AI use. Here, the capability materialises in the functioning to collaboratively develop a shared written assignment with AI-mediated co-editing. **In a second trajectory**, students rely on the AI tool to generate individual paragraphs, avoid shared editing spaces, and exchange only final drafts. This pattern emerges from broader conditions such as the absence of a strong collaboration culture, the exam-oriented and competitive character of the educational system, and students' preference for working privately. It is also reinforced by limited confidence in peers' contributions, difficulties in coordinating time, and the perception that using the AI tool individually is faster and more sufficient than engaging in shared editing. In this case, the capability does not materialise in the functioning to collaboratively develop a shared assignment. **Across both trajectories, the "choice" is not simply a student decision**, but an outcome shaped by the entanglement of agents, artifacts, sociomaterial practices, and broader contextual conditions.

When a functioning is activated, it can also **feed back into and shape/transform the broader context**. For example, when students consistently engage in co-editing texts in real time or integrate AI feedback transparently (functionings), these practices can gradually reshape the wider context of higher education—such as institutional norms of collaboration, expectations around AI-supported learning, or policies regulating digital assessment—thereby influencing how future assemblages can form and what capabilities can emerge within them.

Moreover, evaluating a functioning, whether it fails, exceeds expectations, or opens new possibilities, may lead to a **reconsideration or adaptation of the assemblage's goals**. This, in turn, can require **reconfiguring the assemblage itself**. For example, if the functioning to collaboratively develop a shared written assignment with AI-mediated co-editing results in low-quality student work, this may prompt the **introduction of a new goal**, such as *developing more advanced collaborative problem-solving ability*. Such a shift would then influence and reshape practices within the assemblage—for instance, by adjusting LMS settings to support guided co-editing, revising AI-use policies, or integrating more structured reflective activities.

This example highlights that **the same technology can produce different functionings** depending on the context and the entangled choices made within the assemblage. It also shows **how the model can be operationalised**: digital wellbeing becomes observable in the extent to which emerging capabilities materialise into functionings and stay dynamically aligned over time. We can describe high digital wellbeing as situations where the assemblage's capabilities are effectively realised in practice, and low digital wellbeing as situations where capabilities fail to materialise. However, these assumptions about "high" and "low" wellbeing need to be explored and validated through additional empirical and theoretical work.

**Table 1**
Overview of the key concepts of the Digital Wellbeing metamodel

| Concept | Description | Example |
|---|---|---|
| Assemblage | A sociotechnical configuration constituted through the intra-actions of agents, artifacts, and sociomaterial practices. | The students and the instructor (agents), the LMS and the integrated AI writing tool (artifacts), and the ways they work together—co-editing, giving feedback, prompting the AI, and applying assessment rules (sociomaterial practices). |
| Agents | Human or nonhuman actors—such as individuals, institutions, or AI systems—that enact intentionality. | The students and the instructor. |
| Artifacts | Material or symbolic resources (e.g., tools, platforms, data, policies) that actively shape conditions for action. | The LMS and the integrated AI writing-support tool that enable text generation, commenting, and co-editing. |
| Sociomaterial Practices | Patterned ways of doing routines and actions through which artifacts are engaged and meanings are produced. | Co-editing a shared document, giving feedback, AI-assisted writing, and coordinating contributions. |
| Goal | A goal is both a starting purpose that enables an assemblage while also being produced and reshaped by the assemblages sociomaterial dynamics. | Collaborative learning, effective teaching, fair assessment. |
| Context | A broader context, understood here as the macro-level institutional, cultural, and technological conditions. | The wider context of higher education in Greece, including national regulations on assessment, institutional policies on AI use, cultural norms of collaboration, and available digital infrastructures. |
| Emerging Capabilities | Capacities for action that arise from relational configurations—what the assemblage is able to do, not necessarily what it is doing. | The ability to co-construct knowledge, coordinate contributions, and generate ideas with AI support. |
| Entangled Choices | An outcome emerging from the ongoing intra-actions among agents, artifacts, practices, and contextual conditions. | **Trajectory 1**: Transparent, critical AI use.<br>**Trajectory 2**: Individualized AI use. |
| Functionings | Concrete enactments of capabilities in situated practices; the actualization of potentials under specific contextual conditions. | **Trajectory 1**: To collaboratively develop a shared written assignment with AI-mediated coediting.<br>**Trajectory 2**: To work alone on individual written tasks using AI. |
| Digital Wellbeing as a Meta-capability | The ecosystem's dynamic capacity to translate capabilities into functionings, adapt, and continually reconfigure itself. | Our hypotheses to validate: Low digital wellbeing occurs when students rely on isolated AIgenerated drafts and the course fails to adjust its practices. High digital wellbeing is evident when students co-edit a shared assignment with transparent AI support, and the course adapts when issues arise. |

## 4. Conclusions and future research

This paper proposed a new conceptualisation of digital wellbeing, grounded in sociomaterial perspectives and embedded within the framework of capability-oriented enterprise modeling. It introduced the notion of digital wellbeing as a meta-capability—the capacity of an ecosystem to support the emergence and realization of capabilities under conditions of continuous change.

Through the proposed metamodel, organized around the elements of assemblage, context, entangled choices, emerging capabilities, and emerged functionings, we demonstrate how wellbeing is dynamically and relationally constituted.

Nevertheless, the study has certain limitations. The proposed metamodel is primarily conceptual and requires further empirical validation. Its application across different domains and organisational

settings will also require contextual adaptation to reflect the specific characteristics and challenges of each environment.

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## 6. Declaration on Generative AI

During the preparation of this work, the authors used ChatGPT (OpenAI, GPT-5.1) solely for grammar, spelling, and language editing. All revisions were reviewed and approved by the authors, who take full responsibility for the final version of the manuscript.

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