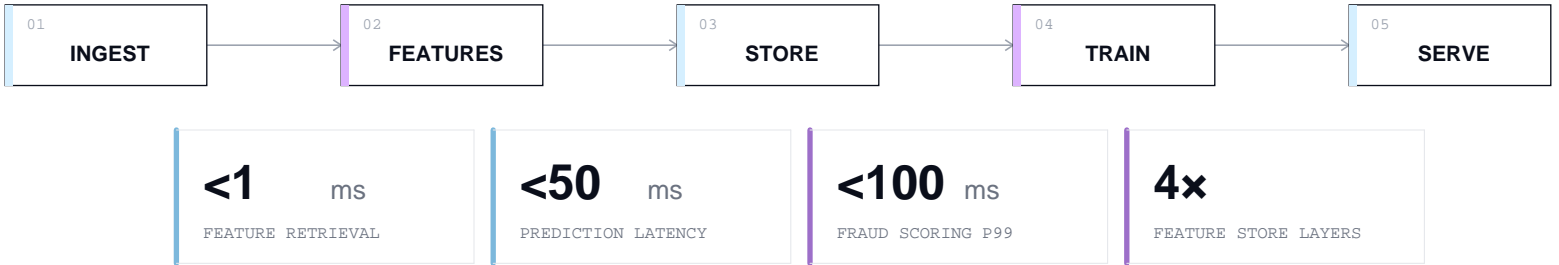


PRODUCT · OPERATIONAL ML PLATFORM

# Aizen Foresight

An end-to-end platform for building, deploying, and scaling production ML on real-time data — with full lineage and auditability from ingestion to inference.



§ 01

## Platform overview

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Foresight is a no-code, streaming-first platform built on a containerized service mesh. Visual pipeline construction in ML Studio coordinates ingestion, feature engineering, AutoML, and serving on a single canvas. Unified feature logic eliminates training-serving skew. All execution is governed: every transformation, model invocation, and prediction is traceable through the integrated metadata store.

§ 02

## Core pipeline stages

02 / 06

STAGE	SERVICE	CAPABILITY
01	<b>Data Collection</b>	Real-time and batch ingestion from databases, Kafka, REST APIs, and cloud object storage. Sub-second streaming and scheduled batch jobs configured visually.
02	<b>Feature Engineering</b>	Streaming and historical feature computation with unified training/serving logic. Eliminates training-serving skew through a single transformation code path.
03	<b>Feature Store</b>	Four-layer architecture: Memory, Offline, Online, Metadata. Apache Arrow columnar format for zero-copy reads and sub-millisecond lookups.
04	<b>AutoML</b>	Automated algorithm selection and hyperparameter tuning across gradient boosting, random forests, SVMs, FFN, RNN, and 1D CNN architectures. One-click GPU training.
05	<b>Serving</b>	Containerized model deployment with REST endpoints, version management, and built-in monitoring for latency, throughput, and error rates.

§ 03

## Feature store · architecture

03 / 06

**MEMORY** In-memory cache, Apache Arrow columnar format. Sub-millisecond retrieval for live inference. Distributed, fault-tolerant.

**OFFLINE** Schema-flexible row tables for raw and computed features. Native AWS S3 and Google Cloud Storage integration.

**ONLINE** Time-series and aggregated features in event-table format, indexed by timestamp plus optional entity keys. Powers real-time inference.

**METADATA** Feature definitions, lineage relationships, and data quality records. Key-value tables for fast discovery and dependency search.

**FEATURE SERVE** RPC endpoint for real-time retrieval. Integrates with model inference for personalization, anomaly detection, and optimization in request paths.

**UNIFIED LOGIC** Same transformation code generates features at training and serving time — preventing skew in production.

§ 04

## ML Studio - pipeline workflow

04 / 06

STEP	NODE	FUNCTION	OUTPUT
01	<b>Data Source</b>	Connection, schema, ingestion mode, and refresh frequency. DBs, Kafka, REST APIs, object storage.	<code>ingest.stream</code>
02	<b>Data Sink</b>	Routes ingested data to Offline, Online, or external destinations on a defined schedule.	<code>sink.persist</code>
03	<b>Dataset</b>	Defines four feature types: basis, aggregate, join-key, expression. Validated before training.	<code>dataset.v1</code>
04	<b>Training</b>	ML or DL training paths. Cost estimates surfaced before submission. Auto-versioned models.	<code>model.v1</code>
05	<b>Real-Time Source</b>	Connects events-based sinks to live data so inference features reflect current state.	<code>stream.live</code>
06	<b>Prediction Deployment</b>	Provisions container, exposes REST endpoint, surfaces health metrics, validates with sample requests.	<code>predict.api</code>

§ 05

## Integration - runtime

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### API CONTRACT

POST `/predict`

REQUEST JSON · feature key-value pairs

RESPONSE JSON · prediction + confidence score

AUTH Bearer token / API key

LATENCY < 50 ms end-to-end

Foresight handles feature retrieval, model inference, and response formatting transparently — making predictions consumable by any web, mobile, microservice, or pipeline application.

### RUNTIME

**CONTAINER** Every job — feature compute, training, serving — runs identically in dev and prod.

**ORCHESTRATION** Kubernetes manages scheduling, scaling, and fault recovery. Foresight abstracts cluster operations.

**GPU** Major cloud GPU clusters. UI-driven instance selection with cost estimate before submit.

**STORAGE** AWS S3 and Google Cloud Storage. Apache Arrow zero-copy interchange.

**DEPLOY** Public cloud or on-premises for regulated and sovereign environments.

§ 06

## Deployments - industry

06 / 06

INDUSTRY	APPLICATION	PROFILE
<b>Financial Services</b>	Real-time fraud detection on transaction streams.	<100ms · Kafka · in-memory
<b>Telecommunications</b>	Predictive churn and network anomaly detection.	CDR streams · time-series
<b>Manufacturing</b>	Predictive maintenance on equipment sensor streams.	1D CNN · vibration · temp
<b>Retail / E-Commerce</b>	Dynamic pricing and personalized recommendations.	clickstream · inventory
<b>Healthcare</b>	Patient risk stratification on EHR data.	batch · daily retrain
<b>Logistics</b>	Route optimization and demand forecasting.	batch + traffic events

### CONTACT

#### Schedule a technical demonstration.

Request sandbox access, or engage the Aizen solutions team for a proof-of-concept tailored to your use case.

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