DIGITAL TWINS FOR LEADERSHIP CONTINUITY: A CONCEPTUAL MODEL LINKING NPC PEDAGOGY AND SUCCESSION

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Abstract
This paper presents a conceptual design framework that explores how AI-powered digital twins can be designed to sustain organizational culture during leadership transitions, one of the most delicate challenges for contemporary organizations. Transitions often expose firms to crises of continuity, erosion of culture, and the loss of tacit knowledge embedded in the communicative style and cognitive framing of outgoing leaders. Traditional mechanisms of succession planning, such as mentorship, leadership pipelines, and governance codification, capture explicit procedures but rarely preserve the distinctive ethos and narrative identity that founders and executives imprint on their firms. At the same time, artificial intelligence is opening new possibilities for continuity by enabling the construction of digital twins: AI-driven representations of leaders that simulate reasoning, communicative tone, and value preferences.
To address this challenge, we propose designing digital twins as organizational NPCs, agents equipped with adaptive memory and narrative coherence that transmit culture and scaffold value-consistent decision-making during transitions. Drawing on insights from NPC pedagogy in games and responsible tourism, where similar agents foster empathy, reflection, and ethical reasoning, we develop a framework integrating stakeholder orientation, ethical responsibility, organizational exploration, systemic awareness, and narrative coherence. Grounded in a TREES-inspired (Tourism, Responsibility, Exploration, Environment, Story) design framework, digital twins become cultural continuity agents that preserve not only what leaders decided, but how they decided, ensuring organizational ethos and identity survive succession intact.

Keywords
Artificial Intelligence; Digital Twins; Leadership Continuity; NPC Pedagogy; TREES Framework.

JEL Classification
M10; M12; O33; I21; L86

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Introduction

The management of leadership succession has long been recognized as one of the most critical moments in organizational life. Founders and executives embed their personal values, communicative styles, and cognitive heuristics into the culture of the firms they lead. While these imprints can become enduring strengths, they also constitute vulnerabilities: when leadership transitions occur, organizations often struggle to maintain coherence without falling into stagnation. Studies in organizational culture and behavioural strategy have repeatedly shown that decision-making is influenced not only by rational models but also by narrative framing, emotional intelligence, and communicative resonance. Preserving continuity, therefore, requires more than procedural documentation; it demands the preservation of identity itself.

This paper asks a central question: can digital twins of leaders be designed as organizational NPCs agents that narrate ethos, preserve memory, and transmit values during succession? We propose that the answer lies in integrating pedagogical insights with management and AI design to develop a framework for digital twins structured around three pillars: narrative coherence, institutional memory, and value alignment.

Artificial intelligence has emerged as a tool for mediating continuity. In the industrial domain, the concept of digital twins has been used to model machines, processes, and systems for optimization. Extending this idea to leadership, scholars and practitioners have begun to envision "human digital twins": computational representations of leaders designed to capture their reasoning, communicative style, and cultural imprint. While promising, critical questions remain: can such systems authentically preserve ethos without caricaturing leaders or ossifying culture?

NPC pedagogy shows how agents equipped with narrative coherence, adaptive dialogue, and memory mechanisms can guide learners, foster empathy, and scaffold ethical reflection. When these design principles are transposed to organizational contexts, digital twins can function as organizational NPCs: adaptive agents that make ethos narratable, memory salient, and value alignment actionable. By adopting this perspective, we bridge fields of management scholarship on succession planning and NPC pedagogy to propose a framework that reimagines digital twins as cultural continuity agents rather than technical replicas.

1. Review of the scientific literature

Leadership succession has been studied extensively in management literature as one of the most critical and fragile phases in organizational life. When leadership transitions occur, organizations are exposed not only to strategic risks but also to cultural discontinuities that can destabilize their identity. Anos (2025) shows that succession failures often stem from the inability to preserve tacit dimensions of leadership, such as narrative coherence, communicative tone, and the interpretive frames through which leaders make sense of the world, rather than from poor strategic choices in themselves. This observation reinforces Schein's (1983) foundational insight: founders and senior leaders imprint organizational culture through deeply embedded practices, rituals, and symbolic narratives, which, once established, are difficult to transmit intact across generations. What is inherited is often fragmented, distorted, or selectively remembered, leading to tensions between tradition and adaptation.

Efforts to address these vulnerabilities have traditionally focused on explicit mechanisms. Mentorship programs, carefully designed succession pipelines, and codified governance processes have aimed to ensure that formal decision-making capacity is preserved. While valuable, these measures address only part of the problem. Behavioural strategy literature (Cristofaro et al., 2024) highlights that decisions are not produced solely by rational analysis but are mediated by emotional intelligence, heuristics, and cultural frames. These elements are embodied in leadership style, enacted through tone of voice, gestures, and the way dilemmas are narrated. Precisely because they are tacit, they are difficult to codify, easy to overlook, and prone to loss in times of transition. Continuity mechanisms, therefore, must go beyond preserving what decisions were made; they must safeguard the frames through which choices were interpreted, justified, and made meaningful.

Recent technological developments have introduced digital twins as a novel response to this challenge. In industrial and engineering contexts, digital twins are already used to replicate machines, infrastructures, and processes for monitoring, prediction, and optimization. Extending this concept, management scholars such as Wang et al. (2024) propose human digital twins: computational representations of leaders constructed from psychometric anchors, linguistic data, and behavioural corpora. These systems are not intended to replace human decision-making but to preserve ethos, communicative style, and judgmental heuristics that might otherwise be lost. Properly designed, they could serve as organizational continuity agents, making the tacit dimensions of leadership available to successors. Yet these models also raise concerns around authenticity, controllability, and ethics. A digital twin that caricatures a leader risk undermining trust, while one that rigidly preserves style without allowing for adaptation risks freezing culture rather than sustaining it.

Parallel insights can be drawn from research on intelligent pedagogy and interactive media, where non-player characters (NPCs) have evolved from static quest-givers into adaptive agents capable of shaping user experience. Studies show that NPCs designed with long-term memory and adaptive dialogue not only provide information but also scaffold reflection, empathy, and ethical reasoning (Schroeder et al., 2020; Park et al., 2023). The believability of these agents—rooted in coherence, intentionality, and emotional resonance—is key to their effectiveness. Warpefelt and Verhagen (2017) argue that NPCs must display rationality, intentionality, and characterhood to be perceived as believable social actors rather than as scripted machines. This means that beyond technical competence, agents must appear to act with purpose, role, and coherence in order to maintain trust. Such insights are crucial for digital twins, which, like NPCs, will be judged less by technical accuracy than by their ability to sustain cultural and emotional plausibility.

When frameworks such as TREES are grafted onto NPC design, these agents become capable of embedding cultural and ethical values without lapsing into didacticism. TREES, originally formulated in responsible tourism, structures experiences into Tourism, Responsibility, Exploration, Environment, and Story (Tosi & Ochoa, 2025). Within NPC pedagogy, these dimensions translate into cultural orientation, ethical feedback, curiosity-driven discovery, systemic awareness, and narrative coherence. The strength of TREES-enabled NPCs lies not in prescribing values mechanically but in

situating them within meaningful stories and persistent interactions. Such design principles resonate with the needs of organizations, where values are not only taught but lived, narrated, and remembered across generations. Embedding a TREES-inspired scaffold into digital twins could ensure that they do not merely reproduce strategic logics but also transmit ethos through story, responsibility, and systemic awareness.

Recent systematic reviews of NPC design (Silva & Ribeiro, 2021) emphasize additional dimensions necessary for believability: personality, emotions, behaviours, relationships, and role. NPCs must be perceived as characters with recognizable profiles and affective coherence, capable of sustaining relationships with players and of fulfilling specific roles within a broader context. These design features make NPCs more natural, immersive, and trustworthy. By analogy, digital twins for leadership continuity must be designed with personality (a recognizable communicative style), emotions (an ability to signal empathy and conviction), and clear role definition (as narrators of organizational ethos rather than autonomous decision-makers). Without these features, twins risk being experienced as impersonal databases rather than as credible carriers of culture.

Another relevant insight comes from the distinction between embedded and emergent narrative in NPC design. Embedded narrative refers to storylines pre-scripted by developers, while emergent narrative arises dynamically from the interaction between player and system. Both forms are necessary for meaningful experience: embedded narratives provide coherence, while emergent narratives ensure responsiveness and personalization. For digital twins, the parallel is evident. A twin must embed foundational values, mission statements, and strategic orientations (embedded narrative), while also generating new stories through interaction with successors (emergent narrative). This dual narrative capacity would allow twins to sustain both stability and adaptability, ensuring continuity without rigidity.

Taken together, these insights from management research and NPC pedagogy suggest fertile ground for interdisciplinary exploration. Management scholarship underscores the importance of preserving tacit cultural dimensions in succession, while NPC pedagogy demonstrates how AI agents can be designed as believable value-carriers through narrative, memory, and alignment. Recent advances in generative AI and VR technologies further reinforce these possibilities by enabling NPCs to interact in natural, voice-based dialogues that feel socially present (Korkiakoski et al., 2025). If digital twins adopt similar capabilities—appearing intentional, emotionally plausible, and narratively coherent—they could function as organizational NPCs: mediators of continuity that preserve ethos while supporting adaptation. This convergence motivates a rethinking of digital twins not merely as replicas of leaders but as cultural agents designed to sustain organizational identity across transitions.

2. Research methodology

This study employs a conceptual and design-oriented methodology that integrates insights from management and pedagogy to propose a framework for digital twin design. The methodology describes a conceptual design process and does not include empirical data collection, framework testing with actual leaders, quantitative analysis, or validation studies. Instead, the methodology outlines: (1) how the TREES framework could theoretically be mapped to organizational variables, (2) how digital twin design

principles could integrate NPC pedagogy insights, and (3) what evaluation criteria future empirical research could employ to test the framework. The three stages represent a design-oriented proposal for how digital twins should be structured; the evaluation dimensions specified are proposed criteria for future validation, not findings from this paper.

The first step of the methodology involves mapping TREES dimensions onto organizational variables relevant to leadership continuity. Tourism, originally conceived as cultural orientation in responsible tourism, is reframed as stakeholder orientation in organizations, emphasizing leaders' role as guides who frame the firm's relationship with external communities. Responsibility is mapped onto ethical framing in decisions, where digital twins highlight dilemmas, trade-offs, and accountability mechanisms. Exploration becomes organizational curiosity, encouraging successors to engage with alternative perspectives and emerging signals. Environment is translated into systemic awareness, ensuring that externalities, interdependencies, and ecological impacts are considered. Finally, the story is carried over directly as narrative coherence, sustaining cultural identity across decisions and communication. This mapping provides a conceptual scaffold that structures how digital twins can function as value-carriers rather than decision engines.

The second step introduces adaptive AI design features inspired by NPC pedagogy. Digital twins must be equipped with memory architectures capable of recalling past decisions, contextual features, and outcomes. This ensures that recommendations are grounded in organizational history rather than detached analytics. Psychometric anchors derived from leader assessments guide communicative style, ensuring that tone and framing remain authentic. Adaptive dialogue mechanisms allow the twin to tailor outputs to different audiences, reflecting how leaders communicate differently with employees, boards, and external stakeholders. These design features replicate the adaptive qualities that make NPCs credible pedagogical agents and transpose them into managerial continuity systems.

The third step specifies an evaluation matrix for assessing authenticity and utility. Quantitative dimensions include decision similarity (measured against historical cases), fidelity of communicative tone (assessed by blinded raters familiar with the leader), and predictive alignment with strategic outcomes. Qualitative dimensions include stakeholder perceptions of trust, authenticity, and cultural resonance, captured through interviews, surveys, and focus groups. Ethical evaluation is integral, involving transparency audits, bias detection, and governance mechanisms to ensure accountability. The methodology thus mirrors approach used in pedagogical research—where agent authenticity and trust are critical—but adapts them to the organizational stakes of succession planning.

The methodology emphasizes interdisciplinary integration. The development of digital twins cannot be confined to technical teams; it requires collaboration between AI developers, organizational psychologists, management scholars, and governance experts. Only through participatory and iterative design can digital twins achieve the authenticity, flexibility, and ethical robustness required to function as organizational continuity agents. This integrative methodology provides the foundation for the subsequent analysis and discussion of results.

3. Results and discussion

The comparative analysis between NPC pedagogy and organizational succession planning yields three primary conceptual contributions that advance the understanding of digital twins in management contexts. These contributions build on existing research in organizational culture, pedagogical design, and AI, but combine these insights in novel ways specific to leadership continuity.

Unlike prior work that treats digital twins as decision-support tools or technical replicas, this paper proposes to reconceptualize them as organizational NPCs, i.e. adaptive agents designed to preserve and transmit organizational ethos. Unlike NPC pedagogy research, which has focused on learning and engagement, this paper explores how similar design principles can address the organizational challenge of cultural continuity during succession.

This interdisciplinary synthesis represents the novel contribution of this work: it bridges management scholarship on succession planning, organizational culture, and intelligent agent design, proposing a framework that positions digital twins as cultural continuity agents rather than purely technical systems.

The comparative analysis suggests that digital twins inspired by NPC pedagogy can function as organizational continuity agents in ways that extend well beyond traditional decision-support systems, organized around three conceptual pillars.

The first pillar is narrative coherence. In interactive media, coherence of narrative is what sustains immersion and makes player actions meaningful. In games such as Assassin's Creed, NPCs act as cultural guides who embed gameplay within a broader historical storyline. The authenticity of these narratives creates trust: players believe in the world not because every detail is historically accurate, but because the story is consistently told. Similarly, organizations thrive when successors perceive decisions not as isolated acts but as parts of a living story about mission, culture, and identity. A digital twin that explains decisions in narrative form—by linking them to the founding vision, recalling pivotal past moments, and framing them in terms of the organization's trajectory—becomes a narrator of ethos. Such narrative framing mitigates the risk of fragmentation, ensuring that during leadership transitions the identity of the firm remains coherent. Without this narrative capacity, digital twins risk producing technically correct but culturally empty outputs.

The second pillar is memory, which transforms isolated interactions into cumulative learning and stable identity. NPC pedagogy shows that memory-rich agents are trusted because they recall prior encounters and adapt responses accordingly, giving users a sense of persistence and consequence. The ecological simulation Eco demonstrates how systemic memory enforces sustainable behaviour. Every action—cutting down a tree, overhunting, polluting—produces persistent consequences that reshape the environment. Because the system remembers, players must account for long-term effects, fostering collective responsibility. By analogy, organizational digital twins can preserve and mobilize institutional memory. A twin could recall how similar dilemmas were handled in the past, what rationales were adopted, and what outcomes followed, surfacing this information in new decision contexts. Such a design prevents organizational amnesia, ensuring that the costs and trade-offs of prior strategies remain visible and salient. Memory in this sense is not archival but generative: it turns history

into a guide for present and future choices, stabilizing culture without impeding adaptation.

The third pillar is value alignment, which anchors both pedagogical NPCs and managerial twins. In NPC design, alignment ensures that characters transmit values authentically rather than lapsing into stereotypes or distortions. The game EcoEcho illustrates how values can be embedded in dialogue and consequences, nudging players toward sustainable behaviours without moralizing scripts. The pedagogical effect comes from adaptive nudging: NPCs adjust their feedback to player actions, encouraging reflection rather than dictating a single correct path. Transposed to organizations, digital twins can similarly guide successors toward decisions that reflect the ethos of the founder and the values of the firm. A twin could frame strategic options in terms of cultural priorities or ethical trade-offs, offering reflective scaffolding without rigid determinism. This prevents distortion of leadership ethos and helps successors internalize values rather than mechanically reproducing outputs. In this way, value alignment is not only a design requirement but also a trust-building mechanism that ensures cultural continuity.

While narrative coherence, institutional memory, and value alignment provide a robust theoretical framework, the application of NPC pedagogy to organizational succession introduces important distinctions between what research has established and what remains speculative. This paper's framework draws on well-established findings from three distinct research literatures. From NPC pedagogy research, we know that NPCs equipped with narrative coherence and adaptive dialogue significantly enhance user engagement (Park et al., 2023; Schroeder et al., 2020), and that memory-rich agents increase perceived trust and authenticity (Warpefelt & Verhagen, 2017; Silva & Ribeiro, 2021). From organizational culture scholarship, Schein (1983) established that founders imprint organizational culture through ritual and narrative. Recent behavioural strategy research confirms that organizational decision-making is shaped not only by rational analysis but by narrative framing and emotional intelligence (Cristofaro et al., 2024; Anos, 2025).

While these theory-based findings are robust, the application of NPC pedagogy to organizational succession introduces novel claims that remain speculative and will guide our future research. First, leaders and founders will be willing to adopt digital twins and provide the inputs necessary to develop nuanced, authentic representations of their ethos. This assumes they view digital twin development as beneficial rather than threatening, an assumption that may not hold given concerns about control, manipulation, or loss of agency. Second, digital twins can authentically preserve a founder's or leader's ethos without caricature, a claim that extends NPC believability research into a higher-stakes organizational context. Third, successors will trust and adopt guidance from digital twins designed with narrative, memory, and value alignment, an assumption requiring validation given organizational dynamics. Ultimately, organizations that implement TREES-inspired digital twins will experience better cultural continuity, a causal claim requiring longitudinal research.

Moreover, the contexts differ substantially: in educational and ludic environments, the stakes of failure are limited to immersion, engagement, or learning outcomes. In organizational settings, by contrast, the consequences of misalignment are much more

severe: a breakdown in trust, fragmentation of culture, or ethical lapses with material implications. For this reason, governance, validation, and transparency are far more critical for digital twins than for pedagogical NPCs. An agent that fails to convey ethos authentically may be perceived not as a resource for continuity but as a manipulative or reductive instrument, undermining employee trust. These contextual divergences also highlight the ethical and practical risks inherent in digital twin design. Just as poorly constructed NPCs risk reinforcing stereotypes, digital twins risk caricaturing leaders if their training corpora are narrow, biased, or incomplete. Authenticity depends on the diversity and depth of inputs—ranging from speeches and decisions to informal communications and testimonies—that allow a nuanced portrait of leadership ethos to emerge. Without this richness, the twin projects a distorted voice. Furthermore, fidelity to a founder's style, if uncritically preserved, can create cultural stasis, preventing necessary renewal and innovation. These dangers underline the need for participatory design that engages employees, iterative validation processes that allow ongoing adjustment, and transparent governance mechanisms that define the scope and limits of AI mediation.

Taken together, these reflections suggest that digital twins should not be conceived as static technical replicas but as organizational NPCs: adaptive agents designed to narrate ethos, preserve memory, and scaffold value-consistent decision-making. This reframing expands the conceptual space of succession planning by integrating pedagogy, AI, and management. The lesson from NPC pedagogy is not that AI can substitute for human agency, but that it can help create environments where identity, values, and memory are preserved and made salient. In this light, digital twins become continuity mediators that sustain organizational culture while enabling principled adaptation to new circumstances.

Conclusions

This paper has sought to bridge management scholarship on leadership succession with insights from NPC pedagogy, proposing that digital twins can be reimagined not merely as technical replications of leaders but as organizational agents designed to sustain ethos, culture, and continuity. By drawing on the TREES framework and its application in NPC design, we have articulated three conceptual pillars, narrative, memory, and value alignment, that together constitute the foundations for credible digital twins. Narrative provides coherence, enabling the twin to situate recommendations within a broader organizational story and preventing fragmentation during transitions. Memory provides persistence, ensuring that prior trade-offs, rationales, and outcomes remain salient to successors. Value alignment anchors the twin in authentic ethos, guiding successors toward decisions consistent with the founder's principles while avoiding rigid determinism. These pillars transform digital twins from static archives into adaptive organizational NPCs: agents that do not dictate, but scaffold continuity by making culture visible, narratable, and actionable.

At the same time, the analysis has emphasized the risks and challenges of this approach. Digital twins that lack believability may be perceived as manipulative or reductive; twins based on narrow or biased corpora may caricature leaders rather than preserve ethos; and twins that rigidly reproduce past styles may risk cultural stasis. The

organizational stakes are higher than in pedagogy or games, since failures in authenticity or alignment could undermine trust, legitimacy, and ethical governance. To mitigate these risks, the study has pointed to design practices inspired by NPC pedagogy—such as the integration of embedded and emergent narratives, personality and role coherence, and affective plausibility—combined with participatory design, iterative validation, and transparent governance mechanisms that define the scope and limits of AI mediation.

For organizational practitioners, this framework suggests several immediate considerations. First, succession planning teams should assess organizational readiness by examining documented ethos, governance capabilities, and employee willingness to engage with AI tools. Second, digital twins should be positioned within broader continuity ecosystems that include mentorship and human judgment rather than as standalone technical solutions. Third, organizations should demand vendor transparency regarding training data diversity, bias detection, and mechanisms for updating digital twins as contexts evolve. Fourth, organizations should recognize that legal and ethical frameworks will be critical, ensuring that digital twins enhance rather than undermine accountability, authenticity, and stakeholder trust.

Future research should pursue pilot implementations of TREES-inspired digital twins in organizations at succession inflexion points, family businesses, technology firms, and institutional organizations, employing mixed-method evaluations that combine quantitative assessments of decision similarity with qualitative evaluations of trust, cultural resonance, and leader adoption rates. Comparative studies should examine whether TREES-inspired digital twins generate different outcomes than purely technical decision-support systems, and research should explicitly investigate governance mechanisms that prevent digital twins from becoming manipulative or culturally stagnating.

Ultimately, the convergence of intelligent pedagogy and leadership continuity offers a promising path toward AI-mediated succession planning that preserves not only what leaders decide but also how they decide, i.e. the communicative style, ethical reasoning, and value commitments that constitute organizational ethos. Digital twins become valuable not as technical replicas but as pedagogical partners in cultural continuity. This approach ensures continuity with integrity while leaving space for principled adaptation, enabling successors to honour their predecessors' ethos while responding to new circumstances with agency and wisdom.

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