TECHNICAL WHITE PAPER

CoreMatrix AI · CoreMatrix Universal

A Next-Generation Construction Intelligence Ecosystem — Pre-Development Intelligence and Universal Construction Management

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1. Abstract

Construction decisions span two distinct phases with two distinct failure modes: before the build, projects fail from slow, fragmented, and inconsistent feasibility analysis; during the build, they fail from disconnected tools, lost records, and reactive management. PSM Innovation addresses both with a two-platform ecosystem. CoreMatrix AI is a next-generation pre-development intelligence and construction cost estimation platform that transforms project inputs and uploaded drawings into structured, explainable, feasibility-grade decision support. CoreMatrix Universal is a next-generation universal construction management platform — 43 integrated modules that carry a project from preconstruction through closeout with one login and one source of truth. This paper describes both platforms: their architecture, data foundations, methodologies, and appropriate scope of use.

PART I — COREMATRIX AI

2. The Pre-Development Problem

Before a shovel touches the ground, developers, investors, lenders, owners, and advisors must answer a deceptively simple question: does this project pencil? Answering it typically requires assembling market data, construction cost baselines, financing assumptions, and design constraints from disparate sources — consultants, published cost guides, spreadsheets, and institutional experience. The process is manual, slow, expensive, and difficult to reproduce: two analysts given the same project frequently reach materially different conclusions.

At the same time, construction costs, interest rates, and material prices have become more volatile, shortening the useful life of any static analysis. The industry needs feasibility analysis that is fast, data-grounded, explainable, and repeatable. CoreMatrix AI was purpose-built for this gap.

3. CoreMatrix AI — Platform Overview

CoreMatrix AI is a web-based platform that produces comprehensive pre-development intelligence reports. Each report can draw on more than 28 intelligence modules and over 700 data points, covering:

- 21 building types, spanning commercial, residential, institutional, industrial, and specialty assets
- 31 United States metropolitan markets and 219 global cities with location-based cost adjustment
- A professional Developer Budget Breakdown across hard costs, soft costs, and contingency
- Five-year pro forma projections with IRR, NPV, and DSCR analysis
- Monte Carlo simulation producing probabilistic cost ranges (P10–P90)
- AI-assisted blueprint and drawing analysis
- A lender-ready output package designed to support financing conversations

A complementary hub of twelve free construction and investment calculators — covering cost per square foot, loan and DSCR analysis, IRR, markup versus margin, concrete, rebar, retaining walls, earthwork, asphalt, area takeoff, lumber, and roofing — provides accessible entry points into the platform's methodology.

4. Architecture

The platform is delivered as a lightweight, browser-based application with a deliberately simple deployment surface. Key architectural characteristics include:

- **Client-centric computation.** Cost modeling, financial analysis, and simulation execute in the user's browser session, minimizing data movement and server-side persistence of project details.
- **Live data gateway.** A dedicated edge proxy layer routes requests to public government data APIs, resolving browser cross-origin restrictions while keeping API interactions observable and controlled. When live sources are unavailable, the platform falls back to embedded parametric baselines so analyses remain available.
- **AI service integration.** Document and drawing intelligence is provided through integration with advanced large language model (LLM) technology, invoked on demand for analysis tasks.
- **Explainability by design.** Every report is structured so that inputs, assumptions, adjustments, and outputs are visible and traceable, supporting governance review and professional verification.

5. Data Foundation

CoreMatrix AI grounds its analysis in publicly available data published by United States federal sources, including the Federal Reserve Economic Data service (FRED), the U.S. Bureau of Labor Statistics (BLS), the U.S. Census Bureau, the U.S. Department of the Treasury, and the U.S. Department of Housing and Urban Development (HUD). These sources inform interest rate environments, producer price and construction cost indices, construction spending trends, and market context.

Live federal indicators are combined with the platform's parametric cost baselines — structured per-square-foot cost models by building type, market, and finish tier — to produce estimates that reflect both long-run cost structure and current conditions. References to government data sources describe the origin of public data only; they do not imply review, approval, or endorsement of the platforms by any government agency.

6. Cost Estimation Methodology

The platform's core estimation approach is parametric: project scope (building type, gross area, location, finish tier, and related inputs) is mapped onto calibrated cost baselines, then adjusted for market location factors and current index conditions. Finish-tier multipliers span contractor-grade through luxury specifications. The output is a structured budget — not a single opaque number — decomposed into hard costs, soft costs, and contingency, so that professionals can interrogate each component.

Parametric estimation is a well-established early-stage methodology. It is designed for feasibility and screening decisions, and is not a substitute for detailed quantity takeoffs, contractor bids, or professional cost consulting as a project advances.

7. Uncertainty Modeling and the Accuracy Standard

Single-point construction estimates convey false precision. CoreMatrix AI instead expresses cost as a probability distribution generated through Monte Carlo simulation, reporting P10, P50, and P90 values — the levels below which 10%, 50%, and 90% of simulated outcomes fall.

The platform's accuracy standard is defined in these probabilistic terms: it is designed so that actual project outcomes are expected to fall within the reported P10–P90 range approximately 95% of the time for projects whose inputs are accurate and whose scope matches the modeled assumptions. This is a statistical design target, not a guarantee of any individual project outcome. Actual results depend on project-specific conditions, market movements, procurement, design evolution, and factors outside any model's scope.

8. AI-Assisted Blueprint Intelligence

Where drawings are available, the platform's AI-assisted document analysis can extract project characteristics directly from uploaded blueprints. In Blueprint-Only Mode, manually entered defaults are cleared and the cost engine operates exclusively on values extracted from the drawings, reducing the risk of stale or inconsistent inputs.

AI-extracted values are presented for user review before analysis. As with all AI-derived outputs, extraction results should be verified by qualified professionals, and the platform is designed to make that verification straightforward.

9. Financial Modeling

Beyond construction cost, the platform models the full pre-development financial picture: development budgets, five-year operating pro formas, internal rate of return (IRR), net present value (NPV), and debt service coverage ratio (DSCR) analysis under user-controlled financing assumptions. Outputs are assembled into a lender-oriented package intended to support — not replace — underwriting, appraisal, and credit processes.

PART II — COREMATRIX UNIVERSAL

10. The Construction Management Problem

Once a project is approved, its center of gravity shifts from analysis to execution — and with it, the failure modes shift too. Project records scatter across email, spreadsheets, and point solutions; field data arrives late or not at all; financial controls (contracts, invoices, draws, lien waivers) live apart from the schedules and field reports that explain them; and by closeout, the record of what actually happened is fragmented and difficult to audit. CoreMatrix Universal was built to give every project one system, one login, and one auditable source of truth from preconstruction through closeout.

11. CoreMatrix Universal — Platform Overview

CoreMatrix Universal is a next-generation universal construction management platform serving general contractors, owners and developers, and specialty contractors. It comprises 43 integrated modules organized into six categories. Every module supports full record control — create, edit, delete, annotate, and attach documents — with audit logging.

Command Center (6 modules)

Master Dashboard · Analytics · Portfolio Map · AI Insights Engine · Report Generator · Notification Center

Preconstruction & Estimating (5 modules)

Pre-Construction Estimator (19 phases, 195 line items) · Bid Management · Drawing Management · Document & BIM · Procurement

Project Controls (7 modules)

Contract Management · Scheduling & Milestones · RFI & Submittals · Change Orders · Subcontractors · Meeting Management · Risk Management

Cost & Financials (5 modules)

Budget & Cost · Invoice & Payments · Draw Schedule (AIA G702/G703) · Lien Waivers · Owner Portal

Field, Safety & Quality (11 modules)

Field Reporting · Mobile Field Access (PWA) · Photo Documentation · Weather & Site Conditions · Workforce · Equipment · Labor Compliance · Permits · Safety & Compliance · Incident Management · Inspections & QA

Closeout & System (9 modules)

Punch List & Closeout · Commissioning · Warranty & Defects · Lessons Learned · ESG Reporting · Integration & APIs · Automation Engine · Security & Governance · Platform Settings

12. Financial Controls and Industry-Standard Workflows

CoreMatrix Universal implements the financial workflows that construction lending and accounting actually run on: contract management with schedule-of-values discipline, invoice and payment tracking, draw schedules aligned to the AIA G702/G703 application-and-certificate format, lien waiver management, and an owner portal for stakeholder transparency. Bringing these controls into the same system as schedules, field reports, and change orders means every dollar can be traced to the project events that produced it.

13. Field Operations and Mobile Architecture

The platform is delivered as a progressive web application (PWA), installable on phones and tablets with offline support, so field data — daily reports, photos, punch items, safety observations, incidents, and inspections — can be captured where the work happens and synchronized to the project record. Weather and site-condition context, workforce and equipment tracking, and permit and labor-compliance records keep the field and the office on the same page.

14. Intelligence, Automation, and Governance

An AI insights engine and automation layer operate across the project record: surfacing risk signals, generating reports, and routing notifications. Governance is a first-class design concern — role-based access, audit trails, and security and governance controls support organizations with compliance obligations, while ESG reporting and lessons-learned modules carry institutional knowledge from one project to the next. The platform supports international operation with multi-country localization and currency handling, and its integration and API modules support connections to external accounting, weather, mapping, and data services.

15. One Ecosystem: From Decision to Delivery

The two platforms are designed as a continuum. CoreMatrix AI answers the pre-development question — should this project proceed, at what cost, and with what risk — and produces the feasibility-grade budget and financing package that frames the deal. CoreMatrix Universal then manages the funded project against that frame: estimates become budgets, budgets become contracts and draws, and field reality is captured against plan through closeout. Two platforms, one source of truth, from first idea to final handover.

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16. Security, Privacy, and Governance

Both platforms are designed around data minimization, and the company does not sell user information. Published legal documentation — including Terms of Service, Privacy Policy, Acceptable Use Policy, security overview, cookie policy, and a data processing addendum — governs use of both platforms and is available on the company website. Role-appropriate disclaimers accompany analytical outputs.

17. Limitations and Appropriate Use

CoreMatrix AI and CoreMatrix Universal are decision-support and workflow software. Users should understand their boundaries:

- CoreMatrix AI outputs are feasibility-grade estimates intended for early-stage screening and planning, not construction bids, guaranteed maximum prices, appraisals, or engineering determinations.
- CoreMatrix Universal records, schedules, financial documents, and reports reflect the data users enter; the platform organizes and controls project information but does not certify its accuracy or legal sufficiency.
- All results depend on the accuracy and completeness of user inputs and, where applicable, uploaded documents.

- Probabilistic ranges characterize uncertainty; they do not eliminate it, and no output constitutes a prediction or guarantee of any specific project result.
- Neither platform provides legal, tax, accounting, investment, engineering, architectural, or other professional advice; outputs should be reviewed by qualified, licensed professionals before being relied upon for high-impact decisions.
- Platform features, module compositions, data sources, and methodologies are subject to change as the products evolve. CoreMatrix Universal is currently in early access.

18. About PSM Innovation LLC

PSM Innovation LLC is a Texas limited liability company (Filing No. 806406333) headquartered in Missouri City, Texas. The company builds CoreMatrix AI and CoreMatrix Universal under the leadership of Agam Rao (Founder & Chief Executive Officer), Jitendra Patil (Chief Technology Officer), and Dr. Rashesh Rangrej, PhD (Senior Business Analyst).

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19. Legal Notices

This white paper is provided for general informational purposes only. It does not constitute an offer to sell, or a solicitation of an offer to buy, any securities, and it does not constitute legal, financial, tax, engineering, or other professional advice. Platform outputs are estimates and records designed to support — not replace — professional judgment. Descriptions of platform capabilities reflect the platforms as designed as of the version date above and are subject to change without notice. References to government data sources do not imply endorsement by any government agency. To the maximum extent permitted by law, PSM Innovation LLC disclaims all warranties, express or implied, regarding the information in this document.