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Data Platform Architecture • Integration & Quality at Scale

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40+	6+	5x	~95%
Vendor Integrations	Source System Types	Eng. Velocity Gain	Client Retention

ARCHITECTURE PATTERN

Every platform I've built follows the same four-layer pattern: normalize messy external data into a consistent core, validate and gate it on arrival, monitor it continuously for degradation, and only then let analytics and AI consume it.

1. External Sources	2. Ingestion & Normalization	3. Quality Gates & Monitoring	4. Analytics & AI
40+ vendor systems	Unified parameterized APIs	Gate 1: Accept/reject at ingest	Scorecard analytics
EHRs, payers, ADT feeds	Core schema mapping (~80%)	Gate 2: 24-hr trend monitoring	Predictive models (millions of records)
Claims, assessments, surveys	Custom field mapping (~20%)	Threshold alerts by severity	Cross-system entity linking
Multiple schemas per vendor	Value standardization	Drill-down: vendor/client/patient	Multi-dimensional reporting
Custom fields per client	Write-back to source systems	Outlier and degradation detection	AI-powered monitoring

DATA QUALITY: TWO-GATE SYSTEM

Gate 1: Ingest-Time Validation
Real-time checks at data arrival. Failed data is rejected with errors returned to the sender immediately. Covers format validation, required fields, value ranges, and referential integrity. Bad data never enters the platform.

Gate 2: 24-Hour Trend Monitoring
Batch analysis across the full dataset running approximately every 24 hours. Surfaces outliers and degradation patterns sliced by vendor, client/provider, and patient level. Catches slow drift that no single transaction would reveal. Threshold-based alerts route issues by severity.

I used this quality infrastructure to demonstrate data health evidence to CMS (Centers for Medicare and Medicaid Services), showing exactly where data mapped cleanly across vendors and where it didn't, and why certain data points shouldn't be used for national benchmarking without understanding those inconsistencies.

DOMAIN TRANSFER

My background is in enterprise healthcare data platforms. The structural problem of turning messy, inconsistent data from dozens of external partners into something analytics and AI can trust is identical across industries.

What I've Built		What This Becomes
→ EHR, payer, and hospital ADT integrations		→ Retailer POS, WMS, inventory integrations
→ Assessment, claims, and survey ingestion		→ Sales, shipment, pricing, promotion ingestion
→ Two-gate quality monitoring (ingest + trend)		→ Customer-facing data quality and alerts
→ Entity construction and cross-system linking	→	→ Item-level inventory estimation and tracking
→ Multi-dimensional quality scorecards		→ Operational analytics and dashboards
→ Predictive models on millions of records		→ Demand forecasting and ordering optimization
→ Data health evidence to federal regulators		→ Data health transparency for customers