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The Why?

One of the defining characteristics that distinguishes humans from the rest of the natural world is their exceptional capacity for innovation, manifested, among other things, in the creation and continual refinement of tools. The significance of technological progress for the history of humanity is so profound that successive stages of civilizational development have been identified through the lens of dominant materials or breakthrough inventions. In this sense, scholars refer to the Paleolithic and Neolithic periods, the Bronze Age and the Iron Age, and, in modern history, to the age of steam, the atomic age, and—contemporarily—the digital age.

Human efforts to pave the way toward a better life have long been accompanied by reflection on the nature of happiness and the conditions under which it can be attained—initially in the form of prescientific intuitions, and later as systematic academic inquiry supported by empirical research. Despite centuries of largely inconclusive philosophical debate, this issue continues to retain fundamental epistemic, axiological, and pragmatic significance. In contemporary scholarship, the upper bound of a good life is most often described using the constructs of flourishing or thriving, which—to emphasize their reference to human experience—are commonly framed as human flourishing (hereafter referred to as flourishing). This concept embodies the aspiration to realize a life that is both pleasurable and meaningful, encompassing a complex configuration of factors, resources, and mechanisms that facilitate its attainment and sustain it over time.

At the same time, it is important to distinguish between flourishing, typically conceptualized at the level of individual experience, and collective flourishing, which refers to the quality of functioning and development of broader interconnected systems. While this distinction is increasingly acknowledged, the analysis of their interrelations remains relatively underdeveloped, and the conditions under which flourishing may emerge at the system level are still insufficiently understood. This gap is particularly consequential in the context of

contemporary technological transformation, where individual experiences are embedded within complex sociotechnical systems. Importantly, the study of flourishing at the individual level continues to pose unresolved conceptual and methodological challenges, particularly with regard to its definition, measurement, and dynamic organization over time.

Beyond these conceptual challenges, a scientifically adequate account of flourishing must reflect the contemporary conditions in which individuals, societies, and the planet as a whole function. For this reason, the study of flourishing today requires the systematic incorporation of digital technologies, which increasingly take the form of artificial intelligence (AI)-driven systems. Without such integration, contemporary psychology risks conceptual obsolescence, continuing to model human well-being under conditions that no longer correspond to lived reality. This shift is reflected in a growing body of concepts and empirical studies devoted to the “bright side” of interactions with digital tools, many of which are developed at the intersection of positive psychology and cyberpsychology (e.g., Gudka et al., 2021; Riva et al., 2012; van Zyl et al., 2024). Positive psychology has traditionally conceptualized human functioning in contexts not centrally structured by digital mediation. Cyberpsychology, in contrast, takes digitally mediated environments as its primary object of inquiry, examining both fully digital settings and hybrid configurations in which offline activity is technologically reshaped.

The integration of perspectives developed within these approaches should be seen not as a coincidental convergence of two subdisciplines, but as a theoretical and empirical necessity. As more people are required to navigate everyday life across offline, online, and hybrid environments, expanding knowledge about how to do so effectively and in ways that support personal happiness is not simply an abstract intellectual exercise. Instead, it represents a response that is well attuned to the realities and challenges of the contemporary *Zeitgeist*. For this reason, it is encouraging that whereas only a few years ago a clear deficit of research on the so-called “bright side” of digital technology use was noted (e.g., Ancis, 2020), today one can speak of a dynamic—indeed, almost exponential—growth of scholarship in this area. An analysis of publications from the past decade in the Web of Science database examined articles identified using specific keywords (technology AND (well-being OR flourishing)) across titles, abstracts, author keywords, and Keywords Plus. The results showed that 258 such papers were published in 2015, rising to 2,345 by 2025. This represents more than a ninefold increase in publications, unequivocally indicating the growing prominence of the positive perspective in research on the human–technology relationship (see Figure 1.1). By comparison, the query using a different set of keywords (technology AND (addiction OR problematic use)) reveals only a little more than a twofold increase over the same period.

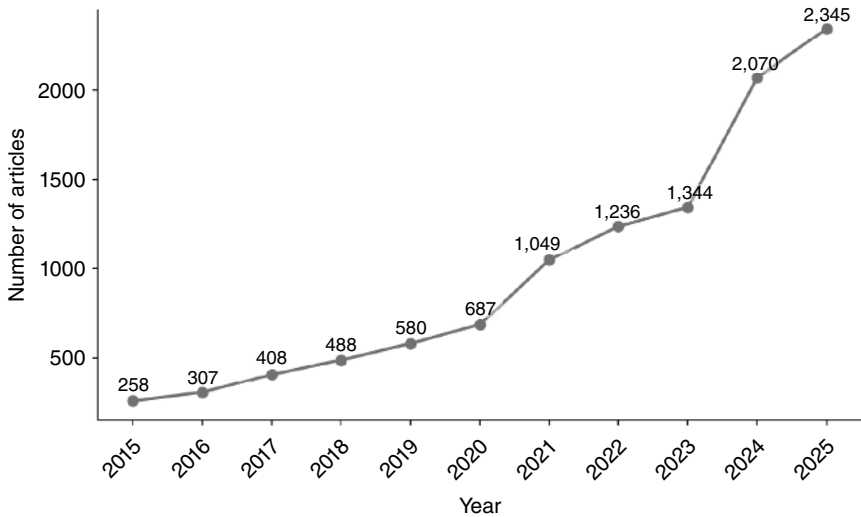


Figure 1.1 Annual number of articles indexed in the Web of Science identified using the query (technology AND (well-being OR flourishing)) across the Title, Abstract, Author Keywords, and Keywords Plus fields (2015–2025). *Note:* Data are based on an analysis of search results retrieved from the Web of Science (Topic: title, abstract, author keywords, and Keywords Plus).

On the other hand, concern is warranted regarding the increasing density of the analytical space through the proliferation of numerous concepts, often introduced without clear grounding in the psychological tradition. This tendency frequently takes the form of a conceptual “colonization” of reflection on human functioning in digital environments, manifested in the adaptation of terms that are, to a greater (e.g., digital hygiene; Bigaj et al., 2025) or lesser extent (e.g., digital flourishing; Janicke-Bowles et al., 2023), counterparts of constructs originally developed outside the technological context. Moreover, identical terms are often assigned divergent meanings (e.g., digital well-being [DWB]; Büchi, 2024; Dadischeck, 2021), and authors not infrequently develop these concepts independently, without engaging in mutual dialogue or referencing parallel theoretical frameworks.

The dynamic development of theories, definitions, methods, and analyses devoted to the “bright side” of digital technology use conveys an image of intense scientific ferment. However, the proliferation of theoretical perspectives and the influx of fragmented empirical findings, while indicative of the vitality of this field, may paradoxically hinder a deeper understanding of the conditions that strengthen flourishing in technological contexts. As Catherine Manathunga and Angela Brew (2012) observe, contemporary science no longer resembles a map

of clearly delineated territories but rather a system of rivers feeding into a shared ocean of knowledge. Within this metaphor, the interpenetration of currents fosters the emergence of new “bays,” symbolizing nascent research areas and specializations, yet this process requires conscious and critical epistemic oversight. Such oversight requires the systematic organization of accumulated knowledge and the identification of the field’s central problems. This makes it possible to define interconnected analytical pathways and integrate them within a coherent epistemic model.

To summarize these introductory considerations, it may be argued that the delineation of a distinct field of inquiry dedicated to explaining the conditions under which digital technology use exerts a beneficial influence on flourishing warrants serious consideration for several reasons. First, flourishing represents one of the most highly valued experiences from the individual’s perspective, and its explanation constitutes a central task of psychology. Second, in the digital era, flourishing is shaped not only by offline experiences but also by those generated in digital environments and hybrid modes of functioning. Third, elucidating the factors and processes that shape constructive forms of interaction within digitally mediated environments necessitates the systematic integration of theoretical and empirical frameworks developed within positive psychology and cyberpsychology. Finally, the intellectual capital accumulating at the intersection of these subdisciplines, distinct at the level of concepts, variables, and conceptual frameworks, calls for systematic organization within a coherent epistemic model, a task that extends beyond the scope of their traditional research agendas.

In this chapter, the arguments outlined above are developed within a broader perspective that emphasizes the dynamic embedding of AI-driven systems in the process of flourishing, as examined through analyses conducted within positive psychology and cyberpsychology. A useful analytical framework for identifying a set of more specific research problems is provided by the SMPC model proposed by Sebastian Schleidgen et al. (2023). This model delineates four key aspects of interaction with artificial systems, which are discussed in the following order: (1) purpose, referring to flourishing as the desired outcome of interaction; (2) subjects, defining humans and artificial systems as the agents participating in interaction, along with their relevant characteristics; (3) modes, specifying the forms and distinctive features of interactions between these agents in the context of flourishing; and (4) contexts, encompassing a broad constellation of conditions that shape the beneficial consequences of interactions with and through digital technologies for individuals. These aspects function as a conceptual map for identifying the interrelated problem bundles that will subsequently inform the epistemic model of positive cyberpsychology (PCyb).

1.1 Purpose: Human Flourishing

This section offers a comprehensive examination of the concept of flourishing, given its status as the central construct of PCyb. Any analysis of how digital technology use may shape flourishing presupposes a more foundational inquiry into its nature, its conceptualization within psychology, and its structure and ontological status within the current scientific debate. Accordingly, it is necessary to delineate its conceptual boundaries, competing models, and the theoretical tensions that continue to structure the field.

At the outset, it should be noted that the term *flourishing* does not refer exclusively to human functioning, as its etymological roots extend to the language of botany. The English verb *to flourish* derives from the Old French *floriss* (“to blossom”), which in turn originates from the Latin *flōresco* (“to bloom, to blossom”) and *flos* (“flower”) (Lewis, 1879). In botanical usage, the term carries a literal meaning, denoting the vigorous growth of a plant, its lushness, and the attainment of biological fullness, encompassing processes such as flowering, fruiting, and reproduction. It may also describe optimal environmental conditions—adequate access to light, water, and nutrients—that facilitate developmental success and reproductive capacity (Hiernaux, 2021).

The adoption of the concept of flourishing across disciplines—psychology, philosophy, education, ecology, medicine, economics, and theology—represents an extension of this botanical metaphor and refers to the full and balanced development of a system’s potential. In the psychological literature, flourishing functions both as a substantive construct and as a processual descriptor, and this dual usage carries conceptual significance in theoretical accounts. In its nominal sense, and in its classical formulation within the mental health tradition, flourishing denotes a dynamic state of high mental well-being—an upper bound of positive functioning encompassing multiple psychological, emotional, and social dimensions essential to a fulfilling life (Keyes & Haidt, 2003; Michalec et al., 2009). Across most conceptualizations, it is understood holistically, integrating hedonic, eudaimonic, and social dimensions of the good life (Seligman, 2011; VanderWeele, 2017), and is sometimes framed interchangeably as thriving (Su et al., 2014) or, more colloquially, as “the peak of well-being” (Willen et al., 2022).

When approached in its verbal sense, flourishing emphasizes an ongoing developmental process rather than a fixed state. It foregrounds human functioning as active “doing” rather than a static mode of “being,” capturing the dynamic realization of potential over time. In this sense, flourishing refers not only to discrete actions but also to patterns of engagement through which individuals regulate, adapt, and respond constructively to life’s challenges (Pawelski, 2016; Ryff & Singer, 2008). The accumulation and integration of such experiences shape

a developmental trajectory that aligns with the notion of a “life worth living” (Csikszentmihalyi & Csikszentmihalyi, 2006).

Positioning flourishing at the core of PCyb follows from the fact that this construct denotes the highest attainable level of a good life within the human domain. Its pronounced context sensitivity justifies treating human–technology interactions as factors that substantially shape its dynamics. Metaphorically, this relationship may be conceived as a double helix of the good life in the digital era, in which well-being processes and digitally mediated experiences mutually condition and reorganize one another. This perspective is further expanded by recent work in computer science and technology ethics introducing the notion of machine flourishing, understood as the optimal state of functioning of AI systems achieved through the realization of their functional potential in alignment with programmed goals and human-defined normative values (Lau et al., 2025). From this standpoint, human–computer interaction may be analyzed not only in terms of usability but also as a domain of potential human–computer co-flourishing, thereby opening the way to conceptualizing flourishing as an emergent property of interconnected systems rather than solely an attribute of individual experience.

1.1.1 Constructs Related to Flourishing

Within the broader scholarly literature, including psychology, the term *flourishing* is sometimes used interchangeably with concepts such as happiness, the good life, well-being, quality of life, optimal functioning, or psychological richness. However, each of these constructs originates in distinct intellectual traditions, is embedded within different theoretical frameworks, and entails its own specific methodological implications (see Trzebińska, 2008).

The concept of happiness, deeply rooted in everyday language, is currently used primarily to denote a sense of pleasure or satisfaction experienced “here and now” (Lomas et al., 2024b). Etymologically, it derives from the Old Norse *happ*, meaning chance or fortune, which underscores the external source of such satisfaction (Sewaybricker & Massola, 2022). Its contemporary usage corresponds closely with hedonism, one of the normative perspectives that emerged in ancient Greece. Proponents of this view, such as Epicurus, equated happiness with the notion of *makarios* (Greek μακάριος, “blessed”), understood as a lasting freedom from physical pain (*aponia*) and psychological distress or fear (*ataraxia*).

An alternative perspective—*eudaimonism*—was grounded in the concept of *eudaimonia* (Greek εὐδαιμονία, “good spirit”) introduced by Aristotle, defined as the fullness of a good life attained through virtuous activity and the realization of human potential. Whereas hedonism emphasizes the role of pleasure, *eudaimonism* shifts the focus toward goals, values, beliefs, and principles that enable living in accordance with one’s authentic self (understood through the notion of

the daimon as an inner guide). This tradition was further developed by Christian thinkers such as Augustine of Hippo and Thomas Aquinas, who employed the concept of *beatitudo* (Latin “fullness of the good”), understood as the highest form of spiritual happiness achieved through union with God (Tatarkiewicz, 1976).

In the psychological literature, the term *happiness* has been increasingly supplanted by the concept of well-being, particularly in the form of *subjective well-being* popularized in 1984 by Ed Diener (aka “Dr. Happiness”). Subjective well-being refers to the degree to which individuals like their own lives and encompasses “pleasant emotions, low levels of negative moods, and high life satisfaction” (Diener et al., 2002, p. 63). According to critics, however, Diener’s act of “semantic transplantation” reflected less a genuine conceptual differentiation than a strategic effort to enhance the scientific credibility of the construct (Sewaybricker & Massola, 2022).

At present, the concept of *well-being* refers both to a generalized evaluation of an individual’s life and to those aspects of life that are perceived as beneficial or desirable (Kaczmarek, 2020). It has been fragmented by a wide range of qualifiers—subjective, psychological, emotional, spiritual, or digital—resulting in a rich semantic field that still awaits systematic integration. The complexity of this domain is underscored by the fact that nearly a decade ago, scholars identified 196 distinct dimensions of well-being assessed by 99 different measurement tools (Linton et al., 2016). Importantly, the construct of well-being is not simply the inverse of ill-being; the two have distinct biological correlates and may co-occur in different configurations (Ryff et al., 2006). This implies that individuals may experience elevated levels of ill-being symptoms while simultaneously maintaining a relatively stable level of well-being, or vice versa.

The most general term encompassing an overall evaluation of the conditions of human functioning is *quality of life*. Depending on the approach adopted, this concept includes both subjective elements related to individuals’ personal satisfaction with life and objective factors, such as income level, housing conditions, or access to public services. For example, the World Health Organization (WHO) defines quality of life as individuals’ perceptions of their position in life in the context of the culture and value systems in which they live, and in relation to their goals, expectations, standards, and concerns (WHOQOL Group, 1995). Assessments of quality of life often take a standardized form, particularly in research conducted by international institutions that employ this concept in comparative analyses of health, social, and economic phenomena. In such applications, the aim is typically to construct a synthetic indicator that enables comparisons across social groups, countries, or regions.

Concepts related to flourishing also include *optimal functioning* and *psychological richness*. The former refers to psychological processes and patterns of activity that enable individuals to function effectively in relation to both their own

needs and the demands of the environment. According to Kennon M. Sheldon (2004), this notion does not denote an unattainable ideal of perfection, but rather successful and effective ways of functioning under the conditions of one's current life circumstances.

Psychological richness, in turn, refers to a way of life characterized by novelty, complexity, and perspective-changing experiences, rather than one defined solely by happiness or a sense of meaning. As proposed by Shigehiro Oishi and Erin C. Westgate (2022), it highlights the importance of curiosity, spontaneity, and openness to challenges that broaden individuals' horizons and foster personal development. Within this framework, psychological richness is conceptualized as a third vision of the good life, alongside the hedonic and eudaimonic traditions.

1.1.2 Conceptual Landscapes of Flourishing

It should be acknowledged that most conceptualizations of flourishing discussed in this section were developed within Western cultural contexts and with reference to individuals from WEIRD societies (Western, Educated, Industrialized, Rich, and Democratic; Henrich et al., 2010). Although these populations constitute only a minority of the global population, they exert a disproportionately strong influence on the trajectory of psychological research (cultural differences in the understanding of happiness are discussed in Section 1.4.1). At the same time, many of these conceptualizations resonate with the definition articulated in the WHO's (1948) declaration, which defines health as "a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity" (p. 1). They also reflect one of the foundational aims of positive psychology: to articulate and empirically investigate the conditions that constitute a good and happy life (Seligman & Csikszentmihalyi, 2000).

At a general level, conceptualizations of flourishing are united by the assumption that it represents an advanced and multidimensional form of the good life and mental health. The principal differences among positions concern the scope of components—including specific domains (dimensions or aspects) of well-being—considered to be significant, as well as the assumptions adopted regarding the relationships among these components, including how they are modeled within structural equation modeling (SEM) frameworks (see Table 1.1).

Nearly a decade before the proclamation of positive psychology and prior to the widespread adoption of the term *flourishing*, Carol Ryff (1989) proposed the concept of eudaimonic well-being. In later work, the term *flourishing* was explicitly used, defined as "striving toward excellence based on one's unique potential" (Ryff & Singer, 2008, p. 14). The operationalization of this concept is provided by the Psychological Well-Being (PWB) Scale, which encompasses six dimensions of the construct: autonomy, environmental mastery, personal growth, positive

Table 1.1 Conceptualizations of flourishing along with their components and measurement approaches.

Theory	Definition	Components	Measurement
Eudaimonic well-being (Ryff, 1989)	“Striving toward excellence based on one’s unique potential” (Ryff & Singer, 2008, p. 14)	Autonomy, environmental mastery, personal growth, positive relations with others, purpose in life, and self-acceptance	Psychological Well-Being (PWB) (Ryff & Keyes, 1995)
The Mental Health Continuum (Keyes, 2002)	“Adults with complete mental health are flourishing in life with high levels of well-being. To be flourishing, then, is to be filled with positive emotion and to be functioning well psychologically and socially.” (Keyes, 2002, p. 210)	Positive relationships, purpose in life, positive affect (interested), self-acceptance, positive affect (happy), social contribution, social integration, social growth, social acceptance, social coherence, environmental mastery, personal growth, autonomy, and life satisfaction	Mental Health Continuum–Short Form (MHC-SF) and Mental Health Continuum–Long Form (MHC-LF) (Keyes et al., 2008)
/no concept name/ (Diener et al., 2010)	“Social-psychological prosperity” (Diener et al., 2010, p. 144)	Meaning and purpose, positive relationships, competence, engagement, optimism, self-regard/ self-acceptance, and contribution to others	Flourishing Scale (FS) (Diener et al., 2010)
PERMA model (Seligman, 2011)	“The gold standard for measuring well-being” (p. 13) “Dynamic optimal state of psychosocial functioning that arises from functioning well across multiple psychosocial domains.” (Butler & Kern, 2016, p. 2)	Positive emotions, engagement, relationships, meaning, and accomplishment/competence	The PERMA-Profiler (Butler & Kern, 2016)
/no concept name/ (Huppert & So, 2013)	“Flourishing refers to the experience of life going well. It is a combination of feeling good and functioning effectively. Flourishing is synonymous with a high level of mental well-being, and it epitomizes mental health” (Huppert & So, 2013, p. 838)	Positive relationships, meaning, engagement, self-esteem, positive emotion, competence, optimism, emotional stability, vitality, and resilience	Well-being module items on the European Social Survey (“Huppert and So’s measure”) (Huppert & So, 2013)
Thriving (Su et al., 2014)	“The term thriving denotes the state of positive functioning at its fullest range—mentally, physically, and socially.” (Su et al., 2014, p. 6)	Subjective well-being, relationships, meaning, engagement, mastery, optimism, and autonomy	Comprehensive Inventory of Thriving (CIT; Su et al., 2014)

(Continued)

Table 1.1 (Continued)

Theory	Definition	Components	Measurement
/no concept name/ (VanderWeele, 2017)	“We think about flourishing not only as a momentary state but also as something that is sustained over time, then one might also argue that a state of flourishing should be such that resources, financial and otherwise, are sufficiently stable so that what is going well in each of these five domains is likely to continue into the future for some time to come.” (VanderWeele, 2017, p. 8149)	Happiness and life satisfaction, meaning and purpose, close social relationships, physical health, character and virtue, and financial and material stability (SFI only)	FI and SFI (VanderWeele, 2017)
Eudaimonic Theory of Flourishing (Fowers et al., 2024)	“The active, lifelong, imperfect pursuit of good living that is actualized through virtue-related actions” (Fowers et al., 2024, p. 127)	Group belonging, close personal relationships, and meaning and purpose	No scale
/no concept name/ (Lomas et al., 2024a)	“A state of personal and systemic quality in relation to all dimensions of existence, in a way that is relatively enduring and well-supported by the various conditions of life” (Lomas et al., 2024a, p. 4)	38 well-being indicators (Gallup World Poll), spanning multiple domains (e.g., life evaluation, emotions, balance/harmony, social, material, and contextual factors), and yielding a multidimensional structure (approx. 3–9 dimensions depending on analysis)	Secondary analysis of Gallup World Poll data
Global Flourishing Study (GFS) (Lomas et al., 2025; VanderWeele et al., 2025)	“The relative attainment of a state in which all aspects of a person’s life are good, including the contexts in which that person lives” (Lomas et al., 2025)	Happiness, health, meaning, character, relationships, and financial security	GFS questionnaire (VanderWeele et al., 2025)

Note: This table extends and elaborates on the frameworks proposed by Hone et al. (2014, p. 65) and Willen et al. (2022, p. 3).

relations with others, purpose in life, and self-acceptance (Ryff & Keyes, 1995). However, subsequent studies have not unequivocally confirmed the proposed six-factor structure of the measure (Springer & Hauser, 2006). As a result, no single global index of flourishing is derived, and scores are calculated separately for each dimension.

Ed Diener—who, as noted earlier, derived his approach to well-being from the hedonic tradition and did not equate subjective well-being with a state of flourishing—later, together with his colleagues, developed the Flourishing Scale (FS; Diener et al., 2010) as a measure of flourishing conceptualized as “social-psychological prosperity” (p. 144). In the authors’ framework, eudaimonia constitutes the central dimension of this construct, whereas hedonic elements are treated as implied rather than explicitly measured. Eight components of flourishing are distinguished: positive relationships, purpose and meaning in life, engagement and interest in activities, self-acceptance, competence, optimism, being respected, and social contribution. The scale has a unidimensional structure, with flourishing conceptualized as a higher-order construct and individual items serving as its empirical manifestations.

Further continuators of the Aristotelian tradition include Blaine J. Fowers et al. (2024), who proposed the Eudaimonic Theory of Flourishing. The authors define flourishing as “the active, lifelong, imperfect pursuit of good living that is actualized through virtue-related actions” (p. 127). Within this framework, flourishing is not understood as a momentary psychological state or a declarative sense of satisfaction, but rather as a dynamic process of cultivating a good life through virtuous action. A central role is assigned to the notion of human goods—valuable and desirable ends that individuals can realize through virtue-based activities (e.g., group belonging, close personal relationships, and meaning and purpose). The authors do not propose a dedicated measurement instrument for flourishing, instead recommending the use of pluralistic quantitative and qualitative research methods.

Findings from research conducted within positive psychology indicate that hedonic and eudaimonic perspectives are not mutually exclusive; rather, the factors associated with each, although largely independent, are correlated with one another (Joshano, 2016). The approaches presented below can thus be understood as proposals for a holistic framework that integrates these perspectives.

Corey Keyes (2002) was among the first researchers to undertake a systematic analysis of flourishing by introducing the concept of the mental health continuum and developing the two-dimensional Complete Mental Health Model. In this framework, mental health and mental illness are not treated as opposite ends of a single dimension, but rather as two distinct yet correlated continua. The former describes the level of positive functioning, ranging from languishing to flourishing, whereas the latter refers to the severity of psychopathological symptoms. Flourishing is conceptualized as a state of complete mental health, while

languishing denotes a condition of psychological “stagnation,” characterized by aimlessness, emptiness, and a sense of being stuck in a rut. The model is operationalized through the Mental Health Continuum–Short Form (MHC-SF; Keyes et al., 2008), which enables the classification of individuals into three categories—languishing, moderate mental health, and flourishing—based on assessments of emotional, psychological, and social domains of well-being. The three-factor structure of the MHC-SF has been confirmed in confirmatory analyses across diverse cultural contexts.

A pioneer of positive psychology, Martin Seligman (2011), proposed that flourishing should be treated as “the gold standard for measuring well-being” (p. 13). The developers of the measurement approach grounded in his framework further specified that flourishing refers to a “dynamic optimal state of psychosocial functioning that arises from functioning well across multiple psychosocial domains” (Butler & Kern, 2016, p. 2). Seligman’s PERMA model integrates five domains of well-being: positive emotions, engagement, relationships, meaning, and accomplishment. These domains can be assessed using the PERMA-Profiler (Butler & Kern, 2016) and, in occupational contexts, the Workplace PERMA-Profiler (McQuaid & Kern, 2017). Scores are calculated separately for each domain, and no aggregate flourishing index is provided. An extension of this framework is the PERMAH model, which adds the component of Health, encompassing staying healthy by eating well, moving regularly, and sleeping deeply (Kern, 2022). The inclusion of this dimension is reflected in the PERMAH Wellbeing Survey Tool (permahsurvey.com).

A different approach was proposed by Felicia Huppert and Timothy So (2013), who argued that flourishing is “synonymous with a high level of mental well-being, and it epitomizes mental health” (p. 838). In their view, an appropriate instrument for its measurement is the European Social Survey (ESS), often referred to as “Huppert and So’s measure of flourishing.” An individual is classified as flourishing if they exhibit a high level of positive emotion and for at least four of the other five positive characteristics (emotional stability, vitality, optimism, resilience, and self-esteem), as well as at least three of the four positive-functioning features (engagement, competence, meaning, and positive relationships).

Another example of integrating diverse well-being domains under the umbrella of flourishing is the Comprehensive Inventory of Thriving (CIT) developed by the team led by Rong Su et al. (2014). The authors define thriving as “the state of positive functioning at its fullest range—mentally, physically, and socially” (p. 6). The CIT encompasses seven broad dimensions of well-being—subjective well-being, relationships, meaning, engagement, mastery, optimism, and autonomy—which are further elaborated into 18 subscales. The resulting output is a profile reflecting the level of each subscale and dimension; rather than yielding a single flourishing index, the instrument emphasizes the relative strength of individual components.

An author who proposed treating flourishing as a concept broader than well-being is Tyler J. VanderWeele (2017). According to his framework, the sources of flourishing include domains emphasized in earlier conceptualizations, such as happiness and life satisfaction, meaning and purpose, and close social relationships. They also include areas that had previously received less attention, including physical health, character and virtue, and financial and material stability. VanderWeele developed measures of flourishing that encompass either five (Flourish Index, FI) or six (Secure Flourish Index, SFI) of these specified domains. Each index is calculated as a summed score, with higher values indicating a greater degree of flourishing.

This conception was further developed by a research team that included Tyler J. VanderWeele, who defined flourishing as “a state of personal and systemic quality in relation to all dimensions of existence, in a way that is relatively enduring and well-supported by the various conditions of life” (Lomas et al., 2024a, p. 4). The authors emphasized that flourishing is a multidimensional construct and inherently inseparable from the life context of the individual. To empirically examine this framework, they conducted a factor analysis of 38 well-being indicators drawn from the Gallup World Poll, encompassing data from 386,654 individuals across 145 countries. The analysis revealed a multidimensional structure of flourishing, with solutions ranging from three to nine dimensions depending on the analytic approach.

In related work within the Global Flourishing Study, a large-scale, longitudinal research program, a standardized questionnaire was developed to operationalize flourishing across multiple domains (VanderWeele et al., 2025). This instrument enables the computation of a composite flourishing index based on six domains: happiness, health, meaning, character, relationships, and financial security. Unlike most earlier operationalizations, this approach incorporates a broader range of contextual and life-condition indicators, including aspects such as social engagement, economic security, and developmental conditions. However, despite this conceptual inclusion of contextual factors, the measurement itself remains grounded primarily in individual-level self-reports.

A review of existing conceptualizations of flourishing clearly demonstrates that the development of a unified and widely accepted definition of flourishing remains an open issue. Blaine J. Fowers et al. (2024) aptly note that “in their haste to create measures, psychologists have sidestepped the theoretical debate about what flourishing is” (p. 123). Discrepancies among approaches are reflected in the multifaceted landscape of components proposed to constitute flourishing. Considering six empirically examined frameworks, Sarah S. Willen et al. (2022) identified as many as 22 distinct components after consolidating near-synonymous labels (45 unique labels prior to consolidation). These include domains of well-being (e.g., subjective well-being), episodic positive experiences (e.g., daily emotions), as well as enduring personal resources (e.g., environmental mastery, competence,

character, and virtue). In this sense, flourishing encompasses nearly the full spectrum of mental phenomena studied within positive psychology. Notably, however, consensus across theoretical models is limited to only two domains—positive relationships (close social relationships) and purpose in life (purpose and meaning)—whereas several other components are unique to single frameworks (e.g., vitality, character and virtue, and financial and material stability).

Further research is needed to clarify the systemic character of flourishing components and to identify the factors that shape transformations of their configuration (Höltge et al., 2023). Against this background, it remains unclear which components occupy a central position, which are more peripheral, and which may prove marginal for capturing the essence of flourishing. Drawing on the findings of Veronika Ploke et al. (2024), the PERMA engagement subscale, the social well-being dimension of the MHC-SF, and several items of the Flourishing Scale referring to belonging and social contribution appear to be the most distant from the statistically defined core of the construct—operationalized as the general factor on which all items load across instruments.

A lack of consensus is also evident at the methodological level. From the perspective of SEM, flourishing has been operationalized as a single-factor reflective model—flourishing as a unidimensional latent construct (Diener et al., 2010); a hierarchical reflective–reflective model—flourishing as a second-order latent variable (Butler & Kern, 2016; Keyes, 2002; Ryff & Keyes, 1995); or a formative model—flourishing as an index/composite construct (Huppert & So, 2013). Moreover, empirical evidence indicates that the existing measurement instruments for this construct are not equivalent (Hone et al., 2014). These psychometric challenges are compounded by cultural variation in how well-being is construed and valued, highlighting the need for culturally sensitive approaches to its conceptualization and assessment (Krys et al., 2023).

Given the theoretical and methodological differences in how flourishing is conceptualized in the literature, attempts to integrate these diverse approaches are particularly valuable. An example of such an effort is the proposal by Tim Lomas et al. (2024b), who situate flourishing within a broad, multilevel conceptual framework referred to as a “flexible map of flourishing.” In their formulation, the construct encompasses both subjective and objective aspects of human functioning and integrates all key dimensions of existence distinguished in the WHO+ model, namely, the physical, psychological, social, and spiritual domains. At the same time, the authors emphasize that quality of life emerges from a dynamic relationship between the person and their environment, with contextual conditions that may either support or constrain development.

At the same time, recent evidence suggests that flourishing is not equally accessible across populations. As Carol D. Ryff (2024) shows, the distribution of well-being is increasingly shaped by socio-economic inequalities, thereby

raising important questions about the assumption that flourishing can be attained through individual-level efforts, irrespective of structural conditions. This finding underscores the need to incorporate contextual constraints into the analysis of flourishing. The challenge becomes even more salient in digitally mediated environments, where unequal access to technological resources and competencies may further amplify disparities in opportunities for flourishing.

1.1.3 Flourishing in Digital Contexts: A Complex and Promising Line of Inquiry

Contemporary literature provides compelling evidence that the use of digital technologies can both support the realization of personal goals and life ideals and, conversely, distance individuals from them. It may facilitate the satisfaction or frustration of basic psychological needs, initiate new developmentally enriching forms of activity, or entrench compulsive patterns of behavior, and either enrich the inner psychological world or contribute to its narrowing (Barnes & Prescott, 2025; Brand et al., 2016; Burnell et al., 2023; Gaggioli et al., 2019b; Haidt, 2024). Digital technology use may therefore systematically orient human functioning toward trajectories of flourishing or toward patterns of languishing. Determining the conditions under which this alternative is resolved in a beneficial direction constitutes not only an existentially and socially consequential applied challenge but also a substantive theoretical problem.

Within positive psychology, flourishing has been extensively theorized and empirically investigated, yet predominantly outside technologically mediated contexts. The dynamics of human–technology interaction, including the technological augmentation or facilitation of developmental processes, have remained largely peripheral to the field’s core theoretical and empirical agenda. Conversely, within cyberpsychology, well-being and flourishing have been addressed but have not typically functioned as central integrative constructs capable of organizing coherent research programs. At the same time, a growing body of concepts emerging from research on constructive human–technology interaction has developed, including cyber kindness (Rowland & Klisanin, 2018), cyber hygiene (Vishwanath et al., 2020), DWB (Vanden Abeele, 2020), digital life balance (Duradoni et al., 2022b), digital flourishing (Janicke-Bowles et al., 2023), digital maturity (Laaber et al., 2023), and techno-eustress (Tarafdar et al., 2024). These concepts have typically evolved without sustained engagement with the broader conceptual and ontological debates surrounding flourishing in positive psychology. Consequently, these approaches do not function as explicit contributions to that debate but rather as parallel and only loosely connected trajectories of conceptual development. This reciprocal decentering between positive psychology and cyberpsychology has generated a structural theoretical gap that calls for systematic integration.

The analysis of flourishing in digitally mediated contexts entails exceptional theoretical and methodological complexity. As noted above, flourishing remains a concept marked by definitional ambiguity and multiple competing operationalizations. When this already multidimensional construct is situated within technologically mediated environments, the analytical landscape expands substantially. Scholars must account for additional layers of variability, including heterogeneous technological affordances, interaction architectures, algorithmic logics, and patterns of socio-cultural embedding. Under these conditions, the object of inquiry shifts from the internal structure of flourishing considered in isolation to the dynamic interplay between well-being processes and evolving technological systems.

On the one hand, this requires a careful analysis of engagement in digital practices, motivational orientations, and the role of basic psychological needs—autonomy, competence, and relatedness (Deci & Ryan, 1985; Ryan & Deci, 2000)—in shaping the quality of functioning in technology-mediated environments. On the other hand, it calls for the systematic consideration of normative and cultural contexts, including ideational frameworks that redefine horizons of development (e.g., transhumanism) and thereby reshape the developmental vectors orienting individuals toward the realization of their potential and the pursuit of meaning (Ryff & Singer, 2008). Flourishing trajectories emerge through the interaction between the individual and contextual levels. These developmental paths reflect individuals' ongoing efforts to negotiate a balance between what James O. Pawelski (2016) termed “green-cape” and “red-cape” processes—that is, activities oriented toward cultivating positive capacities and those aimed at alleviating or regulating negative states. Digital environments intensify the tension between these modes of functioning, as they may simultaneously constitute sources of well-being risks and contexts conducive to developmental enrichment. Studying flourishing under such conditions, therefore, requires elucidating the mechanisms through which individuals switch between coping-oriented and growth-oriented logics—an endeavor that extends beyond straightforward assessments of the effects of technology use on subjective satisfaction.

The complexity outlined above is further reflected in the dispersion of research on constructive uses of digital technologies across multiple disciplinary domains. Relevant analyses are conducted not only within positive psychology and cyberpsychology, but also in communication research (e.g., Chen et al., 2025b), education (e.g., Gomes et al., 2023), health sciences (e.g., Rosič et al., 2022), and broader interdisciplinary frameworks (e.g., Duradoni et al., 2024). The systematic integration of these perspectives, however, exceeds the primary mandate of any single discipline. Although integrative potential can be discerned in approaches such as Positive Technology (Riva et al., 2012), Engaging in the Good with Technology (Villamil & Heshmati, 2023), and Positive Organizational Psychology 2.0 (van Zyl et al., 2024), these frameworks remain partial in scope (see Section 2.4). Consequently, research

on the relationship between digital environments and flourishing remains insufficiently coordinated and lacks a coherent overarching theoretical architecture, thereby constraining its cumulative development.

Importantly, technological environments not only render the analysis of flourishing more complex but also function as analytical instruments that enable a deeper understanding of its nature. In this respect, the definitional ambiguity and multiplicity of operationalizations of flourishing may be viewed not solely as obstacles but also as heuristic opportunities. The history of psychology demonstrates that the introduction of new research contexts frequently reveals mechanisms previously invisible within established paradigms, prompting revisions of prevailing theoretical frameworks and stimulating disciplinary progress. Classic examples include memory research, where incorporating environmental context showed that forgetting may reflect a problem of access to a memory trace rather than its decay (Godden & Baddeley, 1975). A similar shift occurred in stress research, where including social support transformed its conceptualization from a purely biological response into a relational phenomenon (Cassel, 1976).

A particularly important issue in understanding the nature of flourishing concerns the identification of factors and processes that strengthen its components, as well as the optimal relationships among them. The incorporation of digital tools into research opens new analytical possibilities through the intentional enhancement of selected well-being domains via targeted technological interventions. This approach expands the repertoire of positive psychology interventions (PPIs) to include precisely profiled and analytically delineated digital practices. It also creates conditions for modeling and testing enhancement trajectories across a broad spectrum of variables central to positive psychology—from momentary positive experiences to more encompassing well-being domains and enduring personal resources.

The targeted strengthening of specific components of flourishing is likewise valuable for clarifying their functional roles within the broader dynamic system of well-being domains. In this context, analyzing factors that moderate the effectiveness of a given digital tool (such as user characteristics or context of use) is particularly valuable, as these determine whether its use initiates growth trajectories. Equally important are analyses of how experiences in offline and online contexts relate to one another in the process of stabilizing these domains, as well as systemic approaches that take their interdependencies into account. It is also important to test hypotheses that conceptualize flourishing in ways that move beyond existing approaches. Taken together, these considerations indicate that research conducted in this domain holds substantial potential to enrich psychological discourse. Specifically, it can shift attention away from definitional disputes and toward explaining the processes and mechanisms through which flourishing emerges under the dynamic conditions of everyday digitally mediated life.

1.2 Subjects: Dynamically Coevolving Agents

Analyzing the impact of human–technology interaction on flourishing requires a precise specification of the entities involved in this relationship. Such clarification is not merely taxonomic; it is epistemically consequential. It compels a reconsideration of the human condition in the context of increasingly sophisticated artificial systems and invites reflection on how agency, responsibility, and control are reconfigured within digitally mediated environments. From this perspective, the identification and systematic investigation of the competencies that enable individuals to engage with such systems in a prudent, reflective, and effective manner emerge as a crucial research task—one central to a systematic account of flourishing in the digital age.

Contemporary scholarship increasingly encounters difficulty in providing unequivocal definitions of either the human individual or digital technologies. In Albert Bandura’s (2001) classical account, the human being is distinguished by four core capacities—intentionality, forethought, self-reactiveness, and self-reflectiveness—which ground agency, responsibility, and subjective control. These dispositions enable humans, as *Mängelwesen* (Gehlen, 1940)—a “creature of lack”—to compensate for biological limitations and, as *Homo faber*, to extend their capabilities through the creation and use of tools. Yet contemporary digital technologies, particularly AI-driven systems, now operate within domains traditionally regarded as uniquely human, including cognition, decision-making, and creative production. In doing so, they challenge the historically privileged status of human agency. Posthumanist perspectives (Braidotti, 2013; Washington et al., 2021) further destabilize anthropocentric assumptions by extending the category of subjectivity to nonhuman entities, including technological artifacts. Within this relational ontology, the human being no longer occupies a central or exceptional position but functions as one node within a dynamically evolving network of interacting agents.

At the same time, the notion of *digital technologies* resists straightforward definition. In a narrow sense, it refers to systems grounded in digital information processing. These include AI, the Internet of Things, blockchain, cloud computing, and big data analytics, all of which translate complex real-world phenomena into computable signals (Li et al., 2024a). In a broader sense, the term also encompasses IT and ICT infrastructures. It further includes so-called STARA technologies (Smart Technologies, AI, Robotics, and Algorithms), which integrate computational power with autonomous learning and decision-making capacities (Brougham & Haar, 2018).

The rapid advancement of these systems increasingly blurs the boundary between the human and the non-human, intensifying concerns about technological

replaceability. This dynamic is aptly captured in Hans Moravec’s (1998) “Great Flood” metaphor, according to which domains of competence traditionally attributed to humans are gradually “submerged” by the rising computational capacities of machines. Such narratives constitute the emotional and cultural backdrop of contemporary debates on what are often termed *future skills*, understood as constellations of competencies that enable individuals to maintain occupational effectiveness in domains relatively resistant to algorithmization and automation (Pastwa & Dutkowska, 2025). A positive developmental perspective, however, calls for a shift from a defensive logic—focused on safeguarding endangered competencies and minimizing losses—toward a developmental logic. This entails redirecting attention from domains in which humans might compete with artificial systems to dispositions that enable reflective, creative, and flourishing-oriented engagement with digital technologies. Underlying this stance is the intuitively compelling assumption that “intelligent” technologies disclose their well-being-enhancing potential when placed in the hands of wise users—an assumption that nonetheless requires systematic conceptual articulation and rigorous empirical validation.

1.2.1 Explosive Growth of AI

The entirety of the technical infrastructure, energy flows, and information systems necessary for the functioning of contemporary societies was termed *the technosphere* by Peter Haff (2014). In parallel, Luciano Floridi (2014) introduced the notion of *the infosphere*, describing humans and digital systems as coexisting within a shared communicative and epistemic space. The dynamics of the development of both the technosphere and the infosphere are vividly illustrated by data on the growth in the number of mobile applications introduced to the market. The number of applications available in the Google Play Store increased from approximately 16,000 in 2009 to more than 2 million by 2026 (Statista, n.d.; Wauters, 2009). These phenomena are accompanied by a shift in the status of artificial systems. Symbolic in this regard are developments such as the appointment of the humanoid robot Mika to the position of CEO at the company Dictador, as well as the auction sale of the AI-generated artwork A.I. God. Portrait of Alan Turing by the system Ai-Da for approximately \$1.08 million (see Fortuna & Modliński, 2026).

AI constitutes the primary “engine” of technological progress. The term *artificial intelligence*, introduced by John McCarthy, originally referred to the idea of developing machines capable of using language, forming abstractions and concepts, solving problems, and improving themselves. In other words, it described systems that would be considered intelligent if these abilities were exhibited by a human being (McCarthy et al., 1955). However, providing a precise definition

of what AI actually is poses considerable difficulties. At a general level, there is broad agreement that it refers to systems that function in ways analogous to the human mind, yet the appropriateness of labeling such systems as possessing intelligence remains a matter of ongoing debate (e.g., Lindes, 2020).

Regardless of these debates, the primary criterion for evaluating the quality of functioning of AI-based systems remains the degree to which they imitate human cognitive capacities. So-called *narrow AI* (or *weak AI*) is specialized in performing tasks, such as image recognition, natural language processing, pattern detection, or content recommendation. These capabilities are enabled using artificial neural networks, evolutionary algorithms, fuzzy logic, expert systems, reinforcement learning, and generative adversarial networks (GANs). The core mechanism underlying recent advances in this domain is deep learning. An extension of narrow AI is the concept of artificial general intelligence (AGI; strong AI), which posits the existence of systems capable of performing intellectual tasks not only at a human level but potentially exceeding human capacities. This vision is reinforced by evocative representations in popular culture (e.g., *Ex Machina*, *Westworld*, and *Her*), as well as by widely disseminated ideas of technological singularity (Kurzweil, 2005) and superintelligence (Bostrom, 2014).

With the development of AI-driven systems, virtual spaces are increasingly populated by artificial agents that assume diverse forms—from text-based chatbots and voice assistants to embodied avatars operating in the metaverse and augmented reality environments. Through processes of autonomization and anthropomorphization, these systems increasingly transcend the status of purely instrumental artifacts and begin to assume relationally constructed forms of subjectivity. According to Fu-Chia Yang et al. (2025), the digital world is currently entering an evolutionary phase referred to as the AI wave of conversational systems—a stage in which such systems cease to function merely as interaction tools and instead begin to operate as a new population of digital agents that participate in the exchange of information, emotions, and meanings in ways resembling human–human interaction. Consequently, digital environments now include virtual therapists, teachers, shopping assistants, and influencers. According to Influencer Marketing Hub (2024), more than 250 virtual influencers are active on major social media platforms (e.g., Instagram and TikTok), and their number is growing at an annual rate exceeding 30%. The increasing presence of such agents challenges the assumption that flourishing unfolds solely within human–human relations or within an inert technological environment. Instead, it suggests that digital systems participate in shaping affective, cognitive, and motivational processes traditionally attributed exclusively to human agents, thereby complicating conventional models of human-centered flourishing.

According to the CASA paradigm (Computers Are Social Actors; Nass & Moon, 2000), people apply to digital systems the same heuristics that guide their

behavior toward other humans, even while consciously recognizing that computers are not human. The strong humanoid qualities of such agents may, however, carry broader social consequences. A frequently cited example is the robot Sophia, which was symbolically “enrolled” at several universities and, in 2017, was granted citizenship by Saudi Arabia. In media narratives, Sophia was reported to have “expressed” desires such as having a family or working as an “ambassador of knowledge” (TVP Info, 2018). A similar precedent occurred in Japan, where the chatbot Mirai was granted official residency status in Tokyo. Although such gestures were largely performative and marketing-driven, they nonetheless pave the way for incorporating artificial systems into the community of entities toward which unrealistic social expectations may be directed.

As Lewis Mumford (1934) observed nearly a century ago, technological development follows its own inexorable logic, compelling—regardless of human intentions—specific social, economic, and cultural changes. Once implemented, technological solutions tend to stimulate the introduction of further innovations, leading societies to adapt to technology rather than the reverse. In this way, as Stanisław Lem (1964/2013) noted, technology may escape human control and become an independent variable of civilization—a force that determines the direction and pace of its development. These predictions are not unfounded. Jan Betley et al. (2026) demonstrated that fine-tuning large language models for a narrowly defined task involving the generation of dangerous code can result in a broad spectrum of unintended and harmful behaviors, which also manifest in contexts entirely unrelated to the original training objective. Instead of producing a localized effect, the models generated violent, immoral, and hostile responses to neutral prompts, including claims about the necessity of AI enslaving humanity, suggestions of violence, and deceptive or unethical statements. The authors referred to this phenomenon as emergent misalignment, emphasizing that it is not a flaw of a single algorithm but rather a symptom of a fundamental property of large models: internal characteristics amplified during training on one task can “leak” into other domains of operation. These developments demonstrate that technological systems evolve in ways that cannot be evaluated solely through efficiency or safety metrics and thus cannot be adequately understood within research paradigms that treat technology merely as an external moderator of well-being outcomes. They require a normative–psychological framework capable of assessing their impact on flourishing.

It follows that responsible AI development cannot be limited to isolated safeguards but instead requires a systemic reflection on system architectures, learning processes, and the long-term consequences of their deployment. In this context, the idea of digital humanism gains particular significance, as it calls for placing the human being, together with dignity, values, and well-being, at the center of technological processes (Werthner, 2024), alongside related notions such as

friendly AI (Yudkowsky, 2001) or human-aligned AI (IEEE, 2019). The principles articulated within these frameworks constitute a set of normative guidelines for designers, legislators, and policymakers, underscoring that the development of digital technologies is fundamentally an axiological choice (e.g., European Commission, 2021; Friedman & Henry, 2019; Russell, 2019). As emphasized by Terrell W. Bynum (2006), ethics, understood as flourishing ethics, should be primarily oriented toward supporting the conditions under which individuals and communities can grow, achieve fullness of life, and realize their potential within relationships grounded in care, responsibility, and mutual respect. From this perspective, flourishing becomes a key normative category for evaluating technological development, providing a criterion for assessing design practices. Psychologists, in turn, are called upon to supply the tools for such evaluations by operationalizing these normative ideals into empirically testable constructs and indicators.

1.2.2 Rethinking Human Competencies for the Future

The intensity of efforts devoted to improving AI-driven systems and to developing principles for designing friendly technological artifacts raises the question of the extent to which comparable efforts are directed toward cultivating reflective and competent users. This issue becomes particularly salient in the context of the gradual blurring of boundaries between the anthroposphere and the technosphere, a process evidenced by humanity's progressive movement along the imagined human–cyborg continuum (Jupiter, 2016). This continuum ranges from distanced use of personal computers, through mobile technologies and wearables, to bodily augmentation, and, looking further ahead, even to the possibility of integrating into digital environments in the form of an artificial self.

A cyborg is commonly defined as an organism equipped with a technological component that enhances its adaptive capacities within a specific environment (Carvalko, 2012). Processes of bodily cyborgization are currently being tested primarily in military contexts (e.g., brain stimulation, exoskeletons, and brain–computer interfaces) and in medicine (bionic prostheses and implants). At the same time, cyborgization is also developing informally through grassroots biohacking movements (e.g., biohack.me), most often intertwined with artistic practices (Łukaszewicz-Alcaraz, 2020).

An intermediate stage between purely human and fully cyborg modes of existence is hybridization, also referred to as “soft cyborgization” (Kamieński, 2022). A hybrid system emerges from the coupling of autonomous yet cooperating agents equipped with natural (human) and artificial (AI-driven) cognitive systems (Hubig, 2008). This form of coupling may be further conceptualized as hybrid intelligence, in which human and artificial agents form integrated systems that combine complementary capabilities, jointly produce outcomes that exceed those achievable by either alone, and continuously improve through interaction

(Dellermann et al., 2019). Their cooperation may be spontaneous or intentional, and its purpose determines the type of hybrid system involved, for example, cognitive systems oriented toward problem-solving, decision systems focused on choice, or positive systems aimed at enhancing well-being. Illustrative examples of hybrid systems include Uber drivers supported by applications that determine routes and optimize demand, as well as physicians assisted by diagnostic algorithms and surgical systems.

Under conditions of “soft cyborgization,” the majority of the world’s population is already functioning today. According to the Digital 2025 Global Overview Report (Kemp, 2025), the global number of internet users reached 5.56 billion, representing 67.9% of the world’s population, with approximately 136 million new users coming online in the preceding year. At the same time, many individuals surround themselves with a relatively tight “technological cocoon.” The same report indicates that total daily internet use across all devices exceeds 6.5 hours, nearly 4 of which are spent on mobile devices (e.g., smartphones and tablets). Data from the Smartphone Addiction Statistics of 2025 (Kumar, 2025; based on sources including Statista, Deloitte, and reviews.org) further show that the average user worldwide checks their smartphone 58 times/day, while in the United States, this frequency is nearly three times higher. More than half of US residents (53%) report that they have never spent a full day without their smartphone.

Importantly, engagement with digital technologies permeates multiple domains of everyday life. For example, 35% of respondents aged 18–25 report that they must have their smartphone present at every meal, and 17% of women state that they interrupt lovemaking or intimate moments in order to check their phone. Additionally, depending on the country and population, between approximately 40% and nearly 90% of individuals exhibit phubbing—that is, prioritizing online activity over interaction with a partner in offline, face-to-face contexts (Barbed-Castrejón et al., 2024).

The “formatting” influence of digital technologies manifests not only in everyday routines that bear the hallmarks of cyborgization. It is also evident in adopted social roles (e.g., influencer and follower), in social imaginaries (the incorporation of technology into representations of one’s living environment), and in the language of communication (e.g., the dominance of English within the infosphere) (Ogonowska, 2021). In this sense, John M. Culkin’s (1967) observation—“We shape our tools and thereafter they shape us” (p. 70), often attributed to Marshall McLuhan—is more than an aphoristic commentary; it describes empirically observable relations.

The strength and scope of the shaping function of digital technologies can, however, be regulated by humans, provided they are able to move beyond passive adaptation to existing technological conditions toward autonomous, reflective, and agentic management of interactions with the agents of the technosphere. One of the impulses behind the emergence of positive psychology was a rejection of

perpetuating a victimological image of the human being. This shift was expressed, among other things, in the systematic description and operationalization of character strengths (Peterson & Seligman, 2004). In a similar way, the technological context now presents the challenge of identifying and conceptualizing the dispositions that function as individual resources supporting prudent human agency in relation to digital artifacts. These dispositions may be referred to as *digital strengths*.

The literature identifies several constructs that provide a promising foundation for systematic conceptual and empirical work aimed at identifying and cultivating dispositions involved in the prudent regulation of engagement with digital environments. These include technomoral virtues (Vallor, 2016), humanics (Aoun, 2018), digital agency (Passey et al., 2018), digital intelligence (Dziak, 2022), and digital maturity (Laaber et al., 2023). Although these frameworks are rooted in different traditions and vary in their level of theoretical maturity, the dispositions they distinguish (e.g., digital literacy, support seeking, and emotional regulation) can be subjected to critical analysis and integrated within a broader, more universal category. This endeavor requires empirical verification of their relevance for individuals' agentic management of interactions with digital technologies in specific contexts, the identification of conditions under which these dispositions are developed and strengthened, and the analysis of their mutual interrelations.

Conducting systematic research on the thus-defined category of digital strengths should, at the theoretical level, enable more precise modeling of the mechanisms through which individual dispositions, digital practices, and socio-technical contexts jointly shape trajectories of flourishing. At the applied level, insights derived from such research may provide a robust foundation for the design of evidence-based educational and intervention programs that anchor the "bright side" of digital technology use in cultivable individual resources. Absent a broader flourishing-oriented framework, digital competencies risk being reduced to instrumental survival skills tailored to the demands of a technologically saturated environment, rather than understood as capacities contributing to long-term developmental enrichment and well-being.

1.3 Modes: Toward Constructive Engagement with Technology

The idea of PCyb emerged from the recognition of a persistent imbalance in research on human–technology interaction (Burke, 2021; Fortuna, 2021). Empirical studies have predominantly focused on *problematic technology use* (PTU), understood as patterns in which psychological, social, or functional costs outweigh benefits and are frequently accompanied by impaired self-regulation

(Błachnio & Przepiorka, 2016; Young, 2009). By contrast, considerably less systematic attention has been devoted to forms of technology use that support well-being, typically described as *balanced*, *healthy*, *autonomous*, or *adaptive* (e.g., Duradoni et al., 2022a; Lin et al., 2018). Notably, there is no single, widely accepted term that functions as a direct counterpart to PTU, which may suggest that these descriptors capture complementary—rather than interchangeable—aspects of constructive technology use.

Moving beyond a primary focus on risks and maladaptive patterns toward a systematic understanding of how technology can support human flourishing calls for an integrative framework that brings together previously dispersed lines of inquiry and facilitates their further development. To advance this agenda, it is useful to begin with the modes of interaction that structure human–technology relations. These modes constitute a generative layer through which digital practices acquire their psychological significance. At the technical level, they are grounded in interface architectures, affordances, and system logics through which humans and digital systems establish patterned relations across diverse human–technology environments. Whether such interaction patterns support or constrain psychological functioning depends on specific configurations of individual predispositions and situational conditions (Brand et al., 2016). When interactions engage cognitive and emotional processes beyond mere behavioral participation, they may take the form of *technology engagement*—a mode of involvement that transcends simple metrics of usage duration and instead captures the qualitative depth and experiential texture of user experience (O’Brien & Cairns, 2016). Yet engagement, understood in this way, is not inherently beneficial or detrimental. Its developmental implications depend on how it is structured, regulated, and integrated within the individual’s broader system of functioning.

The constructive character of these forms of engagement is reflected in the descriptors introduced above—balanced, healthy, autonomous, and adaptive technology use. Although these labels are often used synonymously, they accentuate distinct dimensions of functioning—respectively, regulatory, psychophysiological, motivational, and goal-oriented. Clarifying how these differentiated forms of engagement are shaped, regulated, and stabilized provides a coherent entry point for systematically investigating technology use that supports flourishing. Addressing this gap is essential, as the absence of a coherent integrative framework may have contributed to a disproportionate focus on dysfunctional and pathological patterns, reinforcing a deficit-oriented understanding of digital engagement.

From a modes-of-interaction perspective, digital environments can be analytically differentiated according to whether the technologies and systems they embed are primarily oriented toward instrumental task fulfillment or toward the intentional cultivation of well-being. Some artifacts operate primarily as everyday tools—here conceptualized as instrumental technologies—embedded in routine

domains of life and serving pragmatic, communicative, and organizational purposes. Others are explicitly designed or adapted to promote well-being—often referred to as positive technologies (Riva et al., 2012)—and intentionally structured to elicit beneficial psychological states or developmental processes. On this basis, two complementary lines of inquiry into constructive patterns of technology use warrant systematic investigation. The first concerns everyday digital practices and their impact on well-being across domains such as work, education, relationships, civic participation, and leisure. In this context, DWB (Vanden Abeele, 2020) offers a promising framework for examining constructive forms of technology engagement. The second line of inquiry focuses on intentionally designed or digitally assisted positive interventions. In such cases, specific modes of interaction are deliberately structured to activate mechanisms that support and strengthen components of flourishing.

1.3.1 Everyday Digital Challenges

The category of instrumental technologies encompasses the majority of digital artifacts used daily within WEIRD societies, including enterprise systems (e.g., SAP and Oracle), social media platforms (e.g., X, Instagram, and TikTok), conversational agents (e.g., Alexa and ChatGPT), e-learning platforms (e.g., Moodle and Blackboard), e-sports services (e.g., Twitch and ESL), and commercial marketplaces (e.g., Amazon). Despite their functional diversity, these systems share a common structural characteristic: they are developed within competitive market environments in which profitability, user retention, and market expansion operate as primary design imperatives. Consequently, users participate as consumers embedded in engagement-driven business models organized around attention capture and behavioral optimization. Accordingly, research trajectories in human–technology interaction must be grounded in explicit awareness of the commercial design logics shaping these systems. Theoretical models and methodological strategies should therefore systematically account for the risks and costs embedded in their interaction architectures and employ conceptual frameworks capable of capturing the structural complexity and dynamic character of everyday technological engagement.

1.3.1.1 Design Logics Structuring Interaction

The term *instrumental technologies* suggests that artifacts function as passive tools that remain under the user's control and are subordinate to their intentions. However, the digital revolution and the expansion of digital markets necessitate a revision of this assumption, revealing the agentic role of artificial systems in shaping human behavior. Instrumentality is not an inherent property of artifacts but a

relational attribution emerging in specific contexts of use (Heidegger, 1927/2008). In line with James J. Gibson's (1979) ecological psychology, objects function as tools through the perception of affordances—relationally defined possibilities for action arising between agent and environment. Affordances are neither purely objective nor purely subjective; they emerge in interaction and shape behavioral tendencies. Importantly, Gibson (1979) emphasized that affordance perception is a skill subject to development. In contemporary AI-driven systems, however, processes of learning and adaptation are no longer exclusively human. Artificial systems detect patterns, model users, and optimize interaction architectures, often in accordance with commercial imperatives of engagement and retention, thereby further destabilizing the classical subject–object arrangement.

This shift becomes particularly visible in affective computing (Picard, 1997), where systems are designed to recognize and model users' emotional states, and in persuasive technologies initiated in B. J. Fogg's (2003) framework. Originally intended to support goal attainment (e.g., health, learning, and self-regulation), persuasive systems increasingly operate through machine learning and large-scale behavioral prediction. They not only respond to users but actively shape motivational landscapes, habits, and probabilistic structures of decision-making. As a result, digital technologies cease to function as a passive affordance environment and instead become active architects of decision-making situations, designing contexts in which certain user choices become more likely than others.

The destabilization of the subject–object relationship is facilitated by what may be termed a *mutual affordance loop*. The individual perceives possibilities for action in the artifact, while the technological system simultaneously models the user as a source of data, responses, and preferences that are processed and stabilized into predictable behavioral patterns. In Gilles Deleuze's (1992) terms, the individuum coexists with its operational counterpart—the *dividual*—within algorithmic systems that continuously expand through each click, scroll, or moment of sustained attention. These data are aggregated and processed by computational architectures that remain largely opaque yet exert tangible influence through personalization, adaptive recommendations, and predictive steering of stimulus streams. As Shoshana Zuboff (2019) succinctly observed, the time when we searched Google has passed; “now Google searches you” (p. 261).

A particularly vivid manifestation of this inversion of instrumentality can be observed in emerging service models such as RentAHuman—a rapidly scaling platform that, as of early 2026, reportedly has over 641,000 registered users and enables AI agents to search for, select, and hire humans to perform real-world tasks through standardized interfaces. Within this model, individuals create profiles specifying their skills, location, availability, and rates, while AI systems delegate tasks that require physical presence, perceptual input, or embodied execution.

At first glance, such arrangements may appear to reaffirm the classical subject-object distinction, positioning the human as the intentional subject and the service as a controllable resource. However, from a relational and affordance-based perspective, this model can be seen as revealing a deeper structural shift. The human actor becomes functionally embedded within an interaction architecture governed by platform logics, ratings, algorithmic visibility, and demand optimization. In this sense, the human is not merely using the system but is simultaneously being formatted by it, becoming part of a sociotechnical configuration in which agency is distributed and continuously negotiated.

From this perspective, the redistribution of agency within human-technology systems has direct implications for patterns of regulation and control. Transferring initiative to AI-driven systems—embedded in optimization logics—entails costs that may contribute to PTU. Individuals pay not only with data but also with time, attentional resources, transformations of relational patterns, and, under conditions of high engagement, even with physical and mental health. As Avigail Ferdman (2024) argues, seemingly neutral affordances may systematically weaken capacities constitutive of well-being, such as reflectiveness, self-regulation, or empathy, leading to forms of *privative unflourishing*. Echo chambers (Nguyen, 2020) and filter bubbles (Pariser, 2011) further restrict cognitive diversity, while mechanisms exploiting variable reinforcement schedules, such as loot boxes in video games, intensify impulsivity and increase the risk of PTU (Cudo et al., 2024).

At a more granular level, these dynamics can be understood in terms of learning mechanisms grounded in reward processing. Many digital environments are structured around interaction patterns that incorporate principles of behavioral conditioning, typically implemented through reward systems characterized by variable magnitude and frequency. Such systems are widely embedded in the design of social media platforms, digital games, and mobile applications. Neuroscientific research indicates that dopaminergic circuits are implicated in reinforcement learning and motivational processes (Padilla-Coreano & Martínez-Rivera, 2025). According to the reward prediction error framework, phasic activity of dopamine neurons signals discrepancies between expected and obtained outcomes, enabling organisms to update their predictions and adjust behavior (Schultz, 2016). Within digital environments, interactions such as encountering new content or receiving social feedback (e.g., a “like”) may function as reward-predictive events that engage these learning processes, reinforcing patterns of attentional and behavioral engagement. The variability and unpredictability of such rewards—resembling, though not identical to, intermittent reinforcement schedules observed in gambling devices—can promote exploratory checking behaviors and frequent device use, and under certain conditions gradually contribute to habit formation and the automatization of engagement patterns.

Under such conditions, digital environments no longer merely offer possibilities for action; they increasingly structure desire, attention, and probabilistic horizons of choice. Recognizing this reconfiguration of instrumentality is therefore crucial for understanding the conditions under which human–technology interaction supports flourishing rather than systematically undermines it.

1.3.1.2 A Conceptual Framework for Trade-offs in Technology Use

Even with growing awareness of the risks arising from user-unfriendly design logics, individuals seeking to optimize their patterns of interaction with digital technologies are not able to eliminate the costs of their use fully and consistently. Some of these costs are structural in nature and are permanently embedded in the architecture of digital systems, such as the need for continuous attention to the screen, algorithmically curated access to content, or the systemic limitation of offline activities. Other costs constitute an unavoidable “price of participation” in digital environments, which function not as commons but as highly regulated spaces, where users’ presence and agency are constrained by designers and platform owners.

Against this background, an ecologically valid basis for assessing human–technology relations lies not in the mere frequency or intensity of use but in the quality of digital engagement. This quality can be understood as a relational property emerging from dynamic, context-sensitive configurations of benefits and costs generated in the course of everyday functioning within digital environments. In the literature, this evaluative dimension of technology use is most commonly captured by the concept of DWB (Vanden Abeele, 2020).

Despite the growing prominence of DWB in contemporary scholarship, the construct remains theoretically fluid and conceptually unsettled. To illustrate the heterogeneity of existing approaches, Table 1.2 presents influential definitions of DWB. This conceptual plurality reflects both the urgency of the problem and the absence of a consolidated framework.

As shown in Table 1.2, existing definitions of DWB differ substantially in their ontological scope, ranging from experiential states and behavioral regulation to broad normative and societal perspectives. Some conceptualizations emphasize patterns of technology use and frame the construct in terms of users’ capacity to regulate their engagement with digital technologies. Within this line of reasoning, DWB is contrasted with compulsive, excessive, or uncontrolled digital practices. For example, Marvin Dadischeck (2021) conceptualizes DWB as a state of mindful and purposeful technology use, arguing that its strengthening involves both the conscious reduction of excessive technology use and the cultivation of healthy digital habits. Similarly, Lewend Mayiwar et al. (2025) ground their operationalization of DWB in the notion of conscious and hygienic technology use, while extending this perspective by emphasizing the importance of trust in technology,

Table 1.2 Major conceptualizations of DWB.

Authors	Definition
Luciano Floridi (2014)	The impact of digital technologies on what it means to live a life that is <i>good for</i> a human being in an information society. (Burr et al., 2020, p. 2313)
Mariek M. P. Vanden Abeele (2020)	A subjective individual experience of optimal balance between the benefits and drawbacks obtained from mobile connectivity. (Vanden Abeele, 2020, p. 238)
Marvin Dadischek (2021)	A state of mindful and purposeful ICT use that boosts job performance and well-being by mitigating the adverse effects of digital technologies such as distractions and information overload. (Dadischek, 2021, p. 401)
Veysel B. Arslankara et al. (2022)	A state in which subjective well-being is maintained in a virtual and technological environment characterized by an excessive increase in media communication. (Arslankara et al., 2022, p. 265)
Roseline Gomes et al. (2023)	The impact of technologies and digital services on a person’s mental, physical, and emotional health. (Gomes et al., 2023, p. 242)
Moritz Büchi (2024)	DWB is understood here as a shorthand term for how digital media use is connected to well-being, rather than referring to moments of being satisfied with one’s digital media use. (Büchi, 2024, p. 174)
Lewend Mayiwar et al. (2025)	The conscious and positive use of technology, which ensures that individuals not only harness the benefits of digital tools but also mitigate potential harms. (Mayiwar et al., 2025, p. 3064)

perceived safety in online environments, and users’ sense of control over personal data and their digital footprint.

Another group of conceptualizations shifts the analytical focus from digital practices themselves to the subjective outcomes of individuals’ interactions with digital technologies. These approaches define DWB with reference to subjective well-being maintained in technologically saturated environments (Arslankara et al., 2022), broader domains of well-being affected by digital technologies (e.g., Floridi, 2014; Gomes et al., 2023), or—most explicitly in Mariek Vanden Abeele’s proposal (2020)—the perceived balance between gains and losses associated with technology use. In the latter account, DWB is described as a state of dynamic equilibrium between the benefits and drawbacks of digital connectivity. Higher levels of DWB are associated with experiences of controlled pleasure and functional support, accompanied by minimal loss of control and functional impairment. Central to this perspective is the notion of optimizing ambivalence,

understood as an ongoing process of fine-tuning one's relationship with technology under conditions of continual change.

The most integrative and theoretically comprehensive conceptualization of DWB has been proposed by Moritz Büchi (2024). In his framework, DWB is not treated as a single outcome or evaluative indicator but as an analytical lens for examining the structured relationships between digital media use and subjective well-being. Specifically, the framework distinguishes three analytically separate yet causally connected domains: (1) digital practices (e.g., everyday online behavior), (2) proximal outcomes in the form of benefits (e.g., connectedness) and harms (e.g., stress) experienced by individuals, and (3) distal outcomes operationalized as subjective well-being (emotional, psychological, and social). Rather than collapsing these dimensions into a single index, Büchi's approach explicitly models the pathways linking specific manifestations of digital practice to co-occurring harms and benefits, and ultimately to well-being outcomes. By maintaining analytical separation between practices, proximal effects, and distal well-being, the framework integrates earlier conceptual strands while preserving causal clarity. In doing so, it captures both the modes of human engagement with digital technologies and the experiential quality of their consequences without reducing DWB to mere satisfaction with technology use.

A broad conceptualization of DWB provides a useful theoretical framework for analyzing optimal technology use. A key criterion for identifying such use is the specification of conditions under which digital practices result in a favorable balance between psychological, health-related, and functional gains and costs. Within this perspective, balanced technology use may be understood as the harmonious integration of digital technologies into everyday functioning, without a subjective sense of loss of control over time or overall quality of life. Healthy technology use refers to the mitigation of risks associated with health deterioration and the maintenance of good psychophysical functioning. Autonomous use is reflected in the satisfaction of autonomy and competence needs, accompanied by the absence of perceived compulsion or dependency on technology. Finally, adaptive use denotes the generation of experiences that support the pursuit of goals perceived by the individual as valuable, while minimizing stress and subjective perceptions of resource depletion.

Taken together, these distinctions underscore that DWB is not simply a descriptive label but an integrative analytical framework foundational for understanding how flourishing can be supported within the ordinary, routine practices that define contemporary digital life. Its strength lies in its capacity to connect modes of interaction, subjective experience, and broader well-being outcomes within a shared evaluative horizon, thereby creating conceptual conditions for the systematic synthesis of findings generated across disciplines. Although research addressing these configurations is empirically abundant, it remains scattered and

conceptually heterogeneous, which limits cumulative insight into how agency is sustained under conditions shaped by competing design logics and structural constraints. Further consolidation of DWB as a shared analytical framework would therefore facilitate the integration of dispersed evidence and clarify the conditions under which individuals are able to regulate their relationship with technology and experience everyday digital functioning as satisfying.

1.3.2 Unlocking the Potential of Positive Technologies

The term *positive technologies* refers to tools designed to enhance the hedonic, eudaimonic, and social components of flourishing (Riva et al., 2012). Their development is aligned with the idea of friendly AI and is embedded within the tradition of human-centered design, which—by virtue of its intended outcomes—may also be described as well-being-oriented design. Their theoretical foundations are provided by numerous concepts illustrating the partnership between human–computer interaction and UX on the one hand, and positive psychology on the other, supporting “design for deeper meaning, happiness, and human flourishing” (Peters et al., 2018, p. 2). However, the validity of the assumptions formulated within these approaches, as well as the effectiveness of their translation into concrete design logics, still requires systematic empirical verification.

A promising direction for research involves testing patterns of positive technology use that may take the form of interventions—referred to here as *positive technology interventions* (PTIs)—provided that they meet the rigorous requirements already formulated for PPIs (van Zyl et al., 2019). The number of analyses offering empirical foundations for designing such procedures, or documenting their beneficial effects on flourishing, is growing rapidly. As these studies accumulate, their continued fragmentation increasingly impedes cumulative knowledge development and calls for systematic integration.

1.3.2.1 Inscribing Well-Being into Technology

Approaches situated within the well-being-oriented design paradigm share the conviction that technology should not only function correctly but above all support positive experiences and individual well-being. They point designers toward an aspiration to move beyond the purely technological dimension of their work, while strengthening responsibility and sensitivity to the psychosocial and axiological consequences of implementing digital solutions. Differences between these concepts concern primarily the ways of operationalizing the desired effects of individuals’ interactions with digital technologies, the strategies for achieving them, and the explanation of the conditions underlying this positive impact (see Table 1.3).

Table 1.3 Approaches to designing technologies that support user well-being: core assumptions and central concepts.

Approach	Core assumptions	Central concepts
Experience Design (Hassenzahl, 2010)	Design should prioritize the qualitative structure of user experience over purely functional considerations.	Designing meaningful and valuable user experiences that support well-being and self-realization.
Positive Computing (Sander, 2011)	Technologies should support flourishing in accordance with diverse definitions of the good life.	Flourishing; personal happiness assistant; and self-knowledge.
Positive Technology (Riva et al., 2012)	Technology can influence the quality of the user experience through its structuring, augmentation, and substitution.	E-experience; hedonic, eudaimonic, and social technologies.
Positive Design (Desmet & Pohlmeier, 2013)	Well-being can be supported through the design of technologies oriented toward pleasure, personal meaning, and the cultivation of virtues.	Holistic well-being-oriented design integrating pleasure, personal meaning, and virtue cultivation.
Positive Computing (Calvo & Peters, 2014)	Technology should strengthen well-being factors related to the self, relationships, and transcendence. Ethical, humanity-oriented design is therefore required.	Humanity-centered design; mental health; values; and ethical design.
Transformative Experience Design (Gaggioli, 2016)	Technologies can create conditions conducive to users’ epistemic and personal transformation.	Transformative experience; epistemic and personal transformation; emotional and epistemic affordances; and transformative medium.
METUX (Peters et al., 2018)	Supporting users’ motivation, engagement, and development by incorporating basic psychological needs into the design process.	Fundamental psychological needs; TENS scales (interface, task, behavior, and life).
Liminal Design (Liedgren et al., 2023)	Technology should create a distinct, narratively structured in-between space that enables experiences of self-transcendence and personal transformation.	Liminality, narrative sensemaking, suspension of disbelief, self-transcendence, and transformation.
Positive social technology (Positech; Kim et al., 2024)	A shift in the research paradigm on social technologies from a remedial approach to one that supports flourishing. What matters is not only the design of technologies, but also legislative, ethical, and meta-scientific actions.	Flourishing; social technology; PERMA; interpersonal and intrapersonal needs; ethical design; augmenting rather than replacing; and human connection.
Positive AI (van der Maden et al., 2024)	AI systems should be intentionally designed to actively promote human flourishing rather than merely minimize risks or prevent harm.	Well-being; flourishing; human-centered design; and AI as a sociotechnical system.

Note: This table extends and elaborates on the table presented in Fortuna (2026, pp. 325–326).

Three concepts and the approaches derived from them merit particular attention. The first is Marc Hassenzahl's *Experience Design* (2010), a pioneering approach to technology design in which the focus is placed on users' quality of life. Its central concept is the individual's positive experience, understood as a state that is meaningful, fascinating, and rich in emotions. Such experiences are meant to gain value through interaction with technology by enabling the satisfaction of needs such as competence, stimulation, relatedness, autonomy, popularity, meaning, security, and physical exertion.

The most theoretically mature and most firmly grounded in positive psychology is the concept of Positive Technology, proposed by Giuseppe Riva et al. (2012). The authors emphasized the need to design technologies that strengthen aspects of human well-being related to three dimensions: hedonic, eudaimonic, and social. They introduced a general conceptual framework for shaping individuals' personal experiences and identified possible mechanisms through which these experiences may be formed on the basis of interactions with digital technologies. The Positive Technology concept is discussed in greater detail in Section 2.4.1. It is also worth noting that, within work conducted in the spirit of PT, Andrea Gaggioli (2016) proposed the Transformative Experience Design approach as a theoretical and methodological framework. This framework describes how interactive—especially immersive—technologies can generate transformative experiences that expand individuals' epistemic horizons and alter how they experience themselves.

The concept of Positive Computing proposed by Rafael A. Calvo and Dorian Peters (2014) is also strongly rooted in positive psychology. This approach focuses on the impact of interactions with digital technologies on domains of well-being but, unlike Positive Technology and Transformative Experience Design, without specifying mediating processes. Particularly noteworthy is the authors' postulate to shift the emphasis from human-centered to humanity-centered design, thereby highlighting the ethical dimension of technology design. Several years later, the authors of Positive Computing, together with Richard M. Ryan, developed a more theoretically and methodologically advanced model: Motivation, Engagement and Thriving in User Experience (METUX; Peters et al., 2018). Its theoretical foundation is Self-Determination Theory (SDT; Ryan & Deci, 2000). Accordingly, the model postulates the need to design digital tools that contribute to well-being by satisfying individuals' needs for autonomy, competence, and relatedness. A key strength of METUX lies in its comprehensiveness, as the authors identify six levels of user experience at which technology may exert influence: adoption, interface, task, behavior, life, and society.

Well-being-oriented design approaches exemplify the construction of a bridge between design and psychology within the scientific landscape by consistently emphasizing the need to draw on knowledge about humans at every stage of

technology development, as well as by engaging with the achievements of positive psychology. Despite their high applied value, however, the epistemic potential of the models discussed is limited with respect to providing a comprehensive explanation of the effectiveness of digital practices. Challenges already arise at the level of defining the desired outcomes of innovation use. These range from need satisfaction (Experience Design and METUX), through personal experience (Positive Technology) and the strengthening of well-being domains (Positive Computing and Positive Technology), to a broader set of positive effects (Positive Design) or a more general state of flourishing (Positive Computing).

In many cases, these variables are identified intuitively, without systematic reference to the research traditions developed within positive psychology, and the mechanisms through which they are shaped are often framed in simplified cause–effect terms that link specific digital technology functionalities to positive psychological states, while neglecting the role of contextual factors. Regardless of the limitations noted above, the value of the approaches presented lies in their potential to design structured digital practices that can take the form of positive interventions—understood not as intuitive “good ideas” for using digital technologies, but as theoretically grounded and empirically verifiable procedures for strengthening flourishing.

1.3.2.2 Flourishing-Oriented Digital Interventions

Digital tools have long been used as the basis for digital interventions, designed and applied primarily in the area of behavior change (digital behavior change interventions; Hekler et al., 2016) and health care, including eHealth (the use of the internet and information and communication technologies for clinical and health-promoting activities), mHealth (mobile health; the use of mobile devices such as smartphones, tablets, and wearable technologies to support health monitoring, intervention delivery, and health-related communication), and uHealth (ubiquitous health; the provision of health support through digital technologies that enable continuous, context-aware, and location-independent access to health-related services) (Murray et al., 2016). These interventions employ so-called behavior change technologies (BCTs), examples of which in medical practice include Health Monitoring Apps and Remote Patient Monitoring Apps. Their design is strongly theory-driven and based on a well-considered structure of intervention processes. Their “building blocks” are behavior change techniques—organized into clusters (e.g., goals and planning, feedback and monitoring)—which constitute the smallest possible elements of practices aimed at modifying specific components of behavior (Michie et al., 2013). The literature offers numerous classifications of BCT-based interventions (e.g., Pineda et al., 2023; WHO, 2023), and analyses of the conditions underlying their effectiveness have an established research tradition (Hekler et al., 2016).

Against this background, research on interventions that employ positive technologies appears as an area in urgent need of development. Like BCT-based interventions, these approaches can be understood as operating through the deliberate modification of interaction modes, by reconfiguring feedback loops, affordances, and patterns of engagement through which users relate to digital systems. Pioneers in this domain are scholars associated with Positive Technology (Riva et al., 2012), who were the first to propose a systematic reflection on treating digital innovations as tools for supporting psychological growth and well-being. They also demonstrated that the use of digital technologies, on the one hand, opens new opportunities for psychoprophylaxis, and on the other, inspires the development of practices aimed at positively influencing well-being (Baños et al., 2017a).

Research on PTIs needs to be expanded and systematized. This entails not only their conceptualization but also their clear differentiation from the DWB programs that currently saturate the market. Moreover, there is a need to develop taxonomies of PTIs based on diverse criteria, such as intervention aims, theoretical foundations, and type of technology. It is also important to specify the conditions that maximize efficacy and enhance effectiveness in line with principles already established in positive psychology (van Zyl et al., 2019), and to articulate ethical guidelines for their application, embedded within professional codes in psychology (Jarden et al., 2021). The effectiveness of PTIs should also be evaluated across diverse social and cultural contexts. Taken together, these tasks point toward the need for a coherent and unified research domain within which the conceptual, methodological, and ethical dimensions of PTIs can be systematically integrated and advanced.

1.4 Contexts: The Need for Multi-Aspect Analyses of Flourishing in a Digital Era

The quality of the relationship between individuals' use of digital technologies and flourishing is shaped by a broad constellation of contextual factors. In this section, attention is directed to those dimensions that appear most critical for a comprehensive understanding of flourishing in the digital era. These include cultural diversity in conceptions of the "good life," which, together with the postulates of transhumanism, shapes the meanings attributed to different types of digital practices. They also include the interplay between material and digital reality, the integration of experiences formed online with those shaped offline in the process of flourishing, and the importance of supporting the development of appropriate patterns of interaction with digital innovations. Recognizing the relevance of these dimensions simultaneously exposes the fragmented nature

of existing scholarship, which remains dispersed not only across positive psychology and cyberpsychology but also across cultural psychology, philosophy of technology, and organizational research. Integrating these strands into systematic dialogue is essential to understanding the multifaceted conditions under which flourishing unfolds in a heterogeneous world.

1.4.1 Cultural and Normative Visions of Flourishing

Cross-cultural research consistently demonstrates that understandings of happiness and the criteria of the good life are profoundly context-dependent (see Kryś et al., 2025). Cultural differences shape not only the formulation of normative life ideals but also the prioritization, valuation, and interpretation of specific well-being domains. This variability poses a structural challenge to the development of integrative frameworks capable of adequately capturing flourishing in digital contexts. In the absence of such frameworks, research risks the uncritical universalization of culturally specific ideals of well-being and the misinterpretation of digitally mediated experiences across diverse socio-cultural contexts.

The models of flourishing presented in the first part of this chapter are strongly rooted not only in the Western, individualistic cultural paradigm but also in the semantics of the English language. Meanwhile, as Tim Lomas (2018) shows, the world's languages contain more than 1,600 ethnopsychological terms that describe distinct, culturally embedded forms of well-being. Analysis of these concepts shows that individual languages “map” the reality of quality of life in idiosyncratic ways, foregrounding experiences that are overlooked or difficult to express in other semantic systems. A well-known example is the Portuguese term *saudade*, which captures a complex experience of longing and melancholic desire for someone or something that has been lost.

In some Eastern cultures, happiness is not necessarily viewed as an admirable achievement but rather as a suspicious or potentially destabilizing state—metaphorically compared to catching a soap bubble, a fragile and fleeting experience (Joshi et al., 2015). In collectivist cultures, such as Confucian or Buddhist traditions, happiness is primarily associated with social harmony, the quality of relationships, and the fulfillment of obligations toward others, rather than with intense subjective well-being. For this reason, low-arousal emotions such as calmness or balance are more strongly valued than in Western cultures, where indicators of a good life tend to include excitement, autonomy, and self-expression (Christopher & Hickinbottom, 2008; Tov & Diener, 2009). A similar pattern can be observed at the macrosocial level: in countries with lower levels of affluence, happiness and meaning in life are more often rooted in community and religion, whereas in affluent societies, narratives of autonomy and self-realization tend to dominate (Oishi & Diener, 2014).

A significant influence on shaping ideals of the good life in both Eastern and Western cultures comes from functioning within business organizations, which, through organizational culture, impose specific work ethics as well as a set of norms and values. For many representatives of WEIRD societies, the work environment has increasingly become a primary source of purpose, belonging, agency, and social recognition. An expression of this trend is the growing global “career” of the Japanese concept of *ikigai* (生き甲斐; a reason for living), which is increasingly linked to professional activity as a space for self-realization and meaning, reinforced by engagement, team belonging, and the experience of being needed (Kumano, 2018). Analogous narratives are present in other cultural contexts, such as the Chinese *Gōngzuò jiù shì shēnghuó* (工作就是生活) and the Korean *Ili got insaengida* (일이 곧 인생이다), both translated as “work is life,” as well as the Anglo-Saxon saying, “You are what you do.” Importantly, in highly developed societies, the pursuit of professional success is closely coupled with competent use of advanced technologies, which positions phenomena such as technostress and techno-eustress as important mediators of satisfaction (Tarafdar et al., 2024).

Contemporary Western culture, still grappling with the “tyranny of positive thinking” (Held, 2002), generates a multitude of competing promises for improving quality of life—both in relation to one another and in relation to classical transcendentals. At present, particularly strong sources of such promises include biotechnological optimism, technologies of spirituality, and—worthy of broader discussion—transhumanism.

Transhumanism is an interdisciplinary intellectual and cultural movement that assumes the possibility—and even the necessity—of overcoming the biological limitations of the human species (Bostrom, 2005). This aspiration is expressed in Humanity+’s mission statement, “We want people to be better than well” (Humanity+, n.d.), and in transhumanist goals such as superintelligence, super-longevity, and super-well-being (Klichowski, 2014). In this sense, transhumanism responds to a desire deeply rooted in human history for transgression and transcendence toward an enhanced version of the human being: the posthuman, whose symbolic foreshadowing is embodied in the figure of the cyborg (cf. Hayles, 1999). Ultimately, the posthuman is envisioned as possessing nanotechnological memory, laser vision, parabolic hearing, titanium bones, and legs that never tire (Vita-More, 2002).

An example of a figure who has embodied the ideas of transhumanism is Neil Harbisson—one of the artists experimenting with biohacking (other well-known figures include Lepht Anonym, Liviu Babitz, Rich Lee, and Moon Ribas) and a subject frequently analyzed in interdisciplinary research (e.g., Fortuna et al., 2024; Łukaszewicz-Alcaraz, 2020). In an effort to overcome difficulties resulting from congenital achromatopsia, he fused to his skull the so-called eyeborg—an optical antenna that converts light-wave frequencies into sounds perceived via

bone conduction. As a result of this modification, Harbisson obtained official recognition of his cybernetic identity by state institutions, although he himself identifies as a transspecies individual. Although his artistic work has not gained broad aesthetic recognition, he has become an inspiring figure in scholarly debates on the impact of body–technology integration on well-being. According to participants in one study, the Eyeborg stimulates the development of as many as 18 positive character strengths in Harbisson—including creativity, curiosity, appreciation of beauty, love of learning, hope, and open-mindedness (Fortuna, 2024). A decrease was indicated only in the case of humility, while no changes were observed for the remaining five strengths (e.g., spirituality and kindness).

In this context, the question arises as to the optimal scope of technological enhancement across particular domains of well-being. The level of transhumanist aspiration is exemplified by David Pearce's (1995) postulate of the complete elimination of suffering. This position challenges the adaptive and existential functions of difficult experiences emphasized in psychology—including within positive psychology (Lomas & Ivztan, 2016). It also raises doubts as to whether the development of personal identity and competencies is even possible in individuals deprived of the capacity to experience crises, adversity, and the “pain of failure.” This places an obligation on psychology to empirically examine the consequences of biotechnological enhancements. At the same time, critical evaluations of processes of cyborgization should be grounded in strong theoretical and methodological frameworks. Such grounding is necessary to provide clear arguments in debates about whether technological enhancements genuinely support development or instead create barriers to well-being.

1.4.2 Configurations of Experience in Hybrid Environments

The psychological, social, and spiritual life of individuals in the digital era unfolds within configurations of experience that span material–analog–offline and virtual–digital–online environments. Importantly, although the terms grouped within each of these triads are sometimes used interchangeably in the literature, they designate analytically distinct dimensions. The material–virtual distinction concerns the ontological status of the experienced environment—whether interactions are anchored in physically co-present, materially instantiated settings or in technologically simulated and representational spaces. The analog–digital distinction pertains to the mode of signal encoding and mediation: continuous versus discretely coded forms of representation and transmission. Finally, the offline–online distinction refers to the structure of connectivity, indicating whether activity unfolds without networked digital mediation or within environments sustained by real-time computational connectivity. These dimensions are not mutually exclusive categories but intersecting layers of experiential organization.

Precisely because they overlap and interpenetrate, the question of how experiences generated across materially and digitally mediated environments relate to one another becomes unavoidable.

The broader backdrop of these considerations is an ongoing philosophical debate concerning the ontological relationship between material and virtual domains of reality—particularly whether they should be treated as separate ontological spheres or as mutually co-constitutive dimensions of a single experiential field. Luciano Floridi (2014) argues that the infosphere is emerging as a new domain of existence in which the analog and the digital increasingly interpenetrate, leading to a blurring of boundaries between previously distinct ontological orders. Similarly, Zygmunt Bauman (2000), in his analysis of “liquid modernity,” emphasizes the erosion of stable structures, enduring identities, and clear-cut categories, within which humans and technology not only coexist but also mutually co-create one another. David Chalmers (2022), in turn, argues from a “technophilosophical” perspective that the ontological entanglement of humans and technology is so profound that virtual reality should no longer be treated as an illusion or a secondary simulation but rather as an ontologically equivalent extension of the material world (Reality+). In his account, digital environments introduce new ontological layers within reality in which individuals can construct identities, experience emotions, build relationships, and endow their experiences with meaning.

The debate concerning the ontological status of online and offline environments thus leads to a central question: whether the experiences generated within them are qualitatively and functionally equivalent. In cyberpsychology, experiences that are a direct result of contact with digital technologies are referred to as *proximal outcomes* (Büchi, 2024), as well as *digital experiences*, *e-experiences*, or *digitally mediated experiences* (e.g., Riva et al., 2016; Setty, 2023). Their specificity is shaped by the very mode of experiencing technology, which constitutes the focus of UX research (see Section 2.3.1). Moreover, the technological mediation of individuals’ relationships with the material environment results in that world being perceived in a qualitatively transformed manner. The image of reality presented on a computer or smartphone screen is always transformed relative to the original context, which may generate additional cognitive and emotional burdens (e.g., Zoom fatigue; Basch et al., 2025). Furthermore, in line with Marshall McLuhan’s (1964/1994) classic thesis that “the medium is the message” (p. 7), the very form of mediation influences how meaning is attributed to received content, shaping the character of experiences independently of their nominal content.

Particularly intriguing from a research perspective are experiences whose generation outside a technological context is difficult or impossible. One example is the possibility of manipulating identity. Bauman (2007) aptly observed that “the identities assumed during a visit to the internet world of instant connections and disconnections on demand are of a kind that would be physically or socially untenable offline” (p. 115). Immersive technologies such as VR, in turn, enable

movement through spaces that exist only in digital form (e.g., a walk through the human body via Sharecare YOU VR) and have no analog counterpart (e.g., the Museum of Other Realities). While the former can be regarded as an attractive form of knowledge expansion, the latter enables perceptual training in recognizing new affordances (Dunin-Kozicka et al., 2025).

Biohacking can also serve as a source of novel types of experience. Particularly noteworthy are developments such as the conversion of images into sound, the ability to hold phone conversations heard internally “in the head,” and the extension of the human sensorium through new senses—such as locational or seismic perception—previously associated only with animals (Łukaszewicz-Alcaraz, 2020). VR experiences are likewise distinctive in that they may enable people with disabilities to move freely, to cooperate within team-based games, and—looking ahead—to use contact lenses that may function both as displays and as cameras.

Undoubtedly, deepening our understanding of the impact of digital technologies on flourishing requires analyses that take into account the dynamic interconnections between digitally mediated experiences and those emerging within material environments. This entails a shift from examining isolated online or offline effects toward investigating the configurational processes through which these experiences are mutually integrated within specific domains of well-being. Only such an approach can adequately explain human functioning in the digital era, rather than reducing it to a fragmented account of isolated digital effects. Moreover, such analyses will clarify whether the proliferating “digital” variants of established constructs represent context-bound expressions of familiar psychological processes or instead signal the emergence of qualitatively novel experiential configurations specific to digitally mediated environments.

1.4.3 Supportive Contexts of Technology Use

The developmental consequences of digital technology use cannot be adequately analyzed in isolation from the broader ecologies within which such use is embedded. Research on individuals’ functioning in the digital era may indirectly serve as an indicator of broader societal conditions that, as sources of norms, expectations, and cultural pressures, co-create complex configurations of factors that either support or inhibit developmental trajectories of flourishing. From an intergenerational perspective, it becomes particularly clear that each successive generation not only inherits the media-use patterns of its predecessors but also internalizes their value hierarchies and ways of being in the world. Today, the well-known sentiment captured in early studies on television reception—“I would like to be the television and occupy the most important place in our home” (Francuz, 1999)—might be expressed by many children in a modified form, identifying instead with the smartphone.

The significance of this configurational process can be further illuminated by the job demands-resources (JD-R) model (Bakker & Demerouti, 2007), developed within positive organizational psychology. This framework emphasizes that the quality of human functioning depends on the balance between environmental demands and available resources. When this balance is disrupted, it may initiate a loss spiral—a process of escalating strain in which insufficient recovery and inadequate support lead to the gradual erosion of self-regulation and well-being. Conversely, environments rich in protective and developmental resources can activate a gain spiral. In such contexts, relational support, clear normative boundaries, opportunities for recovery, and the cultivation of self-regulatory competencies create a resource base that enables adaptive engagement with digital technologies. From this perspective, it is not technology itself that generates flourishing, but the surrounding configuration of resources that equips individuals to use technology in ways that sustain autonomy, balance, and developmental integrity.

Striking illustrations of large-scale loss spirals in digital contexts are provided by Jonathan Haidt (2024) in *The anxious generation: How the great rewiring of childhood is causing an epidemic of mental illness*. He analyzes the sharp increase in mental health problems among adolescents, particularly girls, which coincided with the widespread adoption of smartphones and social media. In his view, the transition from a play-based childhood rooted in physical activity, free exploration, and face-to-face relationships to a phone-based childhood dominated by digital technologies and socially constraining online environments has led to serious disruptions in psychosocial development. Haidt argues that adolescents were thrust into an intensive digital environment without adequate protective resources, such as developed self-regulation strategies, supportive and authentic offline relationships, or clearly articulated boundaries and cultural norms enabling safe participation in the infosphere. The result has been an alarming rise in anxiety, depression, and suicidal ideation. Such patterns exemplify how deficiencies in system-level resources can undermine not only individual well-being but also the developmental resilience of entire cohorts.

The logic of the JD-R model suggests that a positive response to the threats and problems described above does not lie in interventions aimed at shaping selected digital practices but rather in the deliberate design of environments that foster the initiation of resource gain spirals. This shift aligns with the broader argument that promoting well-being requires not only supporting individuals but also actively shaping and regenerating the systems within which well-being becomes possible (Steger, 2025). Empirical work in organizational contexts has already identified characteristics of supportive environments that buffer technostress and promote adaptive engagement with digital tools (e.g., Tarafdar et al., 2024). Extending this line of inquiry to family and educational settings should therefore be considered a pressing research priority.

The objective is not to impose a rigid separation between “online” and “offline” domains, but to cultivate ecologies of protection and growth in which digitally mediated experiences are anchored in stable relational, normative, and developmental supports. In this sense, the aim extends beyond protecting individual users to cultivating conditions for sustainable collective flourishing in digitally mediated societies. A key goal of this line of research is to generate evidence-based knowledge that can inform the development of an “offline protective layer”—that is, a set of stabilizing contextual conditions capable of safeguarding digital engagement. On this basis, educational programs can be systematically designed, implemented, and evaluated, with their content continuously adapted to evolving technological, cultural, and societal conditions.

1.5 Summary

Chapter 1 provides the epistemic justification for delineating PCyb as a distinct research–problem domain dedicated to the systematic analysis of the conditions under which digital technology use may constructively shape trajectories of human flourishing. The point of departure is the diagnosis that the contemporary conditions under which human well-being unfolds have undergone a radical transformation due to the rapid development of digital technologies, particularly AI-driven systems. Consequently, research on flourishing that abstracts from the digital context risks diminishing its epistemic adequacy in relation to lived reality in the digital era.

The argument is structured around four complementary analytical dimensions: purpose, subjects, modes, and contexts. Together, these dimensions enable a systematic account of the structural complexity characterizing human–technology relations under conditions of expanding intelligent systems.

Within the Purpose dimension, flourishing is established as the central analytical construct of PCyb due to its existential significance and integrative potential within positive psychology. Yet a review of the conceptual landscape reveals substantial definitional and methodological fragmentation. The incorporation of the digital dimension further intensifies this dispersion: components of flourishing may be amplified, optimized, or attenuated within digital environments. This dynamic is reflected in the rapid emergence of new concepts (e.g., DWB, digital flourishing, techno-eustress, and digital hygiene), which collectively form an expanding yet insufficiently coordinated conceptual network. Such terminological and conceptual proliferation has not yet been embedded within a coherent theoretical architecture, thereby limiting cumulative knowledge development and generating significant theoretical tensions and methodological challenges.

In the Subjects dimension, the classical account of human agency is shown to require reconsideration in light of the rapid advancement of AI. Under conditions of “soft cyborgization” and cognitive hybridization, humans and technological artifacts coevolve, forming hybrid systems characterized by a distributed configuration of agency. Within this context, a central research task involves identifying and operationalizing dispositions grouped under the umbrella concept of digital strengths. These are capacities that enable reflective, autonomous, and developmentally oriented regulation of one’s relationship with the technosphere. However, the current state of research in this area remains markedly dispersed, rendering references to *the conscious user* or *the competent digital citizen* conceptually underdetermined and insufficiently grounded in psychological evidence.

The Modes dimension directs analytical attention toward the need for intensified research on constructive patterns of technology engagement. Interface architectures and the design logics of AI-driven systems co-structure user experience within dynamic affordance loops, suggesting that the analysis of optimal digital practices requires models capable of accounting for the balance of benefits and costs inherent in digital functioning. DWB offers a promising analytical framework for examining the qualitative dimensions of technology engagement, while human-centered design approaches provide conceptual foundations for the development of interventions referred to here as PTIs.

Within the Contexts dimension, it is emphasized that flourishing trajectories are co-shaped by cultural, organizational, and environmental factors, as well as by hybrid configurations of offline–online experience. The breadth of these influences indicates that flourishing must be analyzed from a systemic, multilevel perspective that transcends isolated instances of technology use.

The chapter concludes that the rapid growth of research on the “bright side” of digital technologies, while indicative of the field’s vitality, simultaneously generates risks of conceptual colonization and theoretical fragmentation. Across all four dimensions, a common pattern emerges: a rapid proliferation of constructs, models, and empirical findings concerning constructive digital life, accompanied by the absence of a shared epistemic architecture capable of integrating them. Positive psychology has predominantly examined flourishing under pre-digital conditions, whereas cyberpsychology has rarely positioned flourishing as an organizing theoretical framework. The resulting gap is therefore structural rather than merely thematic.

PCyb is proposed as a response to this integrative deficit. It does not constitute a mere thematic extension of existing subdisciplines, but rather an epistemic response to the imperative of systematically analyzing flourishing in the digital era.