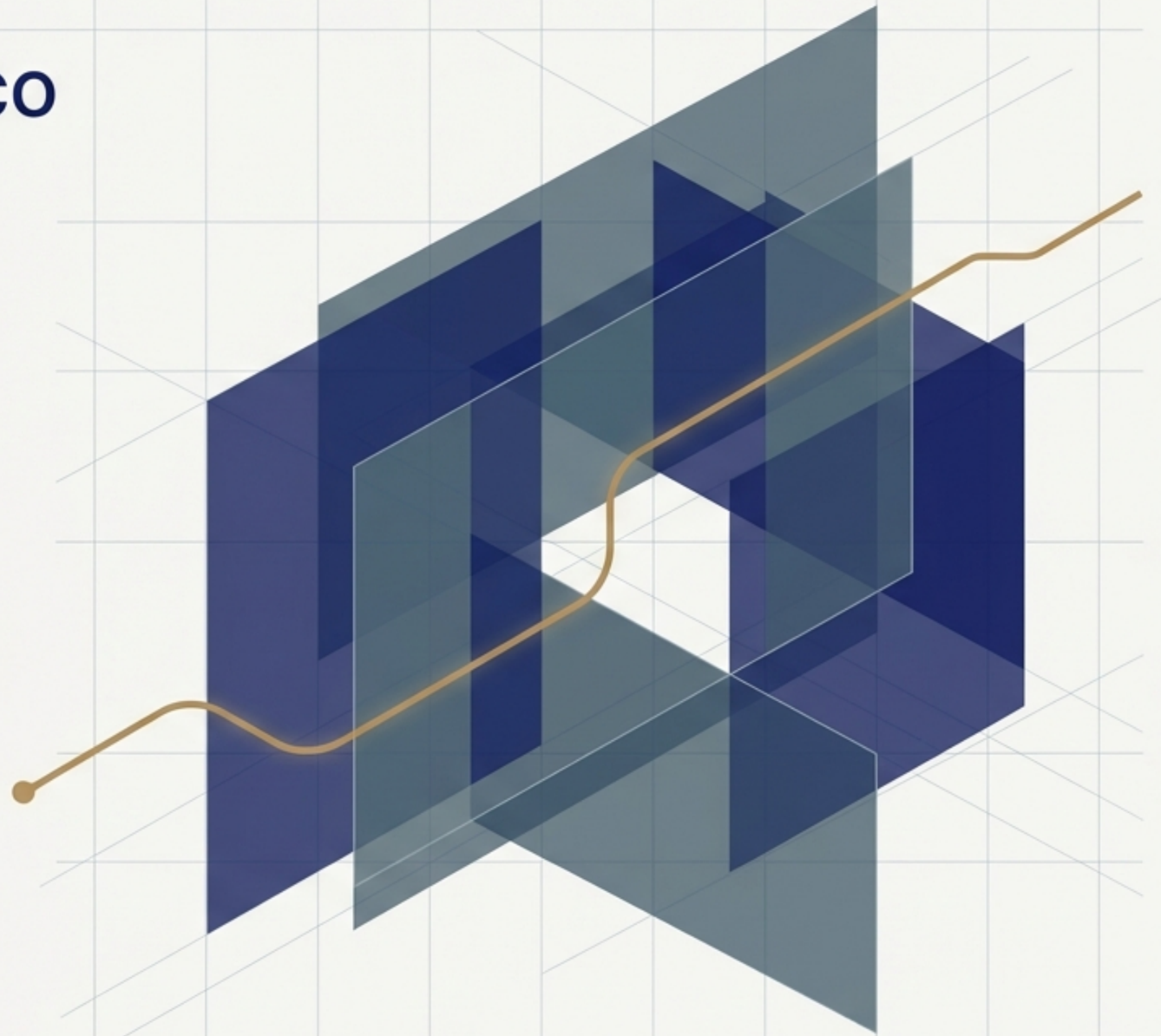
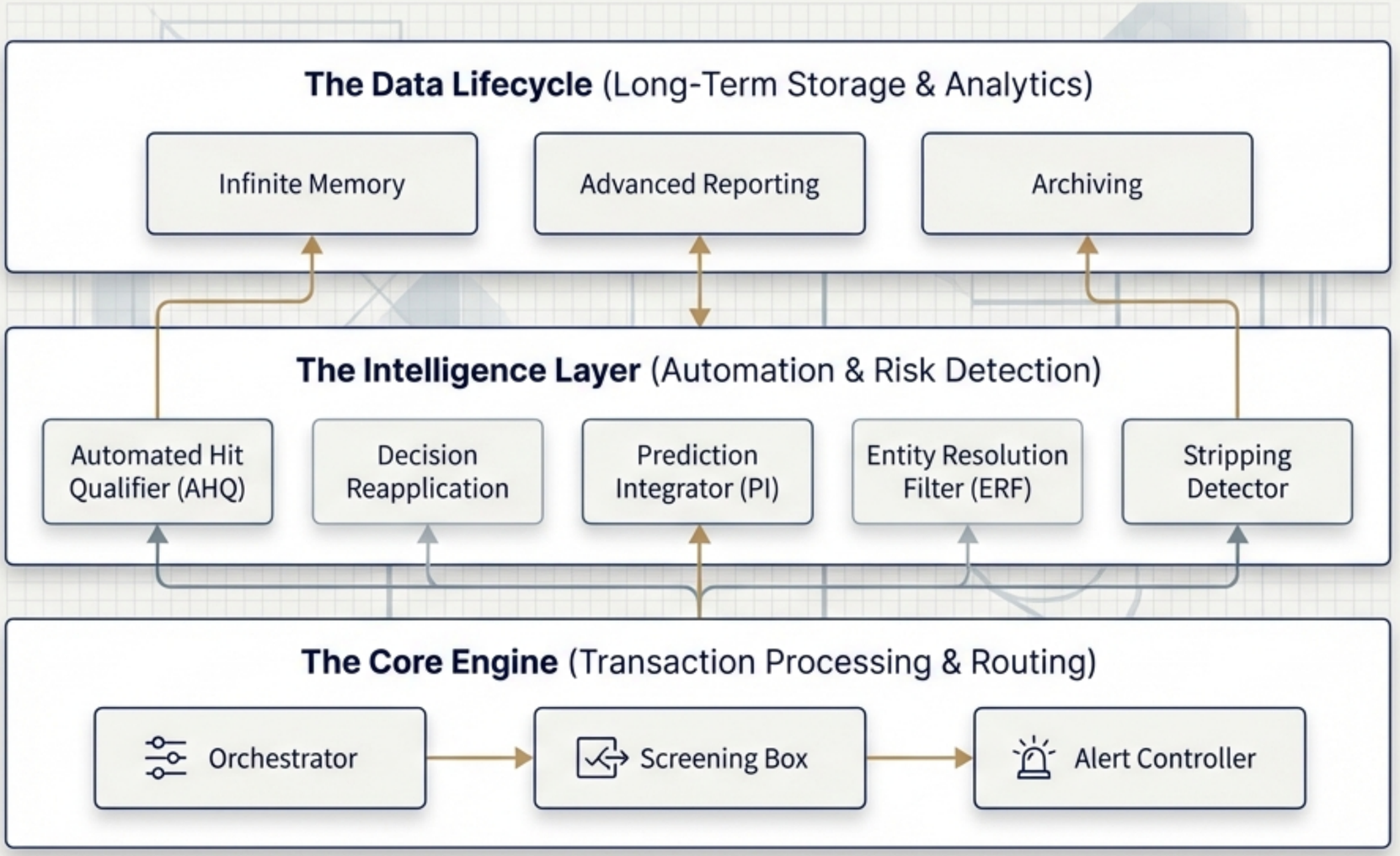
Deconstructing the Firco Continuity Back-Ends Ecosystem

An Architectural Deep-Dive: From Core Processing to Intelligent Automation and Scalable Data Management



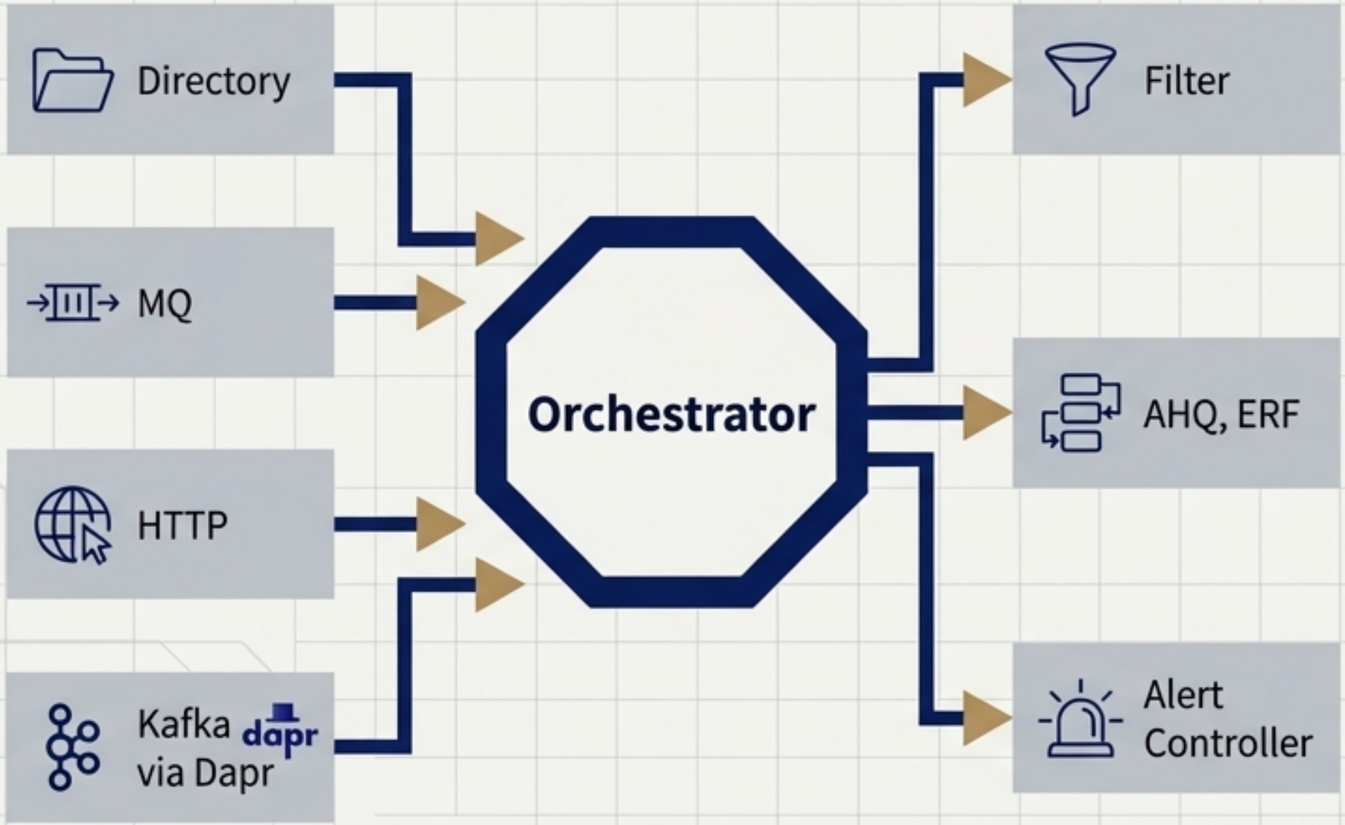
The Firco Continuity Ecosystem Blueprint



The Firco Continuity ecosystem is a multi-layered architecture designed for performance, intelligence, and scale. This presentation deconstructs the platform into its three functional layers, exploring how each component contributes to a comprehensive financial crime compliance solution.

The Orchestrator: The Central Nervous System

The Java-based Orchestrator is the heart of modern Firco packages, replacing legacy components to manage all message parsing, transformation, and routing. It is the system's central nervous system, providing the flexibility to define complex processing flows.



Flow Configuration

Defines the end-to-end path of a message from a consumer, through a dispatcher, to a producer.

Universal Mapper & Requester

Manages complex data transformations and orchestrates communication with internal and external engines.

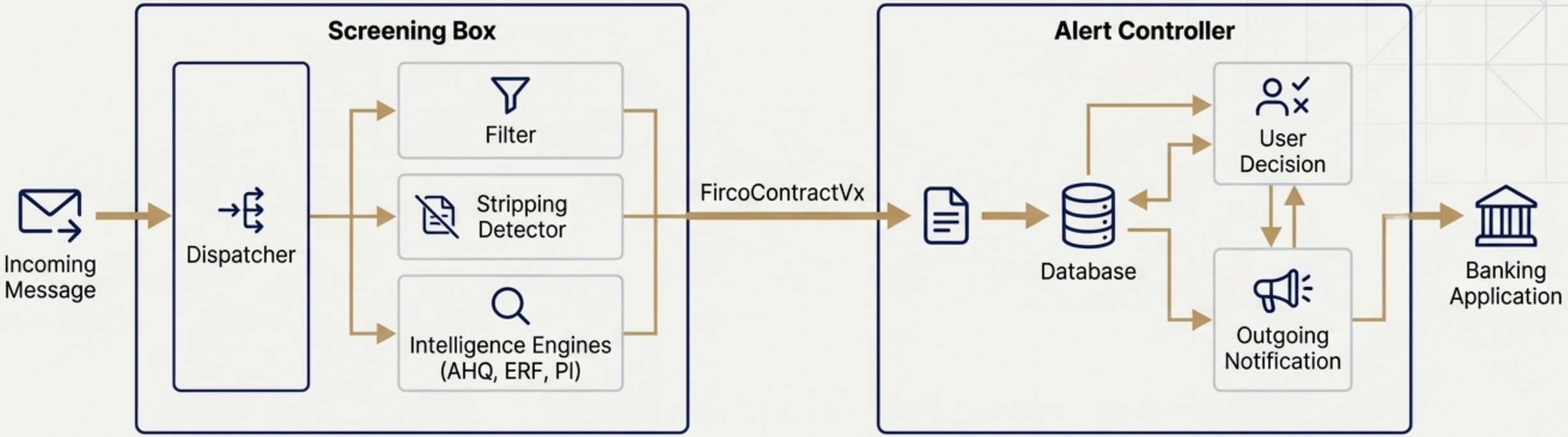
Dispatcher & FCL

The 'brain' that uses **Firco Common Language (FCL)** to apply powerful, customizable logic for routing and message manipulation.

Modern Transport Support

Natively supports Directory, HTTP, MQ, and Kafka (via Dapr) for both on-premises and cloud-native deployments.

Screening Box & Alert Controller: The End-to-End Workflow

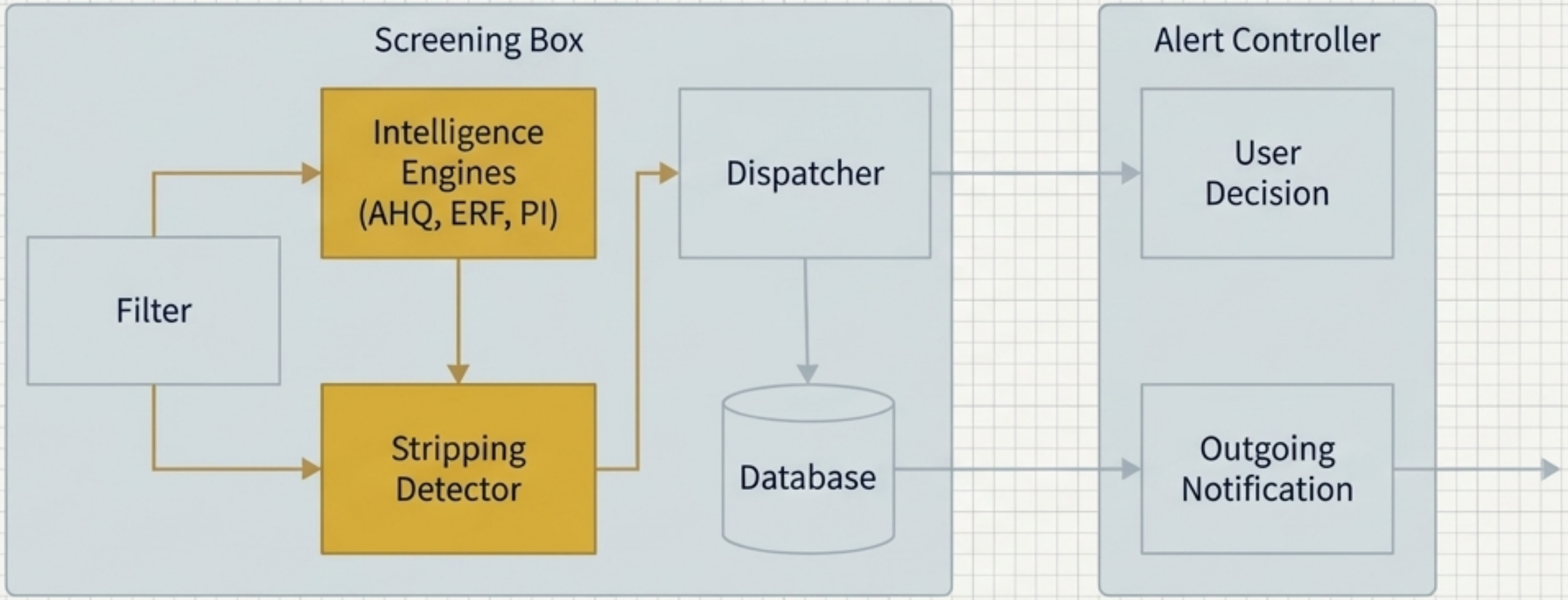


Screening Box: Orchestrates the real-time filtering of incoming messages. Its FCL-based dispatcher routes transactions to the necessary screening and intelligence engines.

Alert Controller: Manages the lifecycle of an alert. It handles database insertion, processes events from Alert Review and other modules, and sends final notifications.

Technical Note: Communication between Screening Box and Alert Controller is standardized using the mandatory `FircoContractVx` format, ensuring a consistent and rich data structure throughout the workflow.

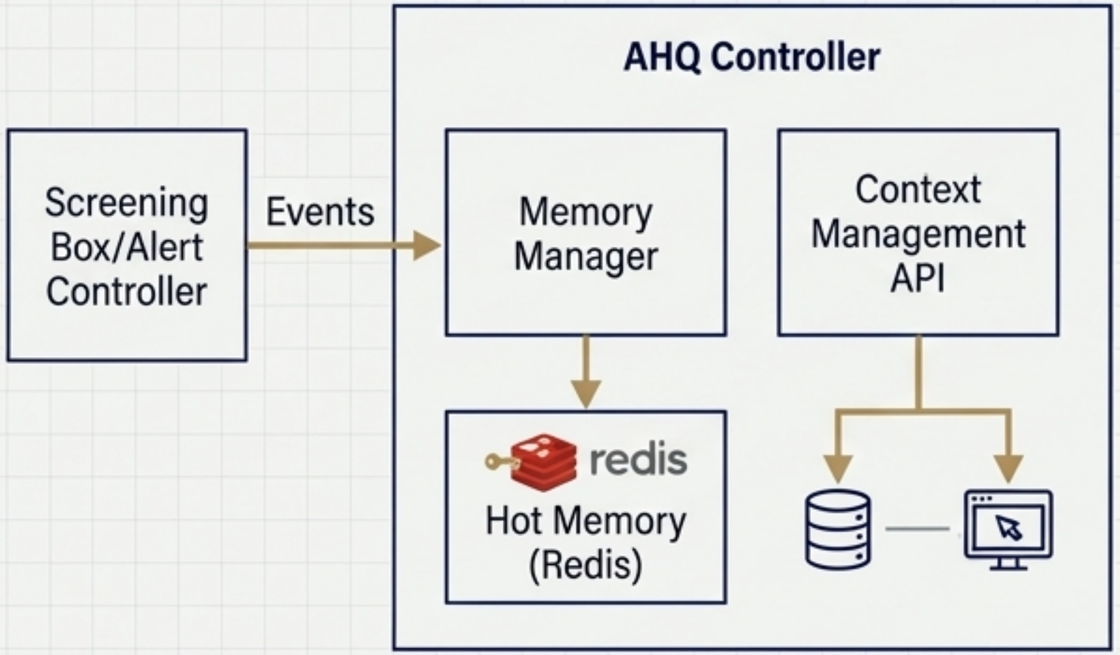
The Intelligence Layer: Automating Decisions and Enhancing Detection



Building upon the core engine, the Intelligence Layer introduces a suite of advanced modules designed to significantly reduce manual review, automate recurring decisions, and detect sophisticated risks. This section explores these key components.

Automated Hit Qualifier (AHQ): Learning from Historical Decisions

AHQ automatically resolves recurring false positive hits based on historical analyst qualifications. It uses a high-performance in-memory state store (Redis) to deliver the speed required for instant payments and high-volume environments.



Dynamic Contexts: Creates a unique 'context' for a hit based on a `**signature**` defined by FCL rules. This signature can include message data, hit details, and entity information.

Context Lifecycle: Contexts progress through a defined lifecycle (`CANDIDATE` -> `ENABLED` -> `DISABLED`/`EXPIRED`) based on configurable thresholds like `manual**QualificationThreshold**` and `minimumOperatorsForAutomation`.

Real-Time Disposition: When a context is `ENABLED`, AHQ can proactively find and qualify matching hits on other live messages in the system.

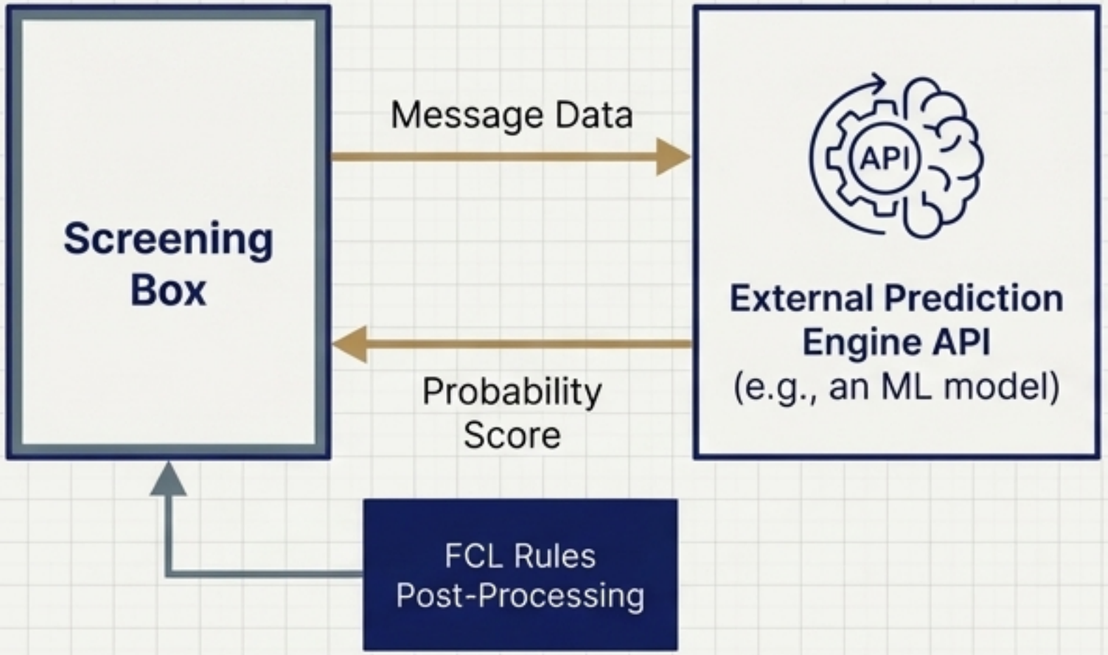
Learning & Simulation Modes: A `LEARNING` mode allows AHQ to train on historical archives (V5/V6) to build its memory, while a `SIMULATION` mode allows for impact assessment without affecting production.

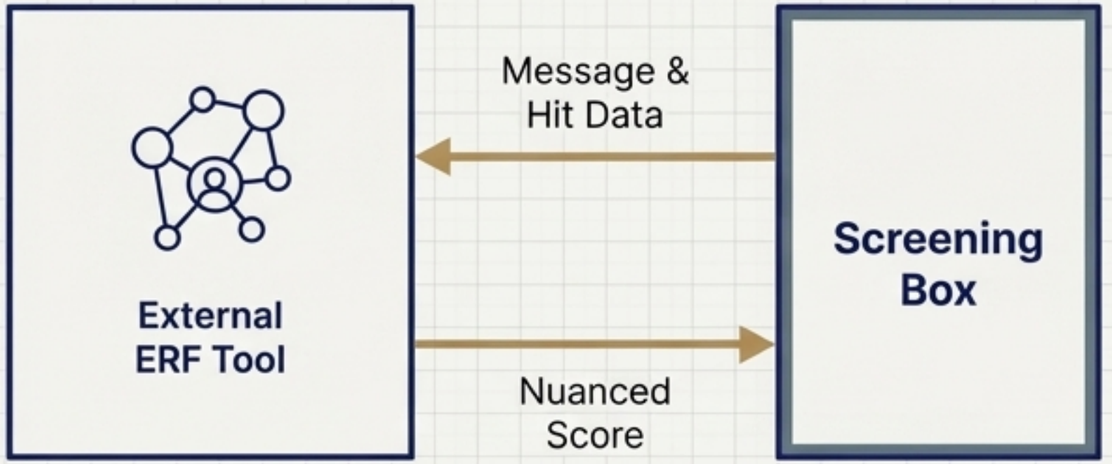
Choosing the Right Automation Engine: Decision Reapplication vs. AHQ

Feature	Decision Reapplication (Legacy)	Automated Hit Qualifier (Modern)
Architecture	Operates independently via DB Client; typically post-processing.	**Fully integrated** into the real-time Orchestrator flow.
Performance	Slower, dependent on direct RDBMS queries.	High-performance, leverages in-memory hot store (Redis).
Scalability	Challenging; contexts stored in primary RDBMS.	Highly scalable; Redis state store can be easily scaled out.
Rules Language	Core Engine Language.	Firco Common Language (FCL) with baseline configurations.
Capabilities	Recognizes patterns at the hit level.	More configurable signatures, batch learning from archives, simulation.
Ideal Use Case	Existing workflows, simpler reapplication scenarios.	High-volume environments, instant payments, complex false positives.

While Decision Reapplication is a robust tool for established processes, AHQ offers a modern, high-performance architecture designed for real-time demands, advanced learning, and superior scalability.

Extending Intelligence with External Engines

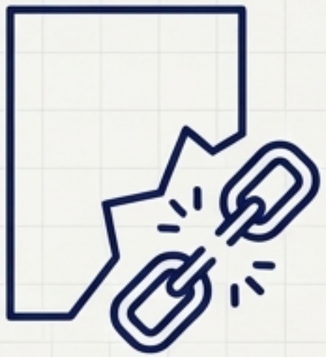




Prediction Integrator (PI): Integrates with external prediction models to obtain a probability score for a hit or message. This score can be used in FCL rules to automate decisions and reduce false positives.

Entity Resolution Filter (ERF): Leverages a sophisticated external ERF tool to analyze entities in a message. By providing a more context-aware score, it effectively reduces the number of ambiguous blocking hits.

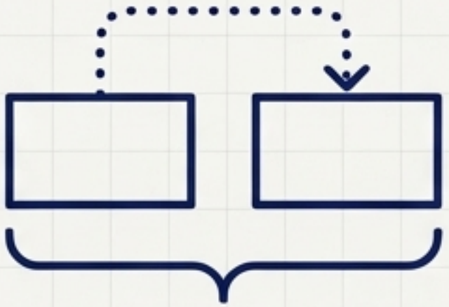
Specialized Risk Detection for Stripping and Paired Payments



Stripping Detector

Detects Payment Stripping.

This component uses configurable rules to identify attempts by bad actors to modify or remove information (e.g., sanctioned bank names) from payment messages to evade detection. It can add a specific Stripping alert to the message.

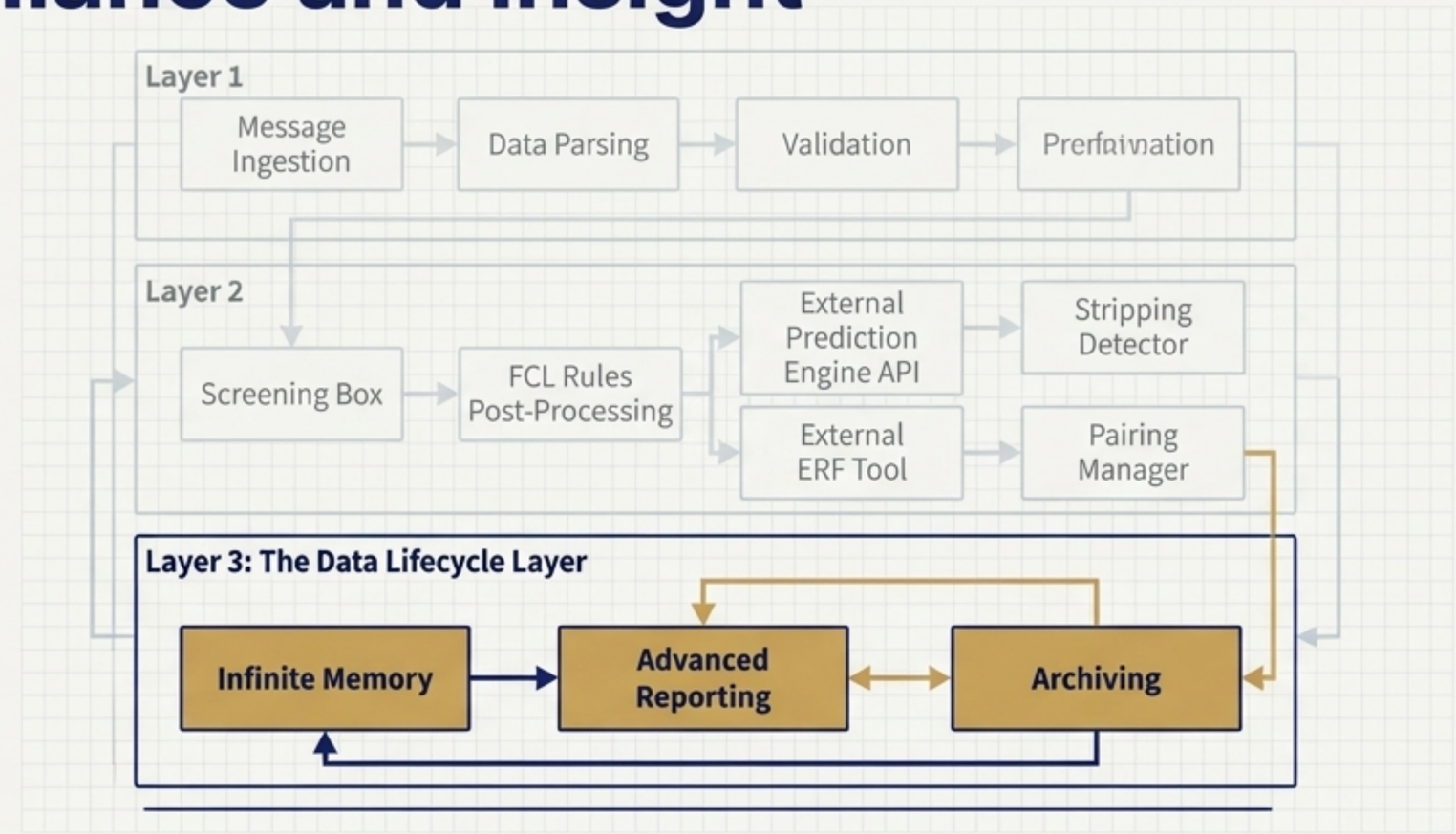


Pairing Manager

Manages Paired Transactions.

This component groups related messages that belong to the same underlying transaction (e.g., MT103 cover payments). It ensures that decisions are applied consistently across all parts of the transaction.

The Data Lifecycle Layer: Managing Petabytes for Compliance and Insight



Financial institutions must store transaction data for years to meet regulatory requirements. The Data Lifecycle Layer provides a modern, scalable architecture for this challenge, moving beyond traditional RDBMS limitations to support long-term archiving, advanced analytics, and efficient data retrieval.

Infinite Memory: Redefining Long-Term Data Management

Reduces Production DB Load

Offloads non-alerted and historical data from the primary RDBMS.

Infinite Scalability

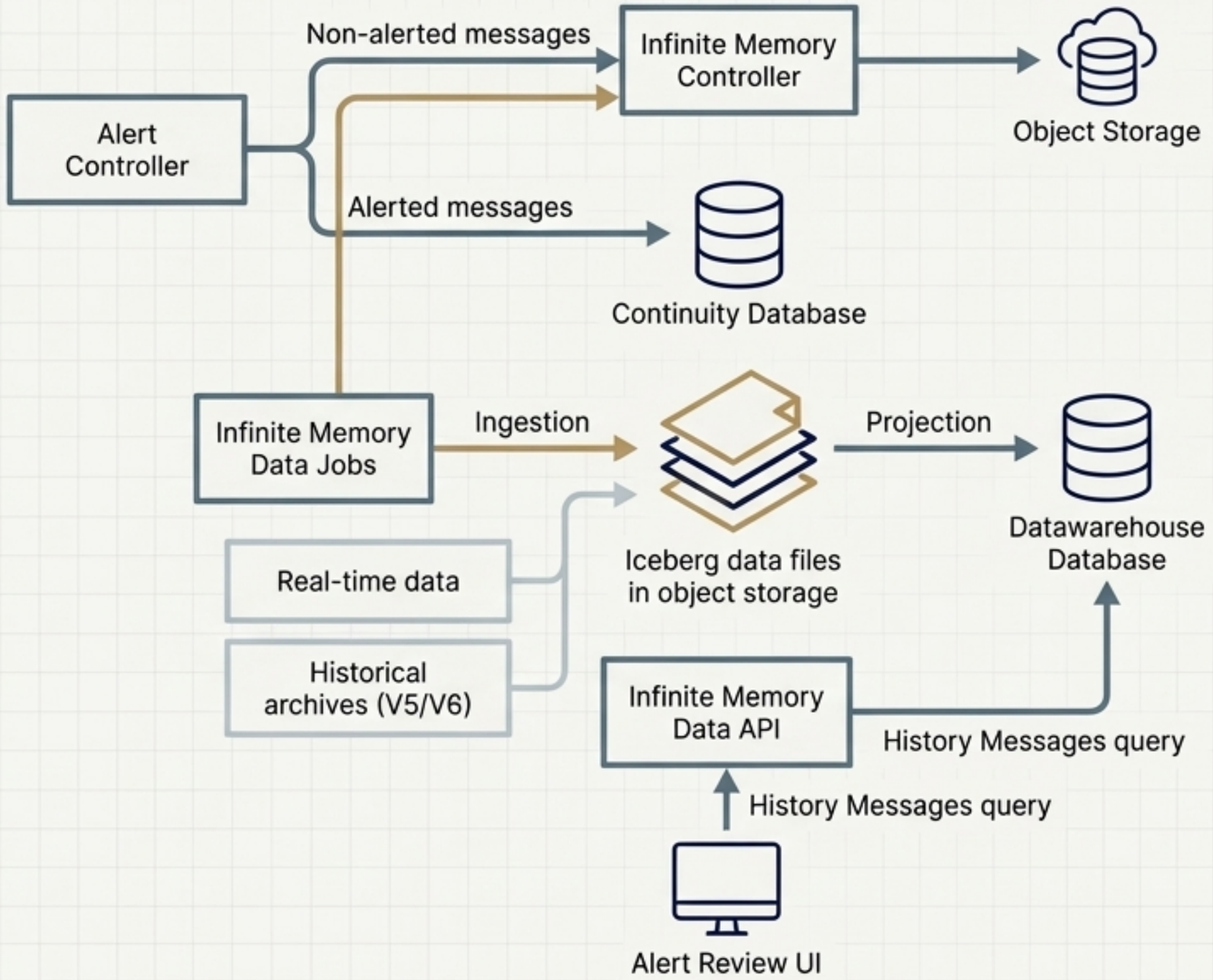
Leverages commodity object storage for long-term data retention.

Unified User Experience

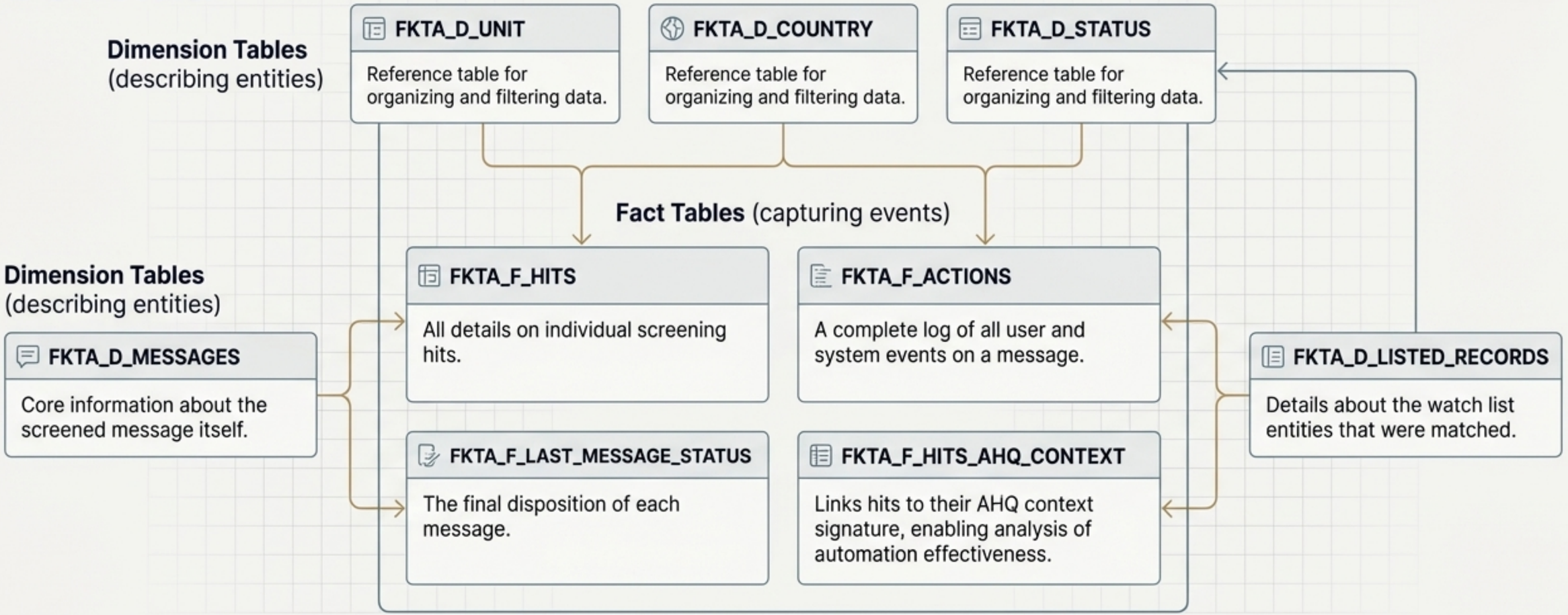
Provides seamless access to historical data within Alert Review.

Analytics-Ready

The projected datawarehouse is optimized for BI tools and advanced reporting.



A Closer Look: The Infinite Memory Datawarehouse Schema



Key Insight: The schema is structured as a classic data mart with fact and dimension tables. This design is optimized for analytical queries and is easily consumable by standard business intelligence and reporting tools.

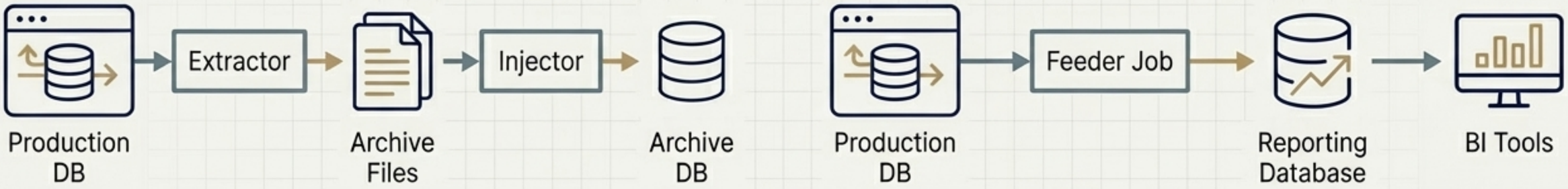
Foundational Tools for Data Management

Archiving Component

The Archiving component provides a robust batch process to manage the data lifecycle in the primary database. It consists of extractor, injector, and purge jobs that create portable archive files for offline storage or transfer.

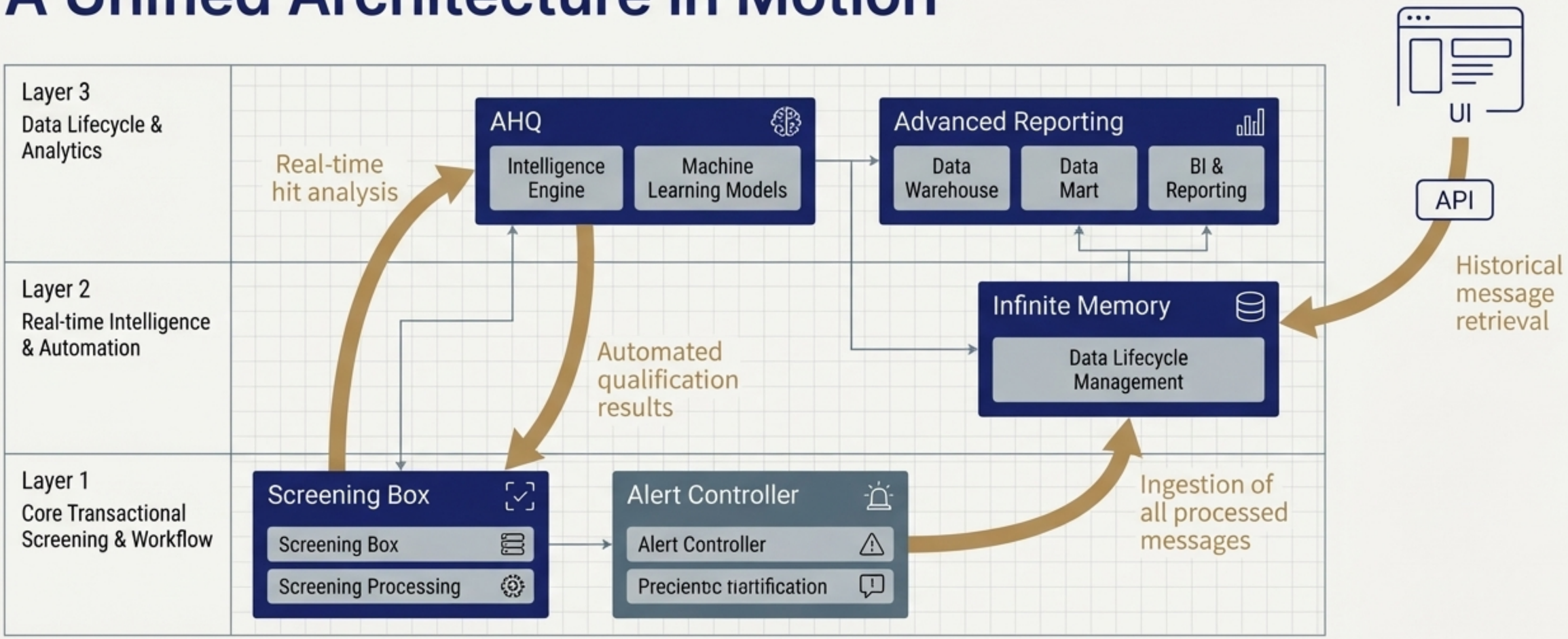
Advanced Reporting Component

The Advanced Reporting component uses a feeder job to extract data from the primary Continuity database into a separate, dedicated reporting data mart. This schema is optimized for connecting BI tools.



These components provide essential data management capabilities. Infinite Memory builds on these concepts with a more scalable, integrated, and cloud-native architecture.

A Unified Architecture in Motion

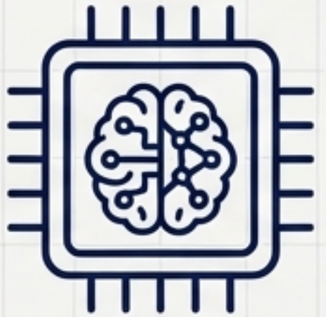


Each layer in the Firco Continuity ecosystem is deeply interconnected. The Core Engine processes transactions, the Intelligence Layer enriches and automates decisions in real-time, and the Data Lifecycle Layer ensures all information is managed securely and scalably for long-term compliance and insight. The system's power lies not just in the individual components, but in their seamless integration.

Architectural Principles and Takeaways

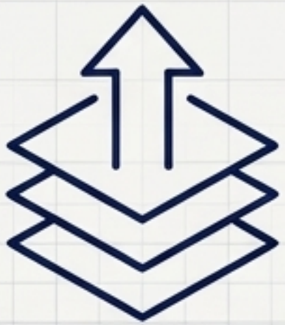
Modularity and Composability:

The system is built from distinct, configurable packages. The Orchestrator acts as the central enabler, allowing for flexible deployments where components can be selected and combined to meet specific needs.



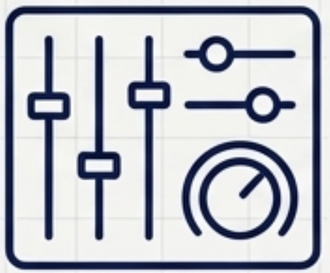
Intelligence at the Core:

Automation is not an afterthought but a deeply integrated part of the real-time processing flow. Modern tools like AHQ leverage FCL for powerful, granular customization of automation logic.



Designed for Scale:

With **Infinite Memory** and cloud-native transport options, the architecture is explicitly built to handle the data volumes and low-latency demands of modern finance.



Control Through Configuration:

The platform empowers technical teams with deep control over system behavior. From message routing to the definition of a false positive, nearly every aspect is managed through declarative FCL rules and YAML configurations.