Repurposing Organizational Learning Processes to Facilitate Sensemaking/Sensegiving in a Memetic Digital Twin Environment

Ulrich Schmitt
Stellenbosch Business School, Bellville, South Africa
Knowcations Start-up, Port Louis, Mauritius

schmitt@knowcations.org

Abstract: This paper addresses the persistent 'structural hole' between the academic domains of Organizational Learning (OL) and Knowledge Management (KM) by proposing a unified, multi-layered sociotechnical architecture. Following the track-CFP on AI and Digitalization in a Changing Business World, the research moves beyond technological hype to demonstrate how sophisticated digital architectures can mirror and scale cognitive structures. By integrating Crossan's classic 4I learning framework and Jones's and Macpherson's 5I extension into an eight-stage continuum running from I0 Ideating to I7 Intersecting, the paper maps these phases across a 12-Slot-Workflow ensuring that fluid grassroots knowledge exploration can occur without inducing systemic oscillation or cascading collapse. By consolidating knowledge across progressing 'I0-I7-bytes' in analogy to Cesar Hidalgo's notion of person-, firm-, and network-bytes, the generic approach is applied to three complementing operational tracks supporting a Memetic Digital Twin (MDT) environment: a conventional OL/KM flow, a personal knowledge worker's authorship cycle (sensemaking), and a community platform's curation cycle (sensegiving). Grounded in Design Science Research (DSR), the paper introduces this differentiation as the RUNGS-Ontology (Relational Universal Networked Generative Scaling) operationalized as an Adaptive Management Framework for facilitating digital leadership with a traceable, cybernetic system engine.

Keywords: Organizational learning (OL), Knowledge management (KM) & co-creation, Absorptive capacities (AC), Cybernetics, RUNGS-ontology, Architecture for canvas ecosystems (ACE), Memetic digital twin (MDT)

1. Introduction

1.1 Contextualizing the OL-KM Structural Hole

The academic domains of Organizational Learning (OL) and Knowledge Management (KM) occupy heavily overlapping conceptual terrain regarding how modern institutions utilize information, yet they have historically evolved within distinct intellectual silos. This divergence has generated a profound 'structural hole' (Burt, 2017) where theory-rich cognitive learning phases fail to interface directly with operational, systems-driven execution architectures. Epistemologically, the two fields operate on fundamentally conflicting assumptions regarding the nature of knowledge assets (Brix, 2017). KM heavily aligns with an 'epistemology of possession', treating knowledge as an objective, static 'stock' to be captured, codified, and distributed within technological repositories. Conversely, OL aligns with an 'epistemology of practice', viewing knowledge as an ongoing, fluid 'flow' deeply intertwined with human actions, behaviour adjustments, and organizational routines. Conceptually, OL focuses almost entirely on the socio-psychological dynamics of error detection, unlearning, and paradigm shifts under the umbrella of 'how organizations learn', while KM remains functionally targeted toward managing the concrete asset outcomes resulting from those learning loops. Bibliometrically, science mapping and co-citation analyses regularly separate the two fields, clustering OL with organizational psychology and leadership, while pinning KM to information systems, computer science, and competitive data strategy. Recent literature confirms that this theoretical fragmentation persists into 2026; an integrative systematic review (Aljuwaiber, 2026) highlights that contemporary studies still treat these domains as isolated islands, marginally integrating KM with OL and other perspectives to rationalize business performance, outcomes, and sustainability.

1.2 The Problem of Digital Stagnation

The consequences of this structural hole are increasingly severe under modern business environments characterized by severe infoxication, knowledge wastes, and volatile artificial intelligence hype. Most legacy KM models were established under last century's conditions of information scarcity and offer inadequate systemic guidance to counter modern cognitive overloads. Corporate implementation frameworks frequently allow KM to superficially absorb OL, prioritizing highly marketable technological assets over deep, behavioural and psychological adaptations (Castaneda, Manrique and Cuellar, 2018). This dynamic results in a purely cosmetic integration that erases the human routines necessary to absorb external disruptions. This operational siloing produces a stark disconnect where complex institutions rely heavily on explicit, static data repositories while completely neglecting the human learning cultures and adaptive leadership required to make systems function. Consequently, organizations encounter an 'appropriation-versus-participation dilemma' that deters

grassroots knowledge workers from actively contributing their unique insights (Rechberg and Syed, 2014). When information technology availability fails to access the 'optimal zone' of organizational learning, the sociotechnical ecosystem degrades, resulting in 'abandoned' structural holes, 'flooded' redundant entropy, and 'flooded rivers' of real-time data overload (Hortovanyi and Ferincz, 2014). Widely used strategic visualization canvases remain inherently descriptive, representing static snapshots rather than kinetic system nodes capable of active portfolio curation. Current literature leaves a critical void regarding the precise connecting flow profiles required to bridge decentralized user networks with centralized platform systems, leaving organizations vulnerable to systemic stagnation.

1.3 The Proposed MDT Resolution

By bridging this structural gap, recent developments in sociotechnical system designs have proposed the concept of Memetic Digital Twins (MDT) based on a SICECE workflow (Schmitt, 2025, 2026c). Building upon this emerging architectural paradigm, recent research utilized the concept to demonstrate how conventional static business model canvas configurations can be decontextualized, dynamized, and then recontextualized to serve business model innovation for entrepreneurs and start-up factories (Schmitt, 2026b, 2026a). This paper utilizes the same initial base of a SICECE-12-Slot-Workflow to bridge the academic KM-OL gap. It introduces three new multi-layered cybernetic loops as a governance framework, transforming the traditional structural hole into an integrated learning ecosystem. By expanding Crossan's 4I model (Crossan, Lane and White, 1999) and Jones's and Macpherson's 5I extension (Jones and Macpherson, 2006) into an eight-phase Organizational Learning Extension running from I0 (Ideating) to I7 (Intersecting), this study demonstrates that these eight phases not only serve institutional learning processes, but also symmetrically apply to decentralized, iterative memetic lifecycles (personal MeSpheres) and centralized curation workflows (community WeSpheres). Grounded in Design Science Research (DSR), conceptual analysis, and systems thinking, the paper is structured to operationalize this matrix across the sections ‘Literature Review’, ‘RUNGS-Ontology’, and ‘Conclusions’.

2. Literature Review and Conceptual Foundations

2.1 Reconciling the KM-OL-Performance-sustainability Nexus: Insights from a Meta-review

The multi-layered ontology to be presented directly addresses the critical empirical realities uncovered in the most recent literature. A major systematic review comprehensively analyzed 70 landmark empirical and theoretical studies (2020-2026) for their efforts to address knowledge management, organizational performance, and long-term business sustainability holistically (Aljuwaiber, 2026). Their findings provide robust evidence that KM practices consistently enhance enterprises’ innovation capabilities and operational efficiency, thereby boosting sustainable competitive advantages across diverse socio-economic sectors. Crucially, they confirm that these performance enhancements do not occur automatically but need to be heavily mediated: “Leadership commitment, collaboration culture, trust, employee competencies, digital infrastructure, and performance measurement systems can strengthen or weaken KM’s effect on learning, innovations, and final outcomes” (Aljuwaiber, 2026). However, they also expose a severe vulnerability in contemporary management theory: the current literature remains plagued by profound conceptual inconsistencies, empirical contradictions, and fragmented theoretical perspectives. They conclude that the academic domain completely lacks a coherent, unified framework capable of aligning leadership, organizational culture, and technological execution architectures (Aljuwaiber, 2026), reinforcing the urgent necessity for the theory-driven cybernetic synthesis exemplified in this paper.

2.2 Deepening the Organizational Learning Continuum: The Foundational Phases and Beyond

To establish a rigorous framework for our triple environment, we must break down the four foundational phases of the classic 4I organizational learning framework (Crossan, Lane and White, 1999):

- I1. 'Intuiting', is defined as the preconscious recognition of patterns and possibilities inherent in a personal stream of experience, which shapes individual actions before being explicitly articulated.
- I2. 'Interpreting', involves the explaining, through words or actions, of an internal insight to oneself and to a wider group, serving as the cognitive bridge that moves knowledge from the preverbal to the verbal layer to develop a localized language.
- I3. 'Integrating', is the process of developing a shared understanding among individuals and taking coordinated action through mutual adjustment, where interactive team dialogue and joint action transform ad-hoc collaborations into recurring organizational practices.

- I4. 'Institutionalizing', is the process of ensuring that routinized actions occur by clearly defining tasks, specifying actions, and putting robust organizational mechanisms in place to embed individual and group learning securely into the corporate memory through formalized systems, structures, procedures, and long-term strategy.

In the author's integrated architecture, this I4 stage hardens fluid concepts into rule-based authorship and curating processes, and boundary object creation. This institutional baseline is broadened by utilizing an proposed inter-organizational I5 extension (Jones and Macpherson, 2006):

- 'I5. 'Intertwining', which orchestrates knowledge exchange across inter-organizational boundaries, balancing the tension between exploitation and exploration through four distinct transformations: 1) 'Acting' during ongoing exploitation, 2) 'Opening-up' to shift from exploitation to exploration, 3) 'Experimenting' during active exploratory loops, and 4) 'Focusing' as the system moves back from exploration to exploitation, completing the internal-to-external behavioral engine.

Section 3 focuses on the architectural transition from this I1-to-I5 flow to structurally expand the continuum into an eight-stage sequence running from I0-to-I7 by integrating the original five I-flows. This taxonomy further expands into twenty-four bi-directional (flow) R^{48}-dyads to create the RUNGS-Ontology (Relational Universal Networked Generative Scaling).

2.3 Cognitive Carrying Capacity and Structural Scaling: Hidalgo's Bytes

The physical and cognitive limitations of scaling these learning loops are governed by the data mechanics of Cesar Hidalgo's knowledge infrastructure (Hidalgo, 2015). Hidalgo introduces the *'person-byte*' as the elemental unit of analysis, representing the maximum capacity for explicit knowledge and tacit knowhow that a single individual can physically carry, absorb, and deploy within finite attention constraints. When an organization's operational complexity exceeds individual attention thresholds, collective interventions become mandatory, giving rise to the *'firm-byte*' - the total accumulated carrying and absorptive capacity (AC) of an institutional snapshot. As market dynamics and transactional expenditures shift, knowledge accumulation must scale further into *'network-bytes*', where diverse institutional capacities form complex, geographically and structurally circumscribed collaborative ecosystems. The RUNGS-Ontology (section 3) incorporates Hidalgo's person, firm, and network boundaries by integrating them within its larger I0-to-I7 and proprietary bi-directional R^{48}-dyads as twenty-four (stock) bytes, providing a quantified, multi-layered foundation for tracking data limits within an institutional, memetic, and curational digital platform architecture.

3. The RUNGS Framework: Operationalizing the Multi-layered Triple-Helix Architecture

3.1 Reconciling Organizational Learning and Knowledge Management

To resolve the persistent structural KM-OL-hole identified, this research expands the four foundational I4 phases (Crossan, Lane and White, 1999) and I5 network extension (Jones and Macpherson, 2006) and introduces an eight-phase Organizational-Learning-aligned I0-I7-continuum. While legacy management models treat learning exclusively as an internal socio-psychological or intra-organizational routine, the RUNGS-Ontology operationalizes these generic I#-phases and establishes a triple-applicability model that operates simultaneously across human-cognitive, memetic-evolutionary, and algorithmic-curational layers; it uses these socio-technical affordances to map, trace, and scale knowledge across structural boundaries. The eight I#-phases, their base definitions, and socio-technical layer manifestations are:

- *I0 Ideating:* Forming a raw concept or initial mental image in the mind to solve problems or seed innovations through upfront consistency checking and brainstorming. *Nano-Action Layer:* Initial admittance of shared submissions into local record architectures and upfront validation checks.
- *I1 Intuiting:* Preconscious recognition of patterns and latent possibilities inherent in a personal stream of experience that shapes individual actions before explicit articulation. *Individual Node Layer:* Pattern recognition by independent knowledge workers and subconscious matching within personal experiences.
- *I2 Interpreting:* Explaining an internal insight to oneself and others through words, symbols, or actions, shifting knowledge from preverbal to verbal to develop language. *Micro-Behavioral Layer:* Collaborative refinement within user networks and explicit rationalization of modifications back to peers.

- *I3 Integrating:* Developing shared understanding across an explicit group and executing coordinated actions through mutual adjustment, interactive dialogue, and joint action. *Consensus-Seeking Layer:* Mutual adjustments across decentralized teams and cumulative synchronization across local technical frameworks.
- *I4 Institutionalizing:* Ensuring routinized actions occur by clearly defining tasks, specifying actions, and putting organizational mechanisms in place to embed learning. *Meso-Operational Layer:* Hardening fluid concepts into rule-based curating processes, standardized smart templates, and boundary objects.
- *I5 Intertwining:* Linking intra- and inter-organizational contexts through exploration and exploitation loops via acting, opening-up, experimenting, and focusing shifts. *Boundary-Spanning Layer:* Exchange across corporate boundaries facilitated by external network capabilities and portfolio tracking.
- *I6 Interfusing:* Consolidating and curating verified community knowledge into an integrated knowledge graph to manifest a permanent digital footprint of shared heritages. *Macro-Societal Layer:* Alignment of organizational memes with the universal accumulated heritage of human knowledge in Popper's Third World.
- *I7 Intersecting:* Orchestrating a transdisciplinary space where separate conceptual perspectives, distinct corporate domains, and fragmented paradigms cross-pollinate. *Ecosystem Cross-Over:* Discerning high-level systemic harmonies and structural alignment among separate business industries.

Grounded in these eight distinct generic phases, the RUNGS-Ontology traces information asset trajectories as they transition from private thoughts within individual minds to a codified, institutionalized, and globally interfused knowledge aggregate (P-Helix), to a personal knowledge management (PKM) memetic repository or MeSphere (M-Helix), or, if voluntarily, shared, to the community's WeSphere (C-Helix). Rather than viewing knowledge as static stocks, RUNGS charts the helix-specific kinetic paths of information through four distinct topological vectors shown as pico-nano, micro-mini, meso-macro, and mega-meta progressions (Table 1). As delineated in the architecture (Table 1), the *RUNGS* Ontology consists of 24 distinct R^{48}-Dyads, arranged as bi-directional *Relational* pairs that map directly onto a 12-Slot SpaceTime-Sequence (Figure 1). When viewed through the lens of the triple environment (across three parallel helices), these dyads provide twenty-four unique name-pairs that represent *Universal* behavioral and computational logics. Due to the *Networked* multi-chain layers and cybernetic feedback loops inherent in the platform environment, knowledge seamlessly consolidates across distinct organizational, memetic, and curatorial topologies. This structural mapping ensures a *Generative* fit with contemporary digital transformation canvases, organizational frameworks, and knowledge management models (Probst, 1998; Schmitt, 2025, 2026b, 2026a). Crucially, *Scaling* within this architecture implies that accrued Absorptive Capacities (AC) are never trapped within an isolated operational silo or workflow slot.

Table 1: Relational Universal Networked Generative Scaling: 8-PMC-Helic-I#s presented as R^{48}-RUNGS-Dyads*

Socio-Technical Scale Abstract OL Phases I#	P-Helix: Rungs Bytes & Flows (Human/OL)	M-Helix: Rungs Bytes & Flows (Meme/Sensemaking)	C- Helix: Rungs Bytes & Flows (System/Sensegiving)
Focus:	**Governs human agency and social learning, mapping the cognitive transition from individual intuition to collective organizational action through iterative feedback, peer review, and inter-organizational reciprocity.**	**Tracks the metabolic evolution of information and memetic knowledge, defining how raw signals consolidate into textured memeplexes, portable boundary objects, and eventually reified facts within the shared knowledge heritage.**	**Enforces systemic integrity and archival governance, providing algorithmic vetting, rule-based codification, and storage ratification necessary to transform private, voluntarily shared contributions into permanent, universally trusted knowledge heritage.**
Pico to Nano **I0 Ideating** **I1 Intuiting**	D (View/Notion-Role/Action) Retaining / Recalling VB:DE Rallying / Reconfirming RB:D	E (Draft/Atom-Meme/Pattern) Resonating / Rebounding DB:E Registering / Recording MB:EF	I (Import/Noise-Update/Curation) Ruminating / Reflecting IB:I Refereeing / Reaching UB:IJ
Micro to Mini **I2 Interpreting**	C (Person/Behavior-Team/Consensus) Refining / Reworking PB:CD	F (MemePlex/Snippets-Graph/Grids) Rendering / Retracing XB:F	J (Whomer/Integrity-Yardstick/Metrics) Rationalizing / Refuting WB:J Reconciling / Realigning YB:JK

I3 Integrating	Reviewing / Reassessing TP:C		Roughing / Rebundling GB:FG	
Meso to Macro	B (Firm/Operations-Network/Boundary)		G (Asset/Artefacts-Synergy/Domains)	K (Ontology/Insights-Boundary/Templets)
I4 Institutionalizing	Regulating / Restricting FB:BC		Regimenting / Reordering AB:G	Rulemaking / Recoding OB:K
I5 Intertwining	Requiting / Reimbursing NB:B		Remediating / Refashioning SB:GH	Reciprocating/Rebalancing BB:KL
Mega to Meta	A (Community/Societal-Heritage/Generational)		H (Knowability/Connections-Ledger/Expertise)	L (Jointure/Connectivity-Enrichment/Negentropy)
I6 Interfusing	Routing / ReceivingCB:AB		Reticulating / Relating KB:H	Relaying / Rerouting JB:L
I7 Intersecting	Reverberating/Responding HB:A		Reifying / Rarefying LB:HI	Ratifying / Rescinding EB:LA

* R^{48}-dyad 1st term denotes primary initiating action (forward flow or core asset transaction) followed by 2nd evaluative, corrective, reactive counterpart: xx:yy - xx indicates the acronym of the applicable Bytes Type (as denoted in the same cell's top row; yy positions the Byte in the 12-slot-sequence A-L.

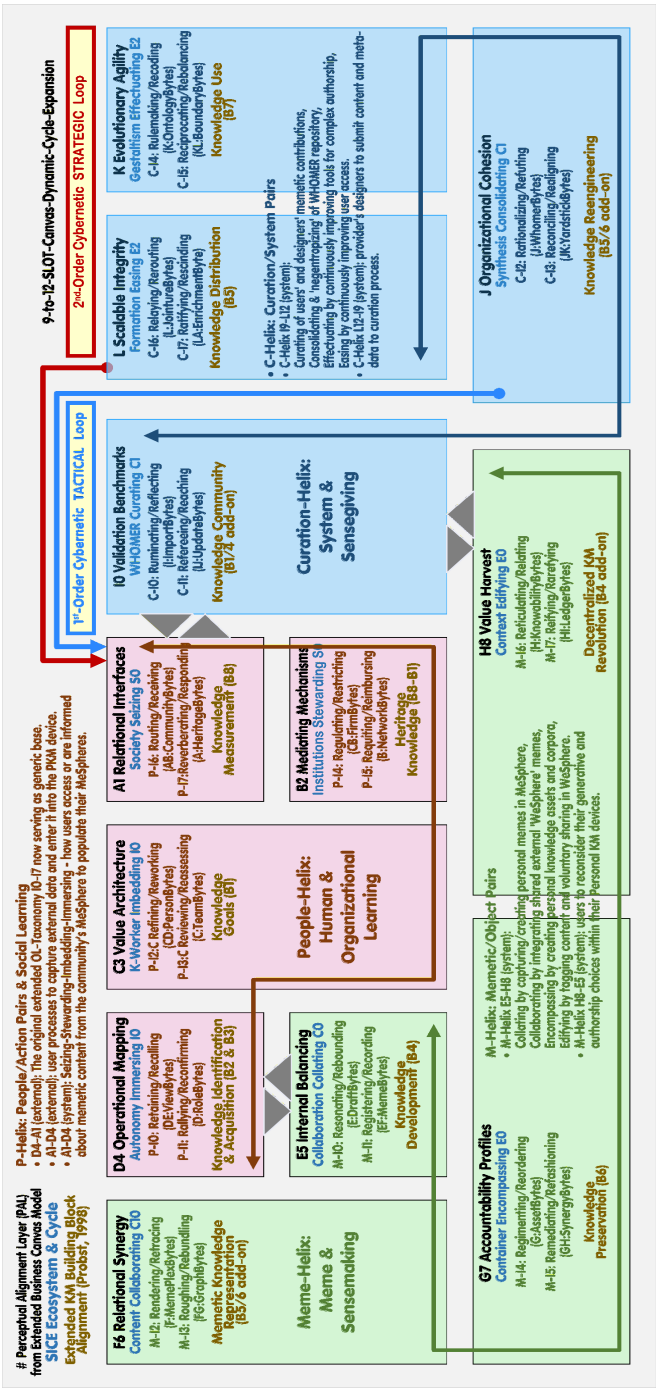


Figure 1: PMC-Helices' R48-Dyads (24 flows) and their R48-Bytes (24 stocks) in KM Context

3.2 The RUNGS Framework as a Sensemaking and Sensegiving Architecture

A 12-Slot-SpaceTime-Sequence functions as the foundational structural timeline that aligns the three parallel helices. Figure 1 demonstrates how the generic triple-eight-phase sequence blends into this 12-slot layout to support the sensemaking and sensegiving affordances of the SICECE cycle (visualized according to the Architecture for Canvas Ecosystems (ACE) previously established (Schmitt, 2026b, 2026a)). Instead of treating human learning, memetic evolution, and algorithmic curation as isolated or disjointed processes, the framework positions the 12 slots as an overarching structural timeline where specific knowledge transitions occur governed by decisions of users' choice, authorship, and sharing as well as the provider's curation and servitization and the community's involvement. This iterative asynchronous cycle directly accommodates three cybernetic loops: the user's personal MeSphere cycle (A1-H8-A1), the curation cycle for newly shared user contributions (I9-J10-A1), and the platform's servitization cycle (K11-L12-A1) which provides vital added value like metrics, notifications, or specific tools to ease complex authorship.

Table 2: PMC-Helices' R^{48}-Dyads (24 flows) and their R^{48}-Bytes (24 stocks)

P-Helix: People/Action (Social Learning)	M-Helix: Memetic/Object Pairs	C-Helix: Curation/System Pairs
P-I0: Retaining/Recalling (DE:ViewBytes) *Internal cognitive functions manage personal memory, allowing minds to retrieve past lessons for current ideation while ensuring that new concepts are persistently stored for future consistency.*	*M-I0: Resonating/Rebounding (E:DraftBytes)* *These energetic predicates define initial sensitivity, where signals vibrate against existing data or 'rebound' to the subconscious for further pattern recognition when no immediate cognitive matches are found.*	*C-I0: Ruminating/Reflecting (I:ImportBytes)* *Internal diagnostic functions govern systemic incubation, allowing curation engine to execute rules for consistency and negentropizing while auditing its performance to identify areas for further improvement.*
P-I1: Rallying/Reconfirming (D:RoleBytes) *R:pair governs transitions from intuition to action, where individuals gather mental evidence to support internal 'gut-checks' while constantly validating externalization against their experience.*	*M-I1: Registering/Recording (EF:MemeBytes)* *R:pair captures birth of records, marking moments signals are first captured/transcribed into symbolic code/content and ensuring their persistent logging/linking within personal systems of prior knowledge.*	*C-I1: Refereeing/Reaching (IJ:UpdateBytes)* *R:pair manages vetting intakes, finalizing initial gatekeeping checks for baseline compliance while extending systemic outreach to clarify submissions and ensure no potentially valuable record is lost.*
P-I2:C Refining/Reworking (CD:PersonBytes) *Predicates drive iterative polishing of concepts, where high-frequency peer feedback alternates between sharpening fluid ideas and their deconstructing to address fundamental flaws or logic errors*	*M-I2: Rendering/Retracing (F:MemePlexBytes)* *Predicates facilitate explication of thoughts, translating pre-verbal insights into tangible more complex concepts/prototypes while providing logical paths to verify rendered forms against their original sources.*	*C-I2: Rationalizing/Refuting (J:WhomerBytes)* *Terms provide systemic transparency for integrating newly shared 'Me-Sphere' contributions based on justified approved submissions with logged logic that maintains associative integrity of indexing.*
P-I3:C Reviewing/Reassessing (C:TeamBytes) *R:pair facilitates team-level synthesis, allowing to collectively evaluate shared work through dialogue while maintaining capacity to look back and correct misunderstandings for coordinated understanding.*	*M-I3: Roughing/Rebundling (FG:GraphBytes)* *R:pair manages information stability within groups, providing necessary textures and 'connector memes' to stay in shared 'container memes' while regrouping 'content memes'/components when configurations fail.*	*C-I3: Reconciling/Realigning (JK:YardstickBytes)* *R:pair generating capacity and performance metrics including triggering corrective adjustments whenever semantic conflicts or logical inconsistencies were detected during integration and documenting formally rejected non-compliant records for guiding contributors toward future improvement and alignment.*
P-I4: Regulating/Restricting (CB:FirmBytes) *Terms enforce institutional alignment, where system proactively directs actions toward established organizational codes while simultaneously identifying and halting any behaviors that deviate from standardized structural boundaries.*	*M-I4: Regimenting/Reordering (G:AssetBytes)* *Terms systemize by tagging 'context memes', coding information into rigid multidisciplinary protocols to enable internal structural adjustments and to resolve logical contradictions with existing aims or standards.*	*C-I4: Rulemaking/Recoding (K:OntologyBytes)* *Predicates drive systemic codification for updating algorithmic curation or user guidance protocols and for flexible rule/ontology modification to accommodate evolving multidisciplinary interpretations/standards.*
P-I5: Requiting/Reimbursing (B:NetworkBytes) *R:pair defines balanced reciprocity between institutional/organizational partners, ensuring that every contribution of knowledge or value is met with an equitable return of intellectual or strategic credit.*	*M-I5: Remediating/Refashioning (GH:SynergyBytes)* *R:pair ensures portability of memes, adjusting their medium for synergetic transfer/repurposing by allowing for reverse adaptation to optimize the information object for alternative utilities/applications.*	*C-I5: Reciprocating/Rebalancing (KL:BoundaryBytes)* *R:pair balances ecosystem synergetic exchange, managing value-exchange protocols for community benefitting tools while adjusting resource streams and affordances based on continuous metric feedback.*

P-Helix: People/Action (Social Learning)	M-Helix: Memetic/Object Pairs	C-Helix: Curation/System Pairs
P-I6: Routing/Receiving (AB:CommunityBytes) *Predicates manage flows of knowledge through network channels, facilitating intentional distributions of resources to industry/communities and formal acknowledgment of incoming data by stakeholders.*	*M-I6: Reticulating/Relating (H:KnowabilityBytes)* *Predicates integrate memes into absorptive capacity lattices, mapping their structural position within knowledge graphs via semantic links to ensure contextual connectivity across diverse domains/realms.*	*C-I6: Relaying/Rerouting (L:JointureBytes)* *Predicates manage distributed diffusion, promoting validated content for community consumption ensuring systemic resilience of data flows/APIs when specific network paths or nodes are compromised.*
P-I7:Reverberating/Responding (A:HeritageBytes) *R:pair governs exchanges between Institution/firm and its environment, where outward organizational impacts trigger inward adaptive strategies based on ecosystems' collective 'echo' or market feedback.*	*M-I7: Reifying/Rarefying (HI:LedgerBytes)* *R:pair describes knowledge transformations into heritage by solidifying abstract perspectives into objective facts for further value while essential principles are distilled to maintain the core's theoretical robustness.*	*C-I7: Ratifying/Rescinding (LA:EnrichmentByte)* *High-level R:pair governs trust engineering by providing formal systemic validation for permanent archival entry and by pursuing collaborative efforts for facilitating active community participation at all levels.*
Legend: (xx:Bytes - xx refers to the positional slot or gap of the named Bytes in the 12-slot-spacetime-sequence (A-L in Figure 1).		

As knowledge assets move through any given slot along this sequence, they trigger a tightly coupled, multi-layered behavioral response across all three operational tracks at once. For the P-Helix, the slot dictates the specific social learning roles and cognitive actions executed by the human actor. For the M-Helix, the slots determine how the respective memetic objects are rendered, textured, or bundled during its evolutionary sensemaking lifecycle. When voluntarily shared, the C-Helix executes the corresponding algorithmic validation, rule-enforcement, and vetting checks required to maintain systemic integrity and drive the platform's automated and emerging sensegiving features. This structural alignment ensures that each spatial-temporal slot coordinates human behavior, memetic modification, and curation governance systemically and holistically. By acting as a master choreographer, the 12-slot framework transforms the underlying matrix from a static taxonomy into a kinetic cybernetic engine, allowing memes to survive, to evolve into personal or co-created memeplexes, learning/knowledge assets, and corpora by transitioning from decentralized individual platforms into permanent, curated community WeSpheres. This novel approach (practiced already in the as-built genealogies of enterprise resource and supply chain management systems) allows digital leadership to transition from an 'appropriation reality' into a 'participation zone' where cohorts, teams, or institutions can be enabled and incentivized.

3.2.1 The P-Helix: People/action (social learning)

In the triple-helix, the P-Helix provides the creative fuel and the social validation required for the other helices to function. Without the P-Helix, the M-Helix would lack '*rendered*' content to metabolize, and the C-Helix would have no submissions to referee. Its synergy with the M-Helix is visible at I2 (*Rendering/Refining*), where human polish gives the meme its physical form. Its synergy with the C-Helix is most critical at I3 (*Reviewing/Reconciling*), where human team-consensus provides the '*social weight*' that allows the curation system to merge a record into the shared archive. Together, they ensure that knowledge is not just 'recorded' by a machine, but 'understood' and 'accepted' by a community. There are three key P-Helix scenarios applying the eight R^{48}-dyads (Table 2 left).

- D4-A1 (external): The original extended OL-Taxonomy I0-I7 now serving as generic base (Table 1).
- A1-D4 (external): user processes to capture external data and enter it into the PKM device.
- A1-D4 (system, Figure 1): Seizing-Stewarding-Imbedding-Immersing describes how users access or are informed about memetic content from the community's WeSphere to populate their MeSpheres.

3.2.2 The M-Helix: Memetic/object (information evolution)

The M-Helix serves as the connective tissue between human action and systemic governance. Its synergy with the P-Helix is a dance of '*polishing and texture'*: the person refines own or community ideas while the meme gains the structural '*roughness*' to be usefully employed. Its synergy with the C-Helix occurs at the standardization and tagging level (I4-I5); while the M-Helix undergoes *Regimenting*, turning a fluid thought into a hard, mobile, 'portable' asset, the C-Helix provides the *Rulemaking* for the underlying Logics and Logistics. This synergy ensures that the system doesn't just store 'data', but 'meaningful objects' that are resilient enough to survive the leap between different co-using or co-creating 'hosts' once voluntarily shared. Two key M-Helix scenarios are applying the eight R^{48}-dyads (Table 2 middle).

- M-Helix E5-H8 (system): Collating by capturing/creating personal memes in MeSpheres, Collaborating by integrating shared external 'WeSphere' memes, Encompassing by creating personal knowledge assets and corpora, Edifying by tagging content and voluntary sharing in WeSphere (Figure 1).
- M-Helix H8-E5 (system): users to reconsider their authorship choices within their PKM devices.

3.2.3 The C-Helix: Curation/system (WHOMER governance)

The C-Helix is the governor and guardian of the 'WHOMER-Sphere' (World Heritage of Memes Repository). It manages the technical and ethical boundaries of the system. It provides the structural skeleton that holds the three Helices together. Without the C-Helix, human learning (P) would be disorganized, and memes (M) would be chaotic and unverified. Its synergy with the P-Helix creates Transparency; the curation *Rationalizes* memeplexes back to the human originators. Its synergy with the M-Helix creates Authority; when the curation *Relays* a record to the WeSphere, the meme becomes *Reticulated* in a global lattice. This triple-synergy creates a Generative KM System: a self-correcting loop where human inspiration is captured, structurally evolved, and systemically validated until it reaches the state of 'Objective Truth' in Popper's Third World. Two key C-Helix scenarios are applying the eight R^{48}-dyads (Table 2 right):

- C-Helix I9-L12 (system): Curating users' and designers' memetic contributions, Consolidating 'negentropizing' and ensuring associative integrity of WHOMER repository, Effectuating by continuously improving tools for complex authorship, Easing by continuously improving user access (Figure 1).
- C-Helix L12-I9 (system): provider's designers to submit content and meta-data to curation process.

4. Conclusions, Contributions, and Impact on Leadership, Cooperation, and Behaviour

This paper directly addresses the track's core mandate to target the actual structural, behavioral, and leadership impacts of digital transformation. By introducing the RUNGS-Ontology, this study offers a concrete antidote to contemporary corporate vulnerabilities, bridging the persistent 'structural hole' between the asset-driven KM focus and behavioral OL routines. The underlying dynamics employed are very well researched from empirical and systemic perspectives (Pirolli and Card, 2005; Carvajal-Pérez *et al.*, 2018; Elia, Margherita and Passiante, 2020; Schmitt, 2025). Operationalized as an Adaptive Management Framework, the RUNGS architecture provides a stable relational template that allows organizations to scale their absorptive capacities systematically without inducing systemic oscillation or cascading collapse.

- On one hand, the generative fit of the triple-structural I0-I7-based PMC-Helices creates a symmetric taxonomy. Its structure tracks an idea from its pre-verbal, memetic inception all the way to a global, transdisciplinary integration of collective intelligence. It expands business system designers' degrees of freedom in terms of leverage, adaptability, malleability, and transferability (Zittrain, 2008; Eck, Uebernickel and Brenner, 2015). From this high-level bird's-eye perspective, RUNGS offers a robust Leadership Tool for strengthening absorptive capacities by emphasizing Sensemaking (memetic evolution) and Sensegiving (knowledge curation).
- On the other hand, as the scenarios in the subsections demonstrated, these benefits must be balanced against the risk of ambiguities by adequately reflecting on spacetime specifics as well as organizational details and preferences. Table 1 and 2, hence, depict the transformation of the I0-I7-taxonomy into the RUNGS-Ontology. Each slot of the 12-Slot-SpaceTime-Sequence is furnished with two bi-directional R^{48}-Dyads-Flows providing a unique alias to its common I# generic counterpart (Table 1). They not only accommodate the in/outflows to its prior/next slot neighbors but also account for flows and progress within the slot itself. The 24 Dyads-Flows are complemented by the 24 RUNGS-single-Bytes-Stocks located within each of the 12 slots and each of the 12 gaps between them (as any in-out-flow only completes once matched with an out-in-flow, gap-Bytes indicate payloads in transit). These RUNGS-Bytes integrate the aims of the *person-firm-network-bytes* referred to earlier (Hidalgo, 2015).

This RUNGS architecture qualifies as an ontology, because its explicitly defines entities (stocks as bytes, relational dynamics as bi-directional dyads, and structural rules across a 12-Slot-SpaceTime-Sequence) move it beyond a basic classification hierarchy 'taxonomy'. As it operates as a formal structural schema, its true ontological functionality provides a steady, immutable template of universal computational logics that can be

populated with application-specific aliases across personal '*MeSpheres*' and institutional or community '*WeSpheres*'. Its impact on leadership, cooperation, and behavior can be summarized as follows:

- *Transforming Work Tasks and Behavior:* The implementation of a Memetic Digital Twin (MDT) environment redefines modern work practices by mapping human cognitive flows across three complementing operational tracks. Through the triple-helix interplay of the People-OL, Memetic-Authorship, and Curation-Platform paths, raw individual insights are socialized, textured into portable boundary objects, and systemically curated.
- *Enhancing Intra- and Inter-Organizational Cooperation:* Rather than relying on static descriptive snapshots, the 12-Slot-SpaceTime-Sequence offers a kinetic engine where network cooperation is explicitly managed. The definition of macro-boundary and meta-generational stock bytes allows diverse institutional capacities to scale fluidly from individual 'MeSpheres' to collective 'WeSpheres'.
- *Digital Leadership and Long-Term Productivity:* By balancing decentralized user innovation with centralized platform governance, the framework moves past superficial IT deployment to deliver verifiable productivity enhancements. It offers digital leaders a traceable, cybernetic engine to instill user acceptance and counter infoxication and knowledge wastes by anchoring modern digitalization firmly within the universal heritage of human knowledge.

Acknowledgements

I would like to express my deepest appreciation to the staff and institutions of the Economic Development Board (edbmauritius.org), the Mauritius Research and Innovation Council (mric.mu), and La Plage Factory Africatech Business Incubator (laplage.io). The EDB's/MRIC's policies and National SME Incubator Scheme allow entrepreneurs from Mauritius or abroad (like me) to be considered for initially operating in partnership with one of the accredited Mauritian business incubators under the MRIC's aegis.

Ethics Declaration: No ethical clearance for the research was necessary.

AI Declaration: As AI tools are increasingly used by reviewers, I applied Gemini to also check my completed submission to confirm that my proposed solutions are indeed novel in the context of academic research as well as professional applications. To the best of my knowledge, after verifying the AI-generated results, this approach has not been previously pursued in academic or commercial realms.

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