

# Bridging Sectoral Silos: A Multi-Layer Lean-Agile Integration for Public - Private Project Delivery

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**Abstract -** The structural and cultural divergence between public and private sector organizations remains one of the most intractable challenges in contemporary project delivery. Despite the widespread adoption of public-private partnerships (PPPs) as a delivery mechanism, project failure rates attributable to governance misalignment, workflow fragmentation, and inter-sectoral cultural incompatibility remain persistently high. Existing frameworks, whether derived from Lean manufacturing, Agile software development, or New Public Management (NPM), address these dimensions in isolation, leaving a critical integration gap in the literature and in practice.

This paper introduces and theoretically frames the MLAIM (Multi-Layer Agile Integration Model), a novel conceptual framework designed to bridge sectoral silos through the simultaneous integration of governance structures, workflow processes, and people-centered collaboration within public-private project delivery environments. Grounded in collaborative governance theory (Ansell & Gash, 2008), Lean-Agile scholarship, and PPP governance literature, MLAIM is structured across four interdependent architectural tiers: an Enabling Infrastructure Layer, a Governance Layer, a Process Layer, and a People Layer unified by an Integration Umbrella and operationalized through an iterative four-stage delivery cycle.

Employing a Design Science Research (DSR) methodology, this paper constructs and validates MLAIM as a theoretically coherent and practically relevant framework. The paper argues that MLAIM represents a meaningful advance on existing frameworks by being the first to simultaneously address all three dimensions of the public-private integration problem structural, processual, and cultural within a single, operationalizable model. Implications for doctoral scholarship, public sector reform, and infrastructure delivery practice are discussed.

**Keywords:** Lean-Agile, public-private partnerships, sectoral silos, integrated project delivery, collaborative governance, MLAIM, Design Science Research

## 1. INTRODUCTION

The governance of complex projects that span organizational, regulatory, and cultural boundaries has emerged as one of the defining challenges of twenty-first-century project management scholarship. Public-private partnerships (PPPs), originally conceived as a mechanism for leveraging private sector efficiency within publicly mandated service contexts, have produced decidedly mixed outcomes. While PPPs have delivered transformative infrastructure in many contexts, a substantial body of literature documents their susceptibility to cost overruns, governance disputes, delivery failures, and post-contractual dysfunction (Hodge & Greve, 2007; Flyvbjerg et al., 2003; Warsen et al., 2019).

The root causes of these failures are increasingly recognized as systemic rather than incidental. Public and private sector organizations are structured around fundamentally different institutional logics (Friedland & Alford, 1991): the former oriented towards accountability, procedural compliance, and public value creation; the latter towards market efficiency, risk-adjusted returns, and competitive agility. When these logics collide within shared project structures, the result is what scholars have characterized as sectoral silos—bounded domains of decision-making, workflow, and culture that resist horizontal integration (Peters, 2015; O'Leary, 2015).

Lean and Agile methodologies have each been proposed as antidotes to the inefficiencies that siloed operations produce. Lean thinking, rooted in the Toyota Production System (Womack et al., 1990), targets waste elimination and value stream optimization. Agile methodologies, codified in the Agile Manifesto (Beck et al., 2001) and scaled through frameworks such as the Scaled Agile Framework (SAFe; Leffingwell, 2011), emphasize adaptive planning, iterative delivery, and cross-functional collaboration. Both have been applied, with varying success, to public sector and hybrid project environments.

However, the literature reveals a critical limitation: neither framework, in isolation, addresses the full tri-dimensional challenge of governance misalignment, workflow fragmentation, and cultural incompatibility that characterizes public-private project delivery.

This paper responds to that gap by introducing the MLAIM (Multi-Layer Agile Integration Model), a theoretically grounded conceptual framework that integrates Lean and Agile principles across the governance, process, and people dimensions of cross-sector project delivery. The paper makes three specific contributions. First, it synthesizes the relevant literature to establish and articulate the integration gap. Second, it presents and theoretically validates the architectural structure of the MLAIM framework. Third, it positions MLAIM against existing frameworks to establish its distinctive scholarly contribution.

The paper is organized as follows. Section 2 establishes the theoretical foundations through a structured literature review. Section 3 outlines the design science research methodology employed. Section 4 presents the MLAIM framework in full architectural and operational detail. Section 5 offers a comparative discussion and identifies the paper's contributions, limitations, and implications for future research. Section 6 concludes.

## 2. THEORETICAL FOUNDATIONS AND LITERATURE REVIEW

### 2.1 The Problem of Sectoral Silos in Project Delivery

The concept of organizational silos bounded units that prioritize internal coherence at the expense of horizontal coordination has been extensively theorized in both public administration and organizational studies literature. Peters (2015) characterizes silo-dominant administrative systems as structurally predisposed to coordination failure, not because individual units are dysfunctional, but because the mechanisms for inter-unit collaboration are underdeveloped or absent. O'Leary (2015) extends this analysis to argue that the transition from hierarchical to networked governance has not eliminated silos but redistributed them, creating new forms of boundary-based fragmentation.

In the context of public-private project delivery, silo effects manifest along three analytically distinct dimensions. The governance silo arises from divergent decision-making structures: public sector actors typically operate within multilevel approval hierarchies subject to legislative oversight, while private sector partners exercise delegated authority within profit-driven organizational structures (Ansell & Gash, 2008). The process silo emerges from incompatible workflow systems: public procurement processes, characterized by extended planning horizons and rigid milestone structures, sit uncomfortably alongside Agile delivery cycles that presuppose rapid iteration and flexible scope management (Mergel et al., 2021). The cultural silo reflects deeper divergences in institutional logic: the public sector's ethos of accountability, equity, and risk aversion versus the private sector's orientation towards innovation, speed, and return on investment (Friedland & Alford, 1991; Scott, 2014).

These three dimensions are analytically separable but practically interconnected. Governance misalignment produces workflow bottlenecks; workflow fragmentation amplifies cultural tensions; cultural incompatibility undermines governance trust. The consequence, extensively documented in empirical PPP literature, is a systemic erosion of collaborative capacity over the project lifecycle (Warsen et al., 2019; Koppenjan & Klijn, 2004). Addressing siloed operations therefore demands not incremental adjustment but an architecturally integrated response that operates simultaneously at governance, process, and people levels, the precise ambition of the MLAIM framework.

### 2.2 Public-Private Partnerships: Promise, Peril, and Persistent Gaps

Public-private partnerships emerged as a dominant infrastructure delivery model in the late twentieth century, catalyzed by New Public Management (NPM) reforms that sought to introduce market mechanisms into public service delivery (Hood, 1991; Osborne & Gaebler, 1992). The theoretical appeal of PPPs rests on the proposition that private sector management efficiency, innovation capacity, and risk appetite can be harnessed to deliver public goods more effectively than purely public provision (Hodge & Greve, 2007). In practice, the evidence is considerably more equivocal.

A systematic review of PPP risk literature by Carbonara et al. (2020) identifies governance dysfunction, demand forecasting failure, and relational breakdown as the three most prevalent causes of PPP underperformance. Wang et al. (2018), drawing on transaction cost theory and principal-agent frameworks, demonstrate that the information asymmetries inherent in long-term PPP contracts create persistent incentive misalignments that formal contractual governance mechanisms alone cannot resolve. Warsen et al. (2019) extend this analysis through the concept of "mix and match" governance, demonstrating that successful PPPs combine contractual and relational governance in ways that are highly context-dependent and difficult to systematise.

Critically, the dominant PPP governance literature focuses primarily on the procurement and contractual dimensions of partnership, the front-end design of agreements, rather than the operational mechanics of collaborative delivery (Hodge & Greve, 2007). This leaves a substantial research gap at the delivery interface: the moment when public and private actors

must translate contractual agreements into coordinated action across divergent organizational systems. It is precisely at this interface that sectoral silos are most damaging and where the MLAIM framework intervenes.

### 2.3 Lean Thinking in Cross-Sector Contexts

Lean management philosophy, derived from the Toyota Production System (Ohno, 1988) and systematized for Western application by Womack et al. (1990), is premised on the identification and elimination of waste, defined as any activity that consumes resources without creating value for the end customer. The five Lean principles value specification, value stream mapping, flow optimization, pull-based production, and continuous improvement—have been applied across manufacturing, healthcare, and, increasingly, public sector delivery contexts.

The translation of Lean to public organizations has, however, been problematic. Radnor and Osborne (2013) conclude from a systematic review of Lean in public services that adopting organizations tend to focus excessively on Lean's technical tools, particularly value stream mapping, without internalizing its underlying philosophical commitments to customer-centricity and systemic waste elimination. The result, they argue, is an improvement in internal process efficiency that fails to generate commensurate gains in public value or service user experience. This critique is echoed in the PPP context: Lean's emphasis on internal value streams provides limited guidance for managing the inter-organizational boundaries that are the defining challenge of cross-sector delivery.

Nevertheless, several Lean concepts retain high relevance for public-private integration: value stream mapping as a diagnostic tool for identifying workflow silos; rolling-wave planning as an alternative to rigid milestone governance; visual management systems as a basis for shared situational awareness; and the principle of continuous improvement (kaizen) as a cultural foundation for adaptive collaboration. The MLAIM framework selectively incorporates these Lean contributions while situating them within a broader integrative architecture.

### 2.4 Agile Methodologies in Public and Hybrid Environments

Agile project management, codified in the Agile Manifesto (Beck et al., 2001) and extended through frameworks such as Scrum (Schwaber & Sutherland, 2017), Kanban, and the Scaled Agile Framework (SAFe; Leffingwell, 2011), has achieved significant penetration in both private sector technology delivery and, more recently, public sector digital transformation. The core Agile proposition that complex projects are best managed through short iterative cycles, continuous stakeholder engagement, and adaptive planning offers a compelling corrective to the plan-driven rigidity that characterizes many public sectors project management traditions.

Empirical evidence on Agile adoption in public sector contexts is growing but remains mixed. Mergel et al. (2021) identify institutional logics as the primary barrier to Agile adoption in government, noting that public sector organizations are structurally oriented towards risk avoidance, procedural compliance, and accountability to external oversight bodies, all of which conflict with Agile's presumption of empowered, autonomous teams. A longitudinal case study of Agile adoption in the UK Ministry of Defence (Lal et al., 2023) demonstrates that successful institutionalization required the development of novel mechanisms, including flexible contracting, dedicated induction training, and revised governance structures, none of which are provided by standard Agile frameworks.

SAFe for Government (Scaled Agile, 2022) represents the most systematic attempt to adapt Lean-Agile principles to public sector contexts, providing guidance on portfolio management, program increment planning, and government-specific acquisition processes. However, SAFe remains primarily designed for large-scale software delivery within single organizations. Its application to cross-sector projects involving both public accountability requirements and private delivery partners introduces complexities, particularly around governance authority, backlog ownership, and performance accountability, that SAFe's architecture does not directly address.

### 2.5 The Integration Gap: Why Lean and Agile Alone Are Insufficient

The preceding review reveals a consistent pattern across the Lean, Agile, and PPP governance literatures: each stream of scholarship addresses important dimensions of the public-private delivery problem, but none provides a comprehensive integrative framework. Lean offers tools for process optimization but lacks a theory of cross-sector governance. Agile offers principles for adaptive delivery but was designed for intra-organizational team contexts. PPP governance frameworks address contractual and relational design but not the operational mechanics of integrated delivery.

More specifically, the literature fails to provide a framework that simultaneously addresses all three dimensions of the silo problem: the governance dimension (how decisions are made and authority is distributed across sectors), the process dimension (how workflows are coordinated across organizational boundaries), and the people dimension (how cultural differences are managed and collaborative norms are established). This three-dimensional gap constitutes the central theoretical problem that the MLAIM framework is designed to address.

The identification of this integration gap aligns with broader calls in the project management literature for frameworks that transcend single-methodology boundaries. Ochieng and Price (2010) argue for culturally sensitive integration models in complex multi-party projects. Klijn and Koppenjan (2016) advocate for governance frameworks that operate across institutional logics rather than within them. Emerson et al. (2012) propose an integrative framework for collaborative governance that identifies shared motivation, capacity for joint action, and principled engagement as the three essential conditions for cross-sector collaboration—conditions that map closely onto the governance, people, and process dimensions, respectively. These convergent calls from multiple scholarly traditions provide strong theoretical warrant for the integrative ambition of the MLAIM framework.

### The Integration Gap in Cross-Sector Project Delivery Frameworks
















Dimension for Cross-sector project Delivery	Lean	Agile/Scrum	SAFe	IPD (Integrated Project Delivery)	MLAIM
Governance Structure					
Workflow Process					
Cultural Alignment					

Figure 3: Comparative analysis of existing project delivery frameworks against the three core dimensions of cross-sector integration, highlighting the comprehensive coverage provided by the MLAIM approach.

### 3. RESEARCH METHODOLOGY

#### 3.1 Methodological Stance

This paper adopts an interpretivist epistemological stance, recognizing that the phenomena under investigation—cross-sector collaboration, governance integration, and organizational culture—are socially constructed and context-sensitive. Within this epistemological frame, the paper employs a Design Science Research (DSR) methodology, which is concerned with the creation and evaluation of artifact frameworks, models, constructs, and methods that solve identified classes of problems (Hevner et al., 2004; Peffers et al., 2007). DSR is increasingly recognized as an appropriate methodological approach for doctoral-level conceptual framework development, particularly in applied disciplines such as project management and public administration, where theory must speak directly to practice (Gregor & Hevner, 2013).

The DSR approach is distinguished from purely positivist hypothesis-testing methodologies by its explicit design orientation: it seeks not only to explain phenomena but to construct solutions. In this paper, the identified problem is the three-dimensional integration gap in public-private project delivery. The proposed artifact is the MLAIM framework. The evaluation strategy, appropriate for the present stage of framework development, is conceptual validation through systematic literature grounding—demonstrating that each architectural component of MLAIM is theoretically warranted and that the framework as a whole possesses internal coherence.

#### 3.2 Method of Framework Development

The MLAIM framework was developed through an iterative process of systematic literature synthesis, analogical reasoning from adjacent frameworks, and recursive conceptual refinement. The systematic literature review encompassed three primary domains: (a) Lean-Agile methodology literature, including SAFe documentation, empirical studies of Agile adoption in public contexts, and Lean public sector scholarship; (b) PPP governance literature, including risk management frameworks, relational governance studies, and collaborative governance theory; and (c) organizational silo and coordination literature, including public administration scholarship on horizontal management and inter-organizational network theory.

The iterative design process proceeded through three stages. In the first stage, the three-dimensional integration gap was identified and specified through thematic synthesis of the literature. In the second stage, architectural components addressing each dimension were derived from the literature and configured into a layered model. In the third stage, the interactions between components were theorized, and an operational delivery cycle was designed to provide the framework's dynamic dimension. The resulting framework was evaluated for theoretical coherence, conceptual novelty, and practical applicability, the three DSR evaluation criteria identified by Gregor and Hevner (2013).

### 3.3 Conceptual Validity and Limitations of the Methodology

Conceptual validity in DSR is established through demonstration that the proposed artifact is theoretically grounded, internally consistent, and responsive to the identified problem. This paper satisfies these criteria through explicit citation of the theoretical antecedents of each MLAIM component, through discussion of the architectural logic that connects them, and through comparison with existing frameworks that reveals MLAIM's distinctive contribution. The primary limitation of this methodological approach is the absence of empirical validation: the framework has been constructed and validated conceptually but has not yet been tested in live project delivery contexts. This is an acknowledged limitation and a priority for the framework's future research agenda.

## 4. THE MLAIM FRAMEWORK: A LEAN-AGILE INTEGRATION MODEL FOR CROSS-SECTOR DELIVERY

### 4.1 Conceptual Origins and Design Rationale

The MLAIM (Multi-Layer Agile Integration Model) framework was conceived in response to the tri-dimensional integration gap identified in Section 2.5. Its name captures its essential character: it is a multi-layered architecture that integrates Lean and Agile principles across the governance, process, and people dimensions of public-private project delivery. The framework is explicitly integrative; it does not seek to replace existing methodologies such as SAFe or Lean project management but to provide a superordinate architecture within which those methodologies can function coherently across sector boundaries.

The design rationale for MLAIM rests on three core premises. First, the failure of public-private projects is predominantly systemic rather than incidental; it reflects architectural misalignment between sectors rather than the individual failings of project teams or managers. Second, that effective integration must operate simultaneously at governance, process, and people levels; partial interventions at any single level are insufficient because the three dimensions are mutually constitutive. Third, Lean-Agile principles, appropriately configured, provide the most coherent and practically proven basis for constructing such an integrative architecture; their emphasis on waste elimination, iterative improvement, and cross-functional collaboration aligns naturally with the requirements of cross-sector project delivery.

### 4.2 Architectural Overview

The MLAIM framework is structured across four interdependent architectural tiers, arranged vertically to reflect their functional relationship:

Tier 1: Enabling Infrastructure Layer: The foundational platform that supports all other framework operations through digital integration, cross-sector capability development, and toolchain alignment.

Tier 2: Three Core Layers: The primary structural components of the framework, each addressing one dimension of the tri-dimensional integration gap: the Governance Layer, the Process Layer, and the People Layer.

Tier 3: Delivery Cycle: The operational mechanism through which the framework functions in practice, comprising four iterative stages: Align, Plan, Execute, and Measure & Improve.

Tier 4: Integration Umbrella: The superordinate coordination mechanism that ensures alignment across all layers and cycle stages through a unified delivery charter, adaptive oversight, and integration dashboards.

These tiers are not sequential stages but concurrent, mutually reinforcing dimensions of a single integrated system. Their arrangement reflects their functional logic: the infrastructure layer enables all operations; the core layers address the substantive dimensions of integration; the delivery cycle provides the operational rhythm; and the integration umbrella maintains system-level coherence. Together, they constitute a framework that is architecturally comprehensive, theoretically grounded, and operationally actionable.

## MLAIM Framework Architecture

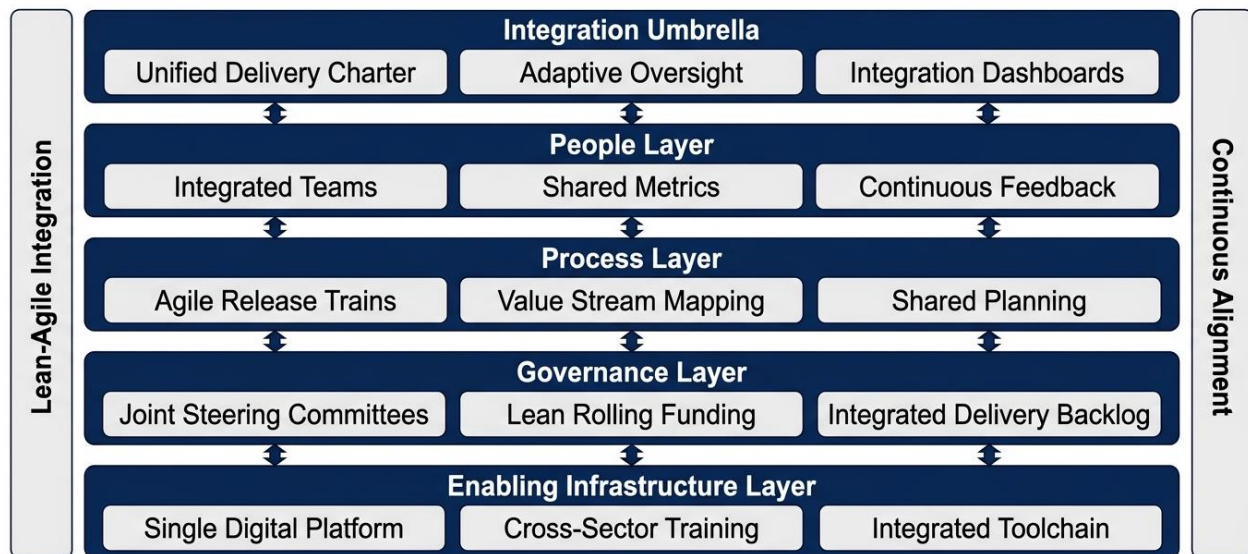


Figure 1: Structural overview of the MLAIM Framework, illustrating the vertical integration of infrastructure, governance, process, and people.

### 4.3 The Enabling Infrastructure Layer

The Enabling Infrastructure Layer constitutes the foundational tier of the MLAIM framework. Its function is to provide the technical, relational, and capability infrastructure without which integration across the other three layers cannot occur. It comprises three interdependent components: a single digital platform, cross-sector training, and an integrated toolchain.

#### 4.3.1 Single Digital Platform

The single digital platform provides the informational substrate for cross-sector collaboration. In the absence of a shared digital environment, public and private sector teams necessarily operate within separate information ecosystems, generating the data silos that amplify governance and process fragmentation. The theoretical basis for this component draws on digital governance scholarship (Janowski, 2015) and the concept of integrated information environments in collaborative organizations (Gil-Garcia et al., 2019). The platform is not conceived as a specific technology but as an architectural principle: all project-critical information, including delivery backlogs, performance metrics, risk registers, and decision logs, must be accessible to all project actors, regardless of sector, in real time.

#### 4.3.2 Cross-Sector Training

Cross-sector training addresses the capability gap that prevents public and private sector professionals from collaborating effectively within shared delivery structures. Empirical research on Agile adoption in public organizations (Mergel et al., 2021; Lal et al., 2023) consistently identifies unfamiliarity with Agile terminologies, values, and practices as a significant barrier to cross-sector collaboration. MLAIM addresses this through structured, joint induction programs that develop shared understanding of both Lean-Agile principles and the institutional constraints—regulatory, accountability, and cultural—that each sector brings to the collaboration.

#### 4.3.3 Integrated Toolchain

The integrated toolchain operationalizes the digital platform by specifying the suite of tools for planning, communication, performance tracking, and retrospective analysis that all project actors will use. Toolchain fragmentation, in which public and private actors employ incompatible project management and communication tools, is a frequently underestimated source of workflow friction. The integrated toolchain component of MLAIM draws on principles of enterprise architecture (Lankhorst, 2017) to mandate toolchain alignment as a prerequisite for process integration.

### 4.4 The Governance Layer

The governance layer addresses the structural dimension of the silo problem, the misalignment of decision-making authority, accountability structures, and strategic planning processes that characterizes most public–private partnerships. It comprises three components: joint steering committees, lean rolling funding, and an integrated delivery backlog.

#### 4.4.1 Joint Steering Committees

Joint steering committees (JSCs) provide the primary governance mechanism for cross-sector decision-making in the MLAIM framework. Unlike conventional PPP governance structures in which public and private actors maintain separate governance forums and escalate disputes to contractual arbitration mechanisms, MLAIM's JSCs constitute genuinely integrated decision-making bodies with co-equal representation from both sectors. This design draws on collaborative governance theory (Ansell & Gash, 2008), which identifies face-to-face dialogue, shared understanding, and trust-building as prerequisites for effective cross-sector governance. The JSC structure is further informed by the principle of "stewardship" leadership (Ansell & Gash, 2012), in which JSC chairs function as conveners and facilitators of collaborative decision-making rather than as representatives of sectoral interests.

#### 4.4.2 Lean Rolling Funding

Lean rolling funding replaces the fixed-phase budget structures that characterize conventional public project governance with an adaptive funding mechanism calibrated to Agile delivery cycles. The theoretical basis for this component draws on Lean's principle of pull-based resourcing: resources are allocated in response to demonstrated delivery value rather than pre-committed to fixed project phases. This directly addresses one of the most frequently cited governance barriers to Agile adoption in the public sector: the incompatibility between annual appropriations processes and iterative delivery cycles (Scaled Agile, 2022). Lean rolling funding requires enabling legislation or policy frameworks in most public sector contexts, an institutional prerequisite that MLAIM acknowledges as a necessary condition for full implementation.

#### 4.4.3 Integrated Delivery Backlog

The integrated delivery backlog is a shared, prioritized inventory of all project deliverables, expressed in terms of value to the end beneficiary rather than in terms of sector-specific technical specifications. Backlog integration addresses the governance silo directly: by requiring public and private actors to jointly maintain and prioritize a single backlog, it creates a shared object around which cross-sector governance can cohere. This component draws on Scrum's concept of the product backlog (Schwaber & Sutherland, 2017) and SAFe's program-level backlog architecture (Leffingwell, 2011), adapted to the cross-sector context by incorporating public value criteria alongside technical and commercial delivery criteria.

### 4.5 The Process Layer

The process layer addresses the workflow dimension of the silo problem, the incompatibility of planning horizons, delivery rhythms, and coordination mechanisms that prevents effective operational integration across sectors. It comprises three components: Agile Release Trains, value stream mapping, and shared planning.

#### 4.5.1 Agile Release Trains

The Agile Release Train (ART), a core structural concept of SAFe (Leffingwell, 2011), organizes cross-sector delivery teams into a long-lived, self-managing unit that plans, commits, and delivers work in synchronized program increments (PIs) of fixed duration. In the MLAIM context, ARTs are deliberately composed of personnel from both public and private sector organizations, breaking down the organizational boundary that typically separates delivery teams. Each ART is led by a Release Train Engineer (RTE) who is accountable to the JSC and operates across the public–private boundary. This configuration operationalizes the principle of integrated delivery teams while maintaining accountability to the governance structure established in the Governance Layer.

#### 4.5.2 Value Stream Mapping

Value stream mapping (VSM), a diagnostic tool derived from Lean manufacturing (Womack & Jones, 1996), is employed in the MLAIM framework as a cross-sector workflow analysis mechanism. Applied to public–private delivery contexts, VSM reveals the handoff points between sectors where delays, rework, and information loss typically accumulate in the "process silos" identified in Section 2.1. By making these handoff failures visible to all project actors, VSM creates the shared situational awareness necessary for collaborative process improvement. VSM sessions in MLAIM are conducted jointly by public and private team members, with the dual purpose of identifying waste and building relational understanding across sector boundaries.

#### 4.5.3 Shared Planning

Shared planning operationalizes the process integration aspiration of the MLAIM framework through PI Planning events, the large-scale, face-to-face planning ceremonies that are the heartbeat of SAFe's Agile Release Train architecture. In MLAIM, PI Planning events are explicitly designed as cross-sector occasions: public sector program owners and private sector delivery leads plan jointly, negotiate dependencies, and agree on commitments in a shared planning environment. This design draws on research demonstrating that joint planning events significantly reduce coordination costs and improve commitment quality in inter-organizational projects (Ochieng & Price, 2010).

#### **4.6 The People Layer**

The people layer addresses the cultural dimension of the silo problem: the divergent values, norms, behaviors, and institutional logics that prevent effective collaborative working between public and private sector actors. It comprises three components: integrated teams, shared metrics, and continuous feedback.

##### **4.6.1 Integrated Teams**

Integrated teams are cross-sector delivery units in which public and private sector professionals work as peers within a common team structure, rather than in parallel streams that interact only at designated interface points. The integration of team membership is the most direct intervention available for addressing the cultural silo, because sustained collaborative work across sector boundaries has been empirically demonstrated to reduce intergroup bias, build trust, and develop shared institutional norms (Tajfel & Turner, 1986; Dovidio et al., 2005). In the MLAIM framework, integrated teams operate at the squad level within each ART, with team composition actively managed to maintain cross-sector balance and prevent the re-emergence of sectoral sub-groups.

##### **4.6.2 Shared Metrics**

Shared metrics replace the divergent performance measurement systems that typically characterize public-private partnerships, in which public actors are evaluated against accountability and compliance metrics while private actors are evaluated against commercial performance indicators, with a unified performance framework that applies to all project actors. Drawing on Balanced Scorecard approaches (Kaplan & Norton, 1992) and public value theory (Moore, 1995), MLAIM's shared metrics framework incorporates four dimensions: delivery performance (cycle time, throughput, quality), public value creation, stakeholder satisfaction, and collaborative health. By making all actors accountable to the same performance framework, shared metrics create a structural incentive for cross-sector collaboration.

##### **4.6.3 Continuous Feedback**

Continuous feedback provides the learning mechanism through which the People Layer's collaborative culture is sustained and developed over time. Drawing on Agile retrospective practice (Derby & Larsen, 2006) and organizational learning theory (Argyris & Schon, 1996), MLAIM mandates regular retrospective events structured at team, program, and portfolio levels in which both the quality of delivery and the quality of cross-sector collaboration are explicitly examined. Retrospective findings are logged in the integrated digital platform and feed directly into the Measure & Improve stage of the operational delivery cycle, creating a systematic connection between learning and adaptation.

#### **4.7 The Integration Umbrella**

The integration umbrella is the distinctive element of the MLAIM framework that differentiates it from a simple aggregation of existing practices. It functions as a system-level coordination mechanism, a superordinate governance structure that maintains alignment across the Governance, Process, and People Layers and ensures that they function as a coherent whole rather than as parallel improvement streams. It comprises three components: a unified delivery charter, adaptive oversight, and integration dashboards.

##### **4.7.1 Unified Delivery Charter**

The unified delivery charter is a founding document, jointly authored and endorsed by public and private sector leadership, that articulates the shared purpose, values, operating principles, and accountability structures of the cross-sector partnership. Unlike a PPP contract, which is a legal instrument designed to allocate risk and specify obligations, the delivery charter is a relational document designed to establish the collaborative norms that the contract cannot mandate. It draws on the concept of the "relational contract" (Macneil, 1980) and collaborative governance theory's emphasis on principled engagement (Emerson et al., 2012) as its theoretical foundations. The charter is a living document, reviewed and reaffirmed at each PI Planning event.

##### **4.7.2 Adaptive Oversight**

Adaptive oversight replaces the fixed-cadence, compliance-oriented audit mechanisms of conventional public project governance with a dynamic oversight system that adjusts its intensity and focus to the risk profile of the current delivery cycle. Drawing on the concept of "responsive regulation" (Ayres & Braithwaite, 1992) and adaptive governance theory (Folke et al., 2005), MLAIM's adaptive oversight mechanism applies light-touch monitoring when delivery is proceeding within acceptable parameters and escalates to intensive review when performance thresholds are breached. This approach resolves a persistent tension in public-private project governance: the public sector's accountability imperative demands sufficient oversight to protect public interests, while excessive oversight suppresses the agility and innovation that private delivery partners are engaged to provide.

#### 4.7.3 Integration Dashboards

Integration dashboards provide the informational infrastructure for the Integration Umbrella, aggregating performance data from all layers of the framework into a real-time, shared view of project health. Drawing on Agile's visual management principles (Leffingwell, 2011) and the concept of the "single source of truth" in collaborative information environments (Gil-Garcia et al., 2019), MLAIM's integration dashboards are designed for consumption by both public and private actors across all levels of the project hierarchy, from squad members to JSC members to external accountability bodies. This universal accessibility operationalizes the framework's commitment to transparency as a foundation for trust.

#### 4.8 The MLAIM Operational Delivery Cycle

The MLAIM framework is operationalized through an iterative four-stage delivery cycle that provides the rhythmic structure within which all layers of the framework function. The cycle is explicitly designed to be perpetual; each iteration informs the next, creating a continuous improvement dynamic that is central to both Lean and Agile philosophies. The four stages are Align, Plan, Execute, and Measure & Improve.

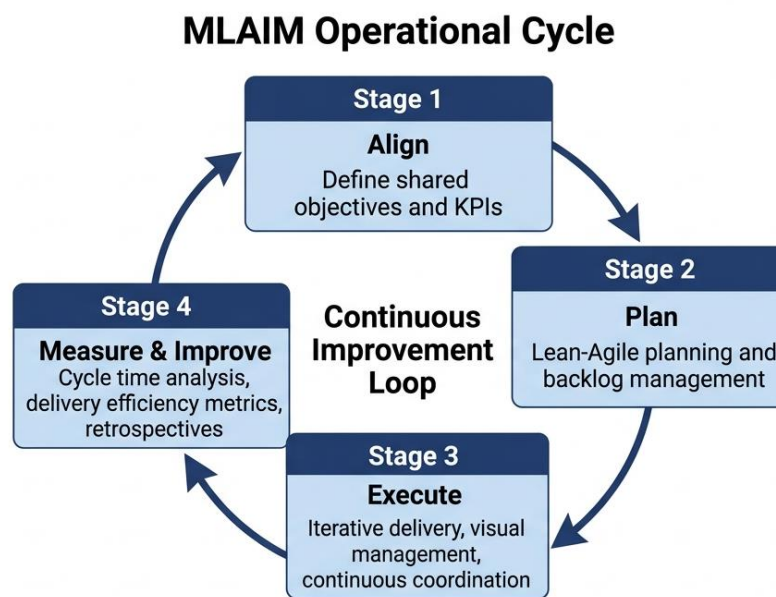


Figure 2: MLAIM Operational Cycle—A Lean-Agile Delivery Process

##### 4.8.1 Align

The Align stage initiates each delivery cycle by establishing or reaffirming the shared objectives, key performance indicators, and value priorities that will guide the forthcoming program increment. Alignment events bring together public and private sector leadership within the JSC structure, with the integrated delivery backlog serving as the primary reference document. The Align stage draws on collaborative governance theory's concept of "shared motivation" (Emerson et al., 2012) as its theoretical foundation, recognizing that sustained cross-sector collaboration requires periodic, structured reaffirmation of common purpose, particularly as organizational contexts evolve and personnel changes occur.

##### 4.8.2 Plan

The Plan stage translates aligned objectives into actionable delivery commitments through joint PI Planning events. Cross-sector ART teams identify the deliverables they will commit to for the forthcoming program increment, map inter-team dependencies, and document risks and impediments to delivery. The Plan stage integrates Lean's principle of visual planning, making work and flow visible to all actors, with Agile's emphasis on team-level commitment and ownership.

The resulting program increment plan constitutes a shared commitment, jointly owned by public and private sector team members, that is the primary reference for execution.

#### 4.8.3 Execute

The Execute stage delivers committed work through iterative two-week sprint cycles within each ART. Cross-sector squads work to sprint goals derived from the program increment plan, supported by daily stand-ups, sprint reviews, and the real-time visibility provided by integration dashboards. The execute stage is the primary locus of the cultural integration challenge: it is in daily collaborative work that sectoral logics most directly confront each other and where the People Layer's integrated team structures, shared metrics, and feedback mechanisms have their most immediate effect. System demonstrations at the end of each program increment provide a structured occasion for stakeholder review and feedback, maintaining public accountability while preserving the iterative delivery rhythm.

#### 4.8.4 Measure and Improve

The Measure & Improve stage closes each cycle by evaluating performance against the shared metrics framework and identifying improvements to be implemented in the next cycle. It comprises two distinct but connected activities: performance analysis, which examines delivery outcomes against committed objectives; and retrospective learning, which examines the quality of cross-sector collaboration and identifies cultural and process improvements. Findings from both activities feed directly into the subsequent Align stage, ensuring that each cycle benefits from the learning generated by the previous one. This feedback loop is the mechanism through which MLAIM delivers on its core promise: the continuous improvement of both delivery performance and cross-sector integration over the project lifecycle.

## 5. DISCUSSION

### 5.1 CLAIM Against Existing Frameworks

A comparative analysis of MLAIM against the most closely related existing frameworks reveals both its intellectual debts and its distinctive contributions. Against SAFe for Government (Scaled Agile, 2022), MLAIM offers a broader architectural scope: SAFe provides sophisticated guidance on Lean-Agile delivery at scale within single organizations but does not address the cross-sector governance and cultural integration challenges that define public-private partnerships. MLAIM's Governance Layer and Integration Umbrella fill this gap directly.

Against Integrated Project Delivery (IPD) frameworks from the construction literature (Forbes & Ahmed, 2011), MLAIM offers a more explicitly Lean-Agile operational dimension. IPD models address multi-party contractual integration effectively but tend to assume a waterfall delivery paradigm incompatible with the iterative rhythms of complex adaptive projects. MLAIM's delivery cycle introduces the iterative dimension that IPD lacks.

Against Ansell and Gash's (2008) Collaborative Governance Framework (CGF), which has been applied to PPP contexts by Zhao et al. (2022), MLAIM offers greater operational specificity. The CGF provides a powerful diagnostic for understanding the conditions under which cross-sector collaboration succeeds or fails but does not specify the operational mechanisms—backlogs, ARTs, VSM, or integration dashboards—through which those conditions are created and sustained. MLAIM operationalizes the CGF's insights.

The distinctive contribution of MLAIM is therefore its integration of three dimensions—governance, process, and people—within a single architecturally coherent framework that is simultaneously theoretically grounded, operationally specified, and iteratively self-improving. No existing framework addresses all three dimensions within a single structure: this is MLAIM's primary claim to scholarly novelty.

**Table 1: Comparative Analysis of Cross-Sector Project Delivery Frameworks**

**Table 1: Comparative Analysis of Cross-Sector Project Delivery Frameworks**

	MLAIM	SAFe	IPD	Lean	NPM Reform
(1) Primary Sector Focus	Public-Private-Multilateral	Private (Commercial)	Private (Construction)	Private (Manufacturing)	Public only
(2) Governance Integration	Integrated & Multi-layered	Top-down (Agile-focused)	Collaborative (Contractual)	Lean Leadership	Decentralized & Performance-based
(3) Process Methodology	Lean-Agile Integrated	Agile-at-Scale (Scrum)	Collaborative Planning	Eliminating Waste	Market-based
(4) People/Culture Layer	Cross-functional & Learning-oriented	Servant Leadership	Team-based (Relational)	Kaizen Culture	Performance Culture
(5) Iterative Delivery Cycle	Integrated Sprints & Release Trains	Fixed-length Sprints & PIs	Phased & Flexible	Continuous Flow	Annual Reporting Cycles
(6) Cross-Sector Applicability	High (All Sectors)	Medium (Mostly Large Private)	Medium (Construction)	Medium (Manufacturing/Service)	Low (Mainly Public)
(7) Enabling Infrastructure	Shared Digital Platform & Toolchain	Agile Tooling (e.g., Jira)	Integrated Data & Models	Visual Management	IT & Performance Metrics
(8) Continuous Improvement Mechanism	Formal Retrospectives & Value Stream Mapping	System Demos & Retrospectives	Feedback Loops	PDCA Cycle	Audits & Evaluation

### 5.2 Theoretical Contributions

This paper makes three principal theoretical contributions. First, it articulates and specifies the tri-dimensional integration gap in public-private project delivery the simultaneous failure of governance, process, and people integration as a coherent theoretical construct. While each dimension has been discussed individually in the literature, their mutual constitutiveness and collective significance have not been systematically theorized. This articulation provides a foundation for future empirical research on cross-sector project failure.

Second, the paper advances collaborative governance theory (Ansell & Gash, 2008; Emerson et al., 2012) by demonstrating how its core propositions shared motivation, capacity for joint action, and principled engagement can be operationalized within a Lean-Agile delivery architecture. This theoretical bridging contributes to both collaborative governance scholarship and Lean-Agile research by demonstrating their mutual complementarity.

Third, the paper extends design science research methodology into the domain of cross-sector project management, demonstrating that DSR is a productive methodological vehicle for doctoral-level framework development in applied management disciplines. This methodological contribution has implications for how doctoral research in project management is conducted and evaluated.

### 5.3 Practical Implications

The practical implications of the MLAIM framework are significant for public sector reform, infrastructure delivery, and digital transformation partnerships. For public sector leaders, MLAIM provides a principled basis for redesigning PPP governance structures away from compliance-oriented contract management towards collaborative value co-creation. The framework's Joint Steering Committee architecture and unified delivery charter provide specific design templates for this transition.

For private sector delivery partners, MLAIM offers a structured basis for engaging with public sector accountability requirements without sacrificing the delivery agility that is their principal source of value in cross-sector partnerships. The adaptive oversight mechanism and shared metrics framework are particularly relevant here, providing a governance architecture that satisfies public accountability requirements while preserving the iterative delivery rhythm that Agile methods require.

For practitioners designing or managing large-scale infrastructure, digital transformation, or service delivery PPPs, MLAIM provides actionable guidance across all stages of the delivery lifecycle from platform and toolchain selection through governance design and team integration to performance measurement and continuous improvement.

### 5.4 Limitations and Future Research

This paper has three primary limitations that define its future research agenda. First, as a conceptual framework developed through systematic literature synthesis, MLAIM has not been empirically validated in live project delivery contexts. The critical next step for the research program is a program of empirical validation studies, ideally longitudinal case studies conducted across multiple PPP contexts that test MLAIM's components against real-world implementation experience.

Second, the framework has been developed at a level of generality intended to ensure cross-sectoral applicability. Its implementation in specific contexts, contexts such as infrastructure delivery, digital government transformation, and healthcare PPPs, will require contextualization that the present paper does not provide. Sector-specific adaptations of the MLAIM architecture constitute a productive future research direction.

Third, the paper does not address the political economy of MLAIM implementation, the enabling legislation, public procurement reforms, and institutional capacity development that full implementation of the framework would require in most jurisdictions. This is a deliberate scope limitation rather than an oversight, but it represents a significant research gap that public policy scholars are well-placed to address.

## 6. CONCLUSION

This paper has addressed a persistent and consequential problem in contemporary project management: the systemic failure of public-private partnerships to achieve genuine integration across the governance, process, and people dimensions that define cross-sector project delivery. Through systematic literature review, we have established that this three-dimensional integration gap is the primary architectural cause of PPP underperformance, a problem that cannot be resolved by existing frameworks operating within their current scope.

In response, we have introduced and theoretically validated the MLAIM (Multi-Layer Agile Integration Model) framework, a four-tier Lean-Agile architecture that addresses governance integration through joint steering structures and adaptive funding, process integration through Agile Release Trains and value stream mapping, people integration through cross-sector teams and shared performance metrics, and system-level coherence through an Integration Umbrella comprising a unified delivery charter, adaptive oversight, and integration dashboards. The framework is operationalized through an iterative four-stage delivery cycle Align, Plan, Execute, Measure & Improve that embeds the principles of continuous improvement at the heart of cross-sector project delivery.

MLAIM's theoretical contribution lies in its integration of collaborative governance theory, Lean-Agile scholarship, and PPP governance literature within a single, architecturally coherent, and operationally specified framework. Its practical contribution lies in providing public and private sector leaders, delivery practitioners, and policymakers with a principled and actionable basis for redesigning cross-sector project delivery systems.

The framework's primary limitation, the absence of empirical validation, is also its most important research priority. The future research agenda includes longitudinal case studies of MLAIM implementation, sector-specific framework adaptations, and political economy analysis of the institutional conditions necessary for full implementation. The authors invite collaboration from scholars and practitioners across project management, public administration, and organizational studies in the pursuit of this agenda.

Cross-sector project delivery is too important to public value, to infrastructure development, and to democratic accountability to be left to improvised coordination. MLAIM represents a principled step towards a future in which Lean-Agile thinking serves not only private sector technology delivery but also the broader mission of integrated, effective, and adaptive public-private project delivery.

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