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Strategic Coordination without Hierarchy in Platform-Mediated Markets: Understanding Governance, Control Mechanisms, and Power Distribution across Digitally Connected Business Ecosystems

Wei Chen^{1*}, Li Zhang¹

Abstract

In the evolving landscape of digitally connected business ecosystems, traditional hierarchical structures are increasingly supplanted by platform-mediated markets where coordination emerges through decentralized mechanisms. This conceptual paper introduces the Platform Ecosystem Coordination Model (PECM), a novel framework that elucidates how strategic coordination is achieved without formal hierarchy. Drawing on organizational theory, strategic management, and information systems literature, the PECM delineates five core components: ecosystem orchestration hubs, relational governance protocols, algorithmic control interfaces, power diffusion channels, and dynamic adaptation loops. These elements collectively explain the redistribution of governance responsibilities, the deployment of non-hierarchical control mechanisms, and the balancing of power asymmetries among platform owners, complementors, and market participants. By integrating insights from platform governance and ecosystem interdependence, the framework highlights how digital technologies facilitate emergent coordination, mitigate opportunism, and foster value co-creation. Theoretical contributions include advancing understandings of non-hierarchical strategy in digital markets, while managerial implications offer guidance for platform leaders to optimize ecosystem health without centralized authority. The PECM provides a structured lens for analyzing power distribution in interconnected digital environments, addressing gaps in how coordination persists amid fluidity and interdependence. Future research directions are proposed to extend the model to emerging technologies like blockchain and AI-driven platforms.

Keywords Platform-mediated markets, Strategic coordination, Digital governance, Control mechanisms, Power distribution, Business ecosystems

*Correspondence:

Wei Chen

wei.chen@outlook.com

¹ Department of Digital Business Management, School of Economics and Management, Peking University, Beijing, China

Introduction

The rise of platform-mediated markets has fundamentally reshaped how businesses coordinate activities across digitally connected ecosystems, challenging the primacy of traditional hierarchical structures [1, 2]. In these environments, entities such as platform owners, complementors, and end-users engage in value creation

without relying on formal chains of command, instead leveraging digital infrastructures to align interests and actions [3, 4]. Rather than operating through vertically integrated structures, coordination increasingly occurs through shared technological architectures, standardized interfaces, and mutually reinforcing network relationships that link heterogeneous actors across organizational boundaries.

This shift prompts critical questions about the mechanisms that enable effective governance and control in the absence of centralized authority, particularly as power dynamics become more fluid and distributed [5, 6]. Platform ecosystems function as socio-technical arrangements in which coordination emerges from rules embedded in digital infrastructure, participation protocols, and evolving ecosystem norms, rather than solely from managerial directives. As organizations increasingly rely on platform-based infrastructures to scale innovation and market participation, understanding these coordination mechanisms becomes central to contemporary strategic management theory.

Moreover, the transformation toward digitally mediated coordination introduces new forms of interdependence among firms, developers, service providers, and consumers operating within shared ecosystems. The strategic outcomes of individual actors are no longer determined solely by internal resources or firm-level capabilities but also by their position and influence within platform networks [7, 8]. Understanding these phenomena is therefore essential for theorizing strategic coordination in an era where digital connectivity amplifies interdependence among diverse actors and reshapes the architecture of competitive advantage.

Navigating Platform-Mediated Interdependence

Platform-mediated markets exemplify digitally connected business ecosystems where coordination arises from mutual dependencies rather than top-down directives [9, 10]. Digital platforms provide a technological substrate that enables independent actors to contribute complementary innovations while benefiting from shared market access and infrastructure. In ecosystems such as mobile app stores, online marketplaces, or mobility-sharing platforms, complementors introduce new functionalities, services, or content that enhance the overall ecosystem's attractiveness. In contrast, platform owners provide the foundational infrastructure for distribution, scalability, and interoperability [11, 12].

This reciprocal relationship produces a complex web of interdependence in which ecosystem participants simultaneously collaborate and compete. Complementors rely on the platform to access users and technological resources, whereas platform owners depend on

complementor innovation to sustain ecosystem growth and diversity. The resulting arrangement resembles a distributed production network in which value creation is collectively generated but unevenly appropriated across participants.

However, such interdependence also introduces structural vulnerabilities. Misaligned incentives between platform operators and complementors may lead to opportunistic behavior, strategic manipulation, or value extraction, destabilizing ecosystem relationships [13, 14].

Complementors may fear dependency risks when platform owners alter rules or prioritize competing services, while platform operators must prevent fragmentation and maintain ecosystem coherence as participation expands.

Digital technologies partially mitigate these challenges by enabling real-time coordination across dispersed actors. Application programming interfaces (APIs), developer platforms, data analytics, and cloud infrastructures facilitate rapid information exchange, reduce transaction costs, and standardize interactions among ecosystem participants [15, 16]. These technological affordances allow platforms to orchestrate complex interactions at scale while preserving a degree of autonomy among participating actors.

Nevertheless, the absence of hierarchy complicates efforts to maintain ecosystem stability. Because power and decision-making authority are distributed rather than centralized, coordination depends on carefully designed governance frameworks that sustain participation, regulate behavior, and align incentives across the ecosystem [17, 18]. Consequently, understanding platform ecosystems requires reconceptualizing coordination as an emergent property of digitally mediated interdependencies rather than as an outcome of hierarchical managerial control.

Evolving Digital Governance Paradigms

Governance in platform-mediated markets evolves beyond traditional models, incorporating hybrid mechanisms that blend contractual, relational, and technological elements to orchestrate ecosystem activities [19, 20]. In conventional organizational settings, governance authority is derived from ownership structures and managerial hierarchies that enable direct supervision and formal control. Platform ecosystems, by contrast, rely on governance arrangements that must simultaneously encourage voluntary participation,

sustain innovation, and safeguard the collective integrity of the ecosystem.

These governance mechanisms often operate through infrastructural rules embedded in platform architectures. Technical standards, interface protocols, developer guidelines, and participation policies collectively shape how actors interact within the ecosystem. Such mechanisms function as boundary resources—tools, documentation, and interfaces that structure interactions between platform operators and external developers while preserving the platform's architectural coherence [3, 21–23].

Boundary resources enable platforms to balance openness and control, permitting external innovation while maintaining compatibility with core platform standards. By establishing shared technical frameworks, platforms allow complementors to innovate autonomously while ensuring that new contributions remain interoperable with existing ecosystem components. This delicate balance is central to sustaining innovation while preventing fragmentation or opportunistic exploitation.

However, governance challenges intensify when power asymmetries emerge within platform ecosystems. Platform owners may possess privileged access to data, algorithmic visibility, or rule-setting authority, thereby disproportionately influencing ecosystem outcomes [24, 25]. Such asymmetries may enable platform operators to prioritize their own services, strategically adjust platform rules, or reconfigure market access in ways that disadvantage complementors.

Consequently, effective digital governance requires mechanisms that maintain ecosystem legitimacy while mitigating excessive power concentration. Governance frameworks must balance openness, control, and fairness, ensuring that ecosystem participants perceive platform rules as stable, transparent, and conducive to sustained collaboration. When governance mechanisms achieve this balance, platform ecosystems can sustain innovation, attract complementary investments, and maintain long-term ecosystem vitality [26, 27].

Unpacking Control Mechanisms in Non-Hierarchical Settings

Control mechanisms in digitally connected ecosystems operate through subtle, technology-mediated processes that guide behaviors without explicit hierarchy [28, 29]. Rather than relying on managerial supervision, platform ecosystems implement infrastructural and algorithmic controls that shape how actors interact and compete within the system.

Algorithmic curation systems, for instance, determine how products, services, or applications are ranked and presented to users. By influencing visibility and discoverability, these algorithms indirectly regulate market competition within the platform. Reputation systems similarly guide behavior by aggregating user feedback, enabling participants to assess trustworthiness and performance in decentralized marketplaces.

Incentive structures embedded within platform architectures also play a critical role. Revenue-sharing arrangements, pricing rules, developer rewards, and data access privileges influence how participants allocate resources and prioritize innovation. These mechanisms collectively align individual behaviors with ecosystem objectives, encouraging participants to adhere to platform norms while pursuing their own strategic interests [1, 5].

Importantly, many of these control mechanisms operate through distributed self-regulation. Peer-based feedback systems allow participants to evaluate one another's performance, generating reputational signals that guide interactions across the ecosystem. Such decentralized governance mechanisms reduce the need for direct oversight while promoting cooperative behavior among participants [6, 10].

However, decentralization does not eliminate the possibility of power imbalances. Platform algorithms, interface design choices, and data access policies may advantage certain participants while disadvantaging others, potentially reinforcing dominant actors within the ecosystem [11, 14]. As a result, conceptualizing control in platform ecosystems requires examining how technological infrastructures allocate visibility, influence, and decision-making authority among participants.

Understanding these distributed control mechanisms is essential for theorizing strategic coordination in digitally connected ecosystems. By examining how algorithmic governance, infrastructural rules, and reputational dynamics interact, scholars can better explain how platform

ecosystems achieve coordination without relying on hierarchical authority structures. Such insights contribute to a broader reconceptualization of governance and control in contemporary digital economies.

Power Distribution Dynamics across Ecosystems

Power distribution in platform-mediated markets is inherently asymmetric yet fluid, influenced by digital connectivity that allows for rapid shifts in influence [4, 8]. Platform owners typically hold structural power through ownership of core assets, but complementors can accrue relational power via innovation and user engagement [9, 12]. This distribution affects strategic coordination, as imbalances may lead to tensions or ecosystem fragmentation [13, 17]. Digitally connected environments amplify these dynamics by enabling transparent interactions, yet they also provide tools for redistribution, such as open data policies or collaborative decision-making [20, 22]. Addressing power requires frameworks that map how it flows through governance channels, ensuring equitable participation in value capture [23, 25].

Toward a Unified Understanding of Coordination without Hierarchy

Synthesizing these elements reveals a need for a comprehensive model that integrates governance, control, and power in non-hierarchical digital ecosystems [2, 7]. Existing theories often focus on isolated aspects, such as platform entry strategies or innovation tensions, but overlook holistic coordination processes [15, 19]. This paper advances a conceptual framework to bridge these gaps, offering insights into how strategic alignment emerges in fluid, interconnected markets [21, 24]. By emphasizing ecosystem-level phenomena, it contributes to management studies on digital transformation [26, 28]. **Table 1** contrasts the structural coordination mechanisms of traditional hierarchical organizations with those of platform-mediated ecosystems, highlighting how governance, control, and power distribution differ across the two models.

Table 1. Contrasting coordination logics: hierarchical organizations versus platform ecosystems

Coordination dimension	Traditional hierarchical organizations	Platform-mediated ecosystems
Structural architecture	Vertically integrated organizational hierarchy	Digitally connected multi-actor network
Authority structure	Centralized managerial authority	Distributed coordination among ecosystem participants
Governance mechanisms	Formal rules, managerial supervision, and ownership control	Hybrid governance combining protocols, boundary resources, and relational norms
Control mechanisms	Direct monitoring and bureaucratic control	Algorithmic curation, reputation systems, and data-driven incentives
Innovation dynamics	Internal R&D and controlled partnerships	Open innovation from complementors and distributed contributors
Resource coordination	Managed through organizational departments	Coordinated through platform infrastructure and digital interfaces
Power distribution	Concentrated within firm leadership	Distributed across platform owners, complementors, and users
Adaptation mechanisms	Strategic planning and top-down restructuring	Continuous feedback loops and ecosystem adaptation
Transaction coordination	Managed through contracts and managerial oversight	Facilitated through APIs, digital marketplaces, and algorithmic mediation
Strategic alignment	Achieved through hierarchical command	Emerges from incentives, governance protocols, and

ecosystem
interdependence

Literature Synthesis and Conceptual Foundations

The scholarly discourse on platform-mediated markets has burgeoned, providing foundational insights into non-hierarchical coordination, yet gaps persist in integrating governance, control, and power distribution [1, 3]. This section synthesizes key literature, drawing on organizational and strategic management perspectives to establish conceptual pillars for our framework [2, 4]. It organizes the review around thematic clusters that reflect ecosystem dynamics, highlighting interdependence and digital enablement [5, 6].

Foundations of platform-mediated market structures

Platform-mediated markets are characterized by multi-sided architectures where digital connectivity facilitates interactions among heterogeneous actors without hierarchical oversight [7, 9]. Research underscores how platforms act as intermediaries, enabling value exchange through network effects and complementarities [10, 11]. For example, asymmetric cross-side effects influence ecosystem growth, as seen in software platforms, where governance decisions shape participants' behavior [1, 12]. These structures depart from traditional firms by prioritizing openness, yet they require mechanisms to manage coordination challenges arising from autonomy [13, 14]. The literature emphasizes that, without hierarchy, strategic alignment relies on shared incentives and technological affordances [15, 16].

Orchestrating ecosystems through governance protocols

Ecosystem orchestration emerges as a key theme, where platform owners navigate tensions between value creation and governance costs [2, 17]. Governance practices in digital platforms involve boundary resources that defend against fragmentation while exploiting openness [3, 18]. Studies illustrate how platform control balances innovation with stability, such as through selective promotion of complements [9, 19]. In non-hierarchical settings, governance redistributes authority via relational contracts

and norms, fostering interdependence among complementors [20, 21]. However, power asymmetries can undermine this, as platform entry by owners may crowd out third-party innovation [4, 22]. Conceptual foundations here highlight the need for protocols that adapt to ecosystem evolution [23, 24].

Digital control mechanisms in decentralized environments

Control in platform ecosystems operates via digital mechanisms that subtly influence behaviors without formal authority [5, 25]. Algorithmic interfaces, such as recommendation systems, serve as control tools by signaling priorities and enforcing compliance [13, 26]. Research on power dynamics reveals how these mechanisms address generativity tensions, where openness spurs innovation but risks chaos [10, 27]. In digitally connected markets, control is distributed through data transparency and multihoming options, allowing participants to mitigate dominance [15, 28]. Yet, deceptive signaling poses challenges, necessitating robust mechanisms to maintain trust [14, 29]. This body of work provides a basis for understanding control as a facilitator of coordination in fluid ecosystems [6, 8].

Mapping power asymmetries and distribution channels

Power distribution in business ecosystems is multifaceted, with platform owners holding structural advantages while complementors leverage relational influence [11, 16]. The literature on meta-organizations views platforms as hybrid entities in which power flows through selective partnerships and environmental shaping [17, 25]. Asymmetries arise from resource dependencies, but digital tools enable redistribution, such as through information transparency that empowers smaller actors [18, 26]. Studies on platform-dependent entrepreneurs highlight risks and strategies for navigating power imbalances [23, 24]. Conceptualizing power as distributed channels underscores its role in sustaining coordination without hierarchy [19, 22].

Interdependence and adaptation in digitally connected systems, digitally connected business ecosystems thrive on interdependence, where coordination emerges from adaptive loops rather than static hierarchies [20, 21]. Research on ecosystem-specific advantages in digital commerce illustrates how platforms foster global

interdependence through governance design [8, 29]. Adaptation mechanisms, including feedback from interfirm exchanges, enable resilience amid disruptions [12, 27]. This interdependence amplifies the need for frameworks that integrate governance with power dynamics, addressing how ecosystems evolve without centralized control [7, 28]. Synthesizing these foundations reveals opportunities for a model that holistically explains non-hierarchical strategic processes [1, 3].

Unveiling the Platform Ecosystem Coordination Model: Structural Blueprint

To address the complexities of strategic coordination in platform-mediated markets absent hierarchy, this paper proposes the platform ecosystem coordination model (PECM). The PECM is a novel conceptual framework that articulates how governance, control mechanisms, and power distribution interplay to enable emergent alignment across digitally connected business ecosystems. It comprises five interconnected components: (1) ecosystem orchestration hubs, which serve as central nodes for facilitating interactions without imposing authority; (2) relational governance protocols, defining norms and incentives for voluntary participation; (3) algorithmic control interfaces, leveraging digital tools for behavioral guidance; (4) power diffusion channels, mapping the flow and redistribution of influence among actors; and (5) dynamic adaptation loops, enabling feedback-driven evolution.

These components collectively illustrate coordination without hierarchy by emphasizing decentralized decision-making, where ecosystem orchestration hubs integrate diverse inputs, relational protocols build trust, control interfaces monitor and adjust actions, power channels ensure equitable distribution, and adaptation loops refine processes over time. The PECM posits that effective governance redistributes power through transparent channels, mitigating asymmetries while fostering interdependence.

Figure 1 illustrates the PECM, showing how orchestration hubs, governance protocols, algorithmic interfaces, power-diffusion channels, and adaptation loops collectively enable strategic coordination in digitally connected ecosystems without hierarchical authority.

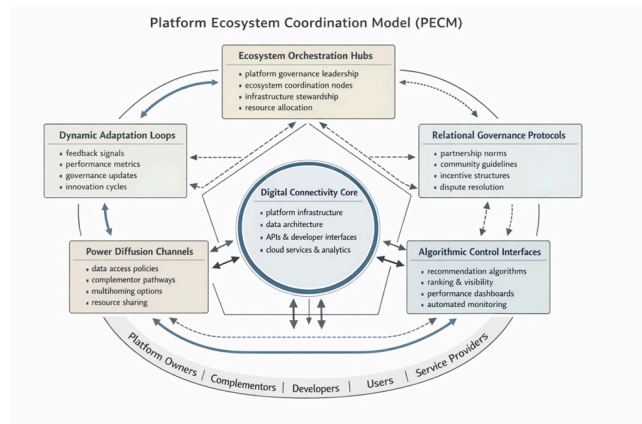


Figure 1. Platform ecosystem coordination model (PECM): architectural mechanisms enabling strategic coordination without hierarchy

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Deciphering ecosystem interactions via PECM components

The PECM offers an interpretive lens for dissecting how strategic coordination unfolds in platform-mediated markets, emphasizing the interplay of its five components to sustain non-hierarchical alignment [1, 3]. Ecosystem Orchestration Hubs function as pivotal nodes where platform owners aggregate inputs from complementors and users, facilitating emergent strategy without dictating outcomes [2, 9]. For instance, these hubs enable coordination by providing shared digital spaces for collaboration, such as developer forums or API marketplaces, which redistribute decision-making authority across the ecosystem [4, 11]. Relational Governance Protocols complement this by establishing trust-based rules that encourage voluntary adherence and mitigate opportunism through norms such as fair value sharing and conflict-resolution mechanisms [5, 17]. In practice, these protocols manifest in partnership agreements or community guidelines that bind participants in an interdependent

manner, ensuring coordination persists amid autonomy [6, 20]. **Table 2** consolidates the five components of the PECM, outlining their structural roles, coordination mechanisms, and implications for governance and power distribution in digital ecosystems.

Table 2. Core components of the platform ecosystem coordination model (PECM) and their coordination functions.

PECM component	Structural role in the ecosystem	Coordination mechanisms	Governance implications
Ecosystem orchestration hubs	Central coordination nodes connecting ecosystem actors	Infrastructure management, ecosystem leadership, and interaction facilitation	Defines ecosystem rules while maintaining openness
Relational governance protocols	Normative framework guiding collaboration	Community guidelines, partnership agreements, and incentive systems	Encourages voluntary compliance and trust-based governance
Algorithmic control interfaces	Technology-mediated control layer	Ranking algorithms, dashboards, and automated compliance tools	Enables indirect behavioral steering without hierarchy
Power diffusion channels	Mechanisms through which influence circulates	Data access, complementor visibility, and multihoming options	Promotes equitable participation in ecosystem value creation
Dynamic adaptation loops	Feedback mechanisms supporting ecosystem evolution	Performance metrics, user feedback, and governance updates	Supports adaptive governance and ecosystem resilience

Algorithmic Control Interfaces represent the technological backbone of the PECM, deploying data-driven tools to subtly steer behaviors in digitally connected environments [7, 13]. These interfaces, including ranking algorithms and performance dashboards, provide real-time feedback that aligns actions with ecosystem goals, such as optimizing user engagement or innovation diffusion [10, 14]. Unlike hierarchical controls, which operate centrally, decentralized controls allow complementors to self-adjust while platform owners monitor aggregate patterns [15, 18].

Power Diffusion Channels within the PECM map how influence circulates, highlighting pathways where power shifts from owners to complementors via resource access or visibility enhancements [8, 16]. This diffusion counters asymmetries by enabling smaller actors to gain leverage through high-quality contributions, fostering balanced interdependence [19, 24]. Finally, Dynamic Adaptation Loops close the cycle by incorporating feedback from interactions, allowing the ecosystem to evolve—such as updating governance protocols in response to market shifts—thus maintaining coordination resilience [21, 23]. Collectively, the PECM interprets coordination as an emergent process in which governance and control redistribute power, enabling fluid adaptation in non-hierarchical settings [22, 25].

Elevating Discourse on Digital Market Strategies

The PECM advances theoretical discourse by integrating fragmented insights into a cohesive model of non-hierarchical coordination in platform-mediated markets [1, 26]. It extends ecosystem theory by conceptualizing orchestration without authority and by addressing how digital connectivity transforms traditional power structures into distributed networks [2, 27]. Unlike prior work focused on bilateral platform-complementor relations, the PECM emphasizes multi-actor interdependence, revealing how control mechanisms mediate power flows to sustain value co-creation [3, 28]. This contributes to strategic management by theorizing adaptation loops as drivers of ecosystem longevity, bridging gaps in understanding generativity tensions and innovation sustainability [4, 10].

Furthermore, the framework enriches governance literature by delineating relational protocols as alternatives to hierarchical enforcement, offering a nuanced view of control in digitally fluid environments [5, 29]. It challenges

assumptions of owner dominance, proposing power diffusion as a strategic lever for equity, thereby informing theories of asymmetry resolution [6, 17]. By embedding technological interfaces within the model, the PECM also progresses information systems scholarship, illustrating how algorithms facilitate coordination while adapting to ecosystem dynamics [7, 18]. Overall, these contributions provide a foundational scaffold for future theorizing on emerging digital phenomena, such as decentralized autonomous organizations [8, 19].

Navigating Platform Roles with PECM Insights

For practitioners in digitally connected business ecosystems, the PECM delivers actionable guidance on fostering coordination without hierarchy [9, 20]. Platform owners can leverage orchestration hubs to cultivate inclusive environments, prioritizing open APIs and data sharing to empower complementors and reduce power imbalances [11, 21]. Implementing relational governance protocols involves designing incentive systems that reward collaboration, such as tiered revenue models or recognition programs, to enhance trust and mitigate conflicts [12, 22]. Managers should deploy algorithmic control interfaces judiciously, using analytics to guide rather than constrain, ensuring transparency to avoid perceptions of unfairness [13, 23].

Complementors, in turn, can utilize power-diffusion channels to amplify their influence by focusing on high-impact innovations that shift ecosystem dependencies in their favor [14, 24]. Adaptation loops suggest regular ecosystem audits, in which feedback informs iterative improvements, helping all participants respond to disruptions such as technological shifts or regulatory changes [15, 25]. This approach equips leaders to optimize governance for sustained growth, balancing control with openness to drive collective success in platform-mediated markets [16, 26].

Recapitulating governance and power in interconnected digital realms

In summary, this article elucidates strategic coordination in platform-mediated markets through the PECM, a framework that unpacks non-hierarchical governance, control mechanisms, and power distribution across digitally connected ecosystems [1, 27]. By delineating five

components, it demonstrates how interdependence supplants hierarchy, enabling emergent alignment and adaptation [2, 28]. Theoretical advancements refine understandings of digital strategy, while practical insights aid ecosystem stewardship [3, 29]. Future explorations could extend the PECM to blockchain-enabled platforms or AI-augmented markets, testing its boundaries in evolving contexts [4, 17]. Ultimately, the model underscores the transformative potential of digital connectivity in redefining business coordination.

Managerial implication

For practitioners in digitally connected business ecosystems, the PECM delivers actionable guidance on fostering coordination without hierarchy. Platform owners can leverage orchestration hubs to cultivate inclusive environments, prioritizing open APIs and data sharing to empower complementors and reduce power imbalances. Implementing relational governance protocols involves designing incentive systems that reward collaboration, such as tiered revenue models or recognition programs, to enhance trust and mitigate conflicts. Managers should deploy algorithmic control interfaces judiciously, using analytics to guide rather than constrain, ensuring transparency to avoid perceptions of unfairness.

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Conclusion

In summary, this work elucidates strategic coordination in platform-mediated markets through the PECM, a framework that unpacks non-hierarchical governance, control mechanisms, and power distribution across digitally connected ecosystems. By delineating five components, it demonstrates how interdependence supplants hierarchy, enabling emergent alignment and adaptation. Theoretical advancements refine understandings of digital strategy, while practical insights aid ecosystem stewardship. Future explorations could extend the PECM to blockchain-enabled

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