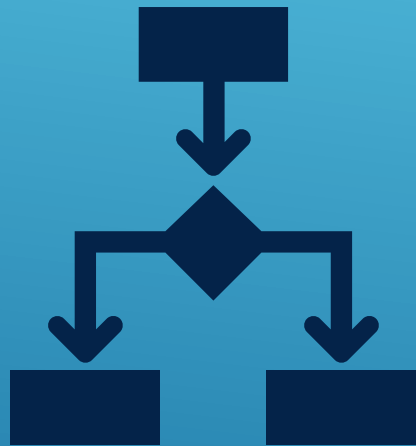




NETCELL EDA PLATFORM

Event-Driven AI Key Components
(HLD level)

NETCELL-EDA Architecture

Key components (HLD level)

Core architecture Layers:

Integration Layer

Events Hub (Kafka + routing)

Event Processing Layer (microservices)

Profiling & AI Layer

Feature Store (online + offline)

Model Registry

Analytics & Dashboards

Platform Services (Config, Identity, Observability)

NETCELL-EDA Architecture

Key components (HLD level)

Integration Layer

What it does:

- Receives events from external systems (APIs, agents, batch jobs).

- Normalizes them into canonical event format.

- Publishes to Kafka topics.

Interfaces:

- REST APIs

- Kafka producers

NETCELL-EDA Architecture

Key components (HLD level)

EventsHub (Kafka + routing)

What it does:

- Central event backbone.

- Topics per domain: contacts-events, accounts-events, billing-events, security-events.

- Uses keys (e.g. ContactId) for ordering.

Tech:

- Kafka (Cloudera Streams)

- Schema Registry

- Ranger for security

NETCELL-EDA Architecture

Key components (HLD level)

Event Processing Layer

Microservices:

- Contact Events Processor
- Account Events Processor
- Billing Events Processor
- Security Events Processor

What they do:

- Consume events from Kafka.
- Validate and deserialize.
- Call Profiling Service.
- Upsert profiles into Document DB.

NETCELL-EDA Architecture

Key components (HLD level)

Profiling & AI Layer

Profiling Service:

- Loads profiles.
- Builds features.
- Calls Inference Service.
- Applies rules.
- Updates profiles.

Inference Service:

- Loads models from Model Registry.
- Scores feature vectors.
- Returns risk/churn/engagement scores.

NETCELL-EDA Architecture

Key components (HLD level)

Feature Store

Online Feature Store:

Real-time features per entity.
Used by Inference Service.

Offline Feature Store:

Historical features in Iceberg/Hive.
Used by training pipelines.

Feature Registry:

Catalog of feature definitions.

NETCELL-EDA Architecture

Key components (HLD level)

Model Registry

What it stores:

- Model type (Risk, Churn, Engagement).

- Version.

- Metrics.

- Tenant scope.

- Storage path.

Used by:

- Inference Service (runtime).

- Training pipelines (registration).

NETCELL-EDA Architecture

Key components (HLD level)

Analytics & Dashboards

Dashboard API:

Reads profiles and aggregates.
Serves data to UI.

Dashboards:

Contact timeline.
Risk score.
Churn prediction.
Engagement metrics.



NETCELL-EDA Architecture

Key components (HLD level)

Platform Services

Config Service:

Per-tenant rules, thresholds, model versions.

Identity & Access:

Tenant isolation, RBAC.

Observability:

Metrics, logs, tracing.



NETCELL-EDA Architecture

Key components (HLD level)

Cross-cutting concerns

Multi-tenancy:

- Tenanted in every event, profile, feature, model.
- Tenant-aware config and models.
- Ranger policies for data access.

Scalability:

- Kafka partitions + consumer groups.
- Kubernetes deployments with autoscaling.
- Stateless microservices.

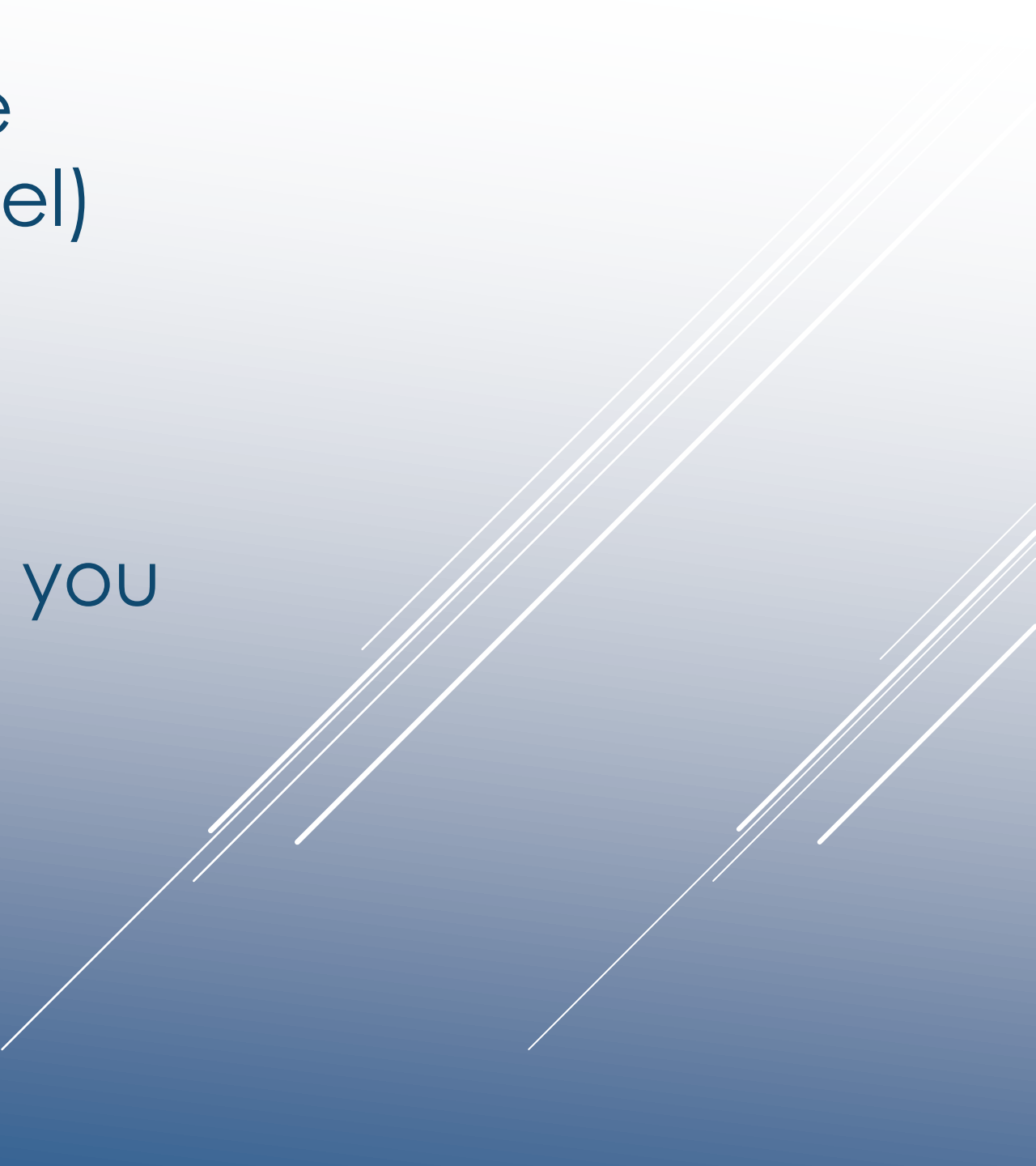
Security & governance:

- Ranger (ACLs).
- Atlas (lineage).
- mTLS / service accounts.

NETCELL-EDA Architecture

Key components (HLD level)

Thank you

The background of the slide is a blue gradient, transitioning from a lighter blue at the top to a darker blue at the bottom. On the right side, there are several parallel white diagonal lines that extend from the top right towards the bottom left, creating a sense of movement and modern design.