

Beam in Nokia NWDAF Distributed Architecture

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Agenda

- What is Nokia NWDAF?
- Nokia NWDAF architecture
- Requirements and challenges
- Using Beam in Nokia NWDAF edge and central
- Use Case Example

What is Nokia NWDAF?

What is NWDAF?

The **NWDAF** is a network function that **collects data from 5G Core network functions**, performs **network analytics** and **provides insights** for closed loop automation to authorized network data/analytics consumers

Network Exposure for the 4 key application types relying on 5G capabilities



eMBB apps
human end user centric



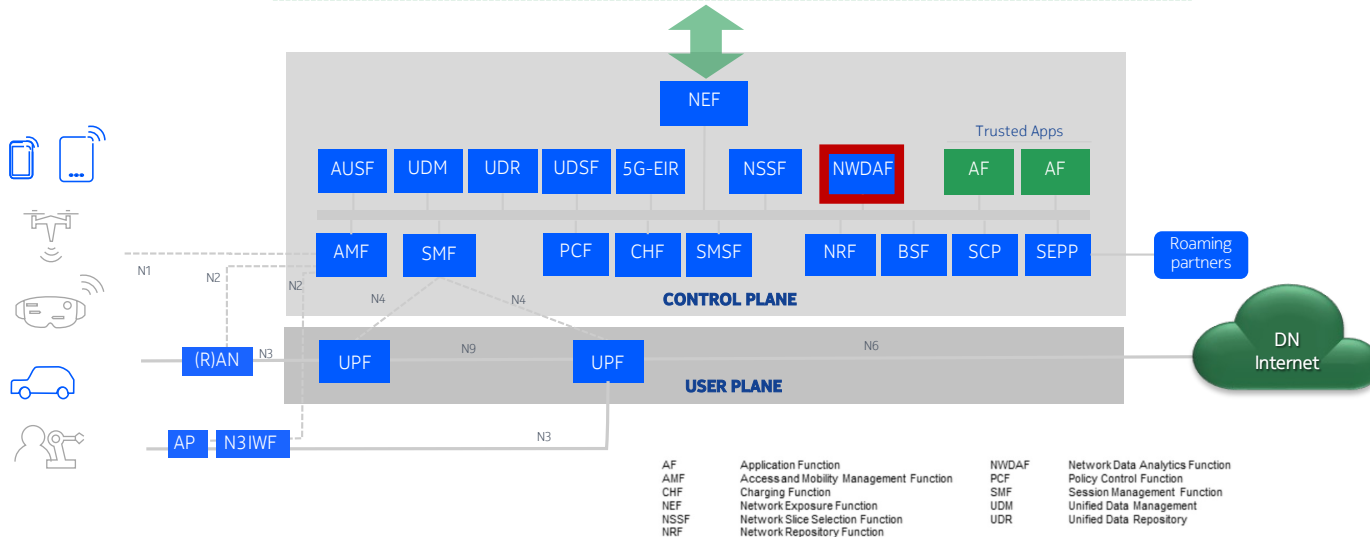
Machine Type Comms Apps
Consumer and Industrial IoT



Proximity apps
Latency sensitive sw at the edge, MEC



Analytics and Network Slicing apps
Enterprise/WNO/Verticals



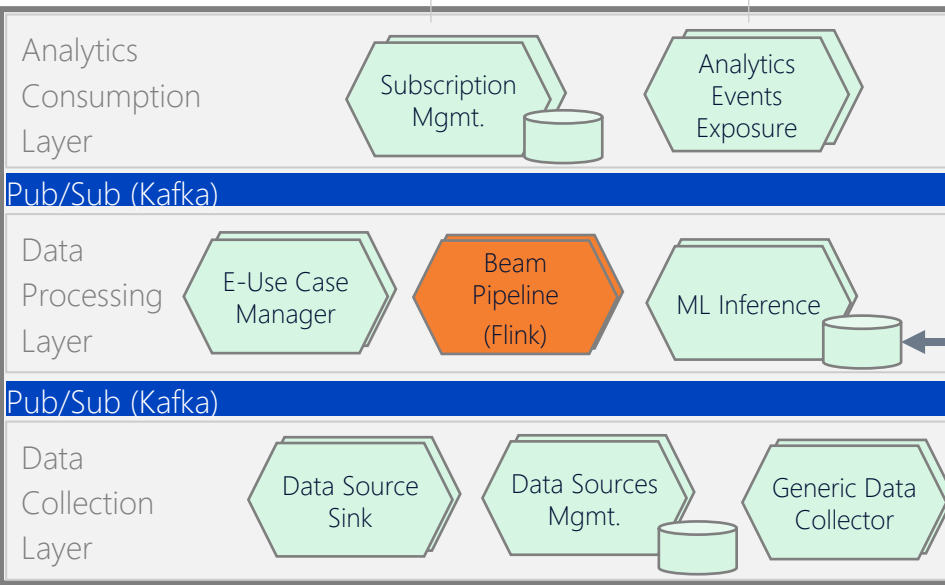
NWDAF Architecture (partial)

NWDAF APIs

Nnwdaf_AnalyticsSubscription_Subscribe

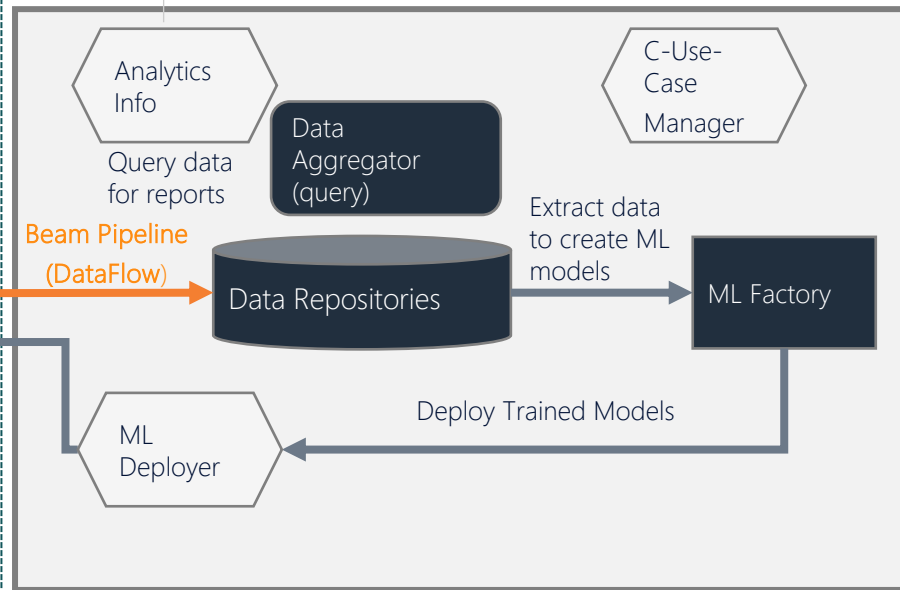
Nnwdaf_AnalyticsSubscription_Notify

Nnwdaf_AnalyticsInfo_Request



Input Sources : AMF, SMF, NRF, AF, UDR, PCF, NSSF

OAM



Data processing pipelines high level requirements

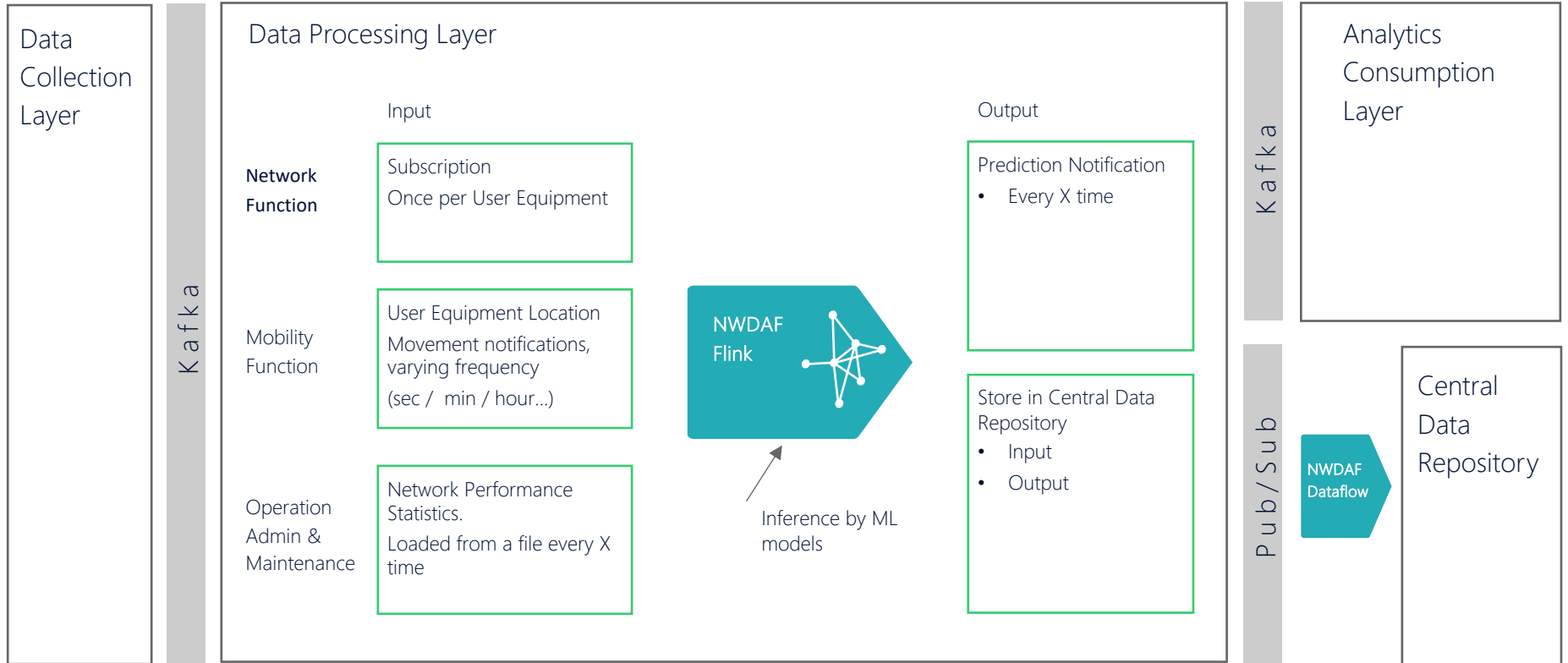
Nokia's distributed NWDAF architecture makes analytics available where needed to meet the varying latency requirements of 5G use cases

- Be able to process large volumes of streaming data in near RT
- Create complex event processing pipelines including
 - sophisticated data integration
 - calculate KPIs using data windows with different velocity
- Ability to support many use cases
- Ability to use parameters that configures the pipelines for data collection, processing and exposure
- Ability to run on multiple technologies (Flink, Data Flow)
- Flexible linear scalability
- Integration with Kafka, Redis, Yugabyte, Pub/Sub
- Monitoring and debugging
- Running in K8s with Service Mesh

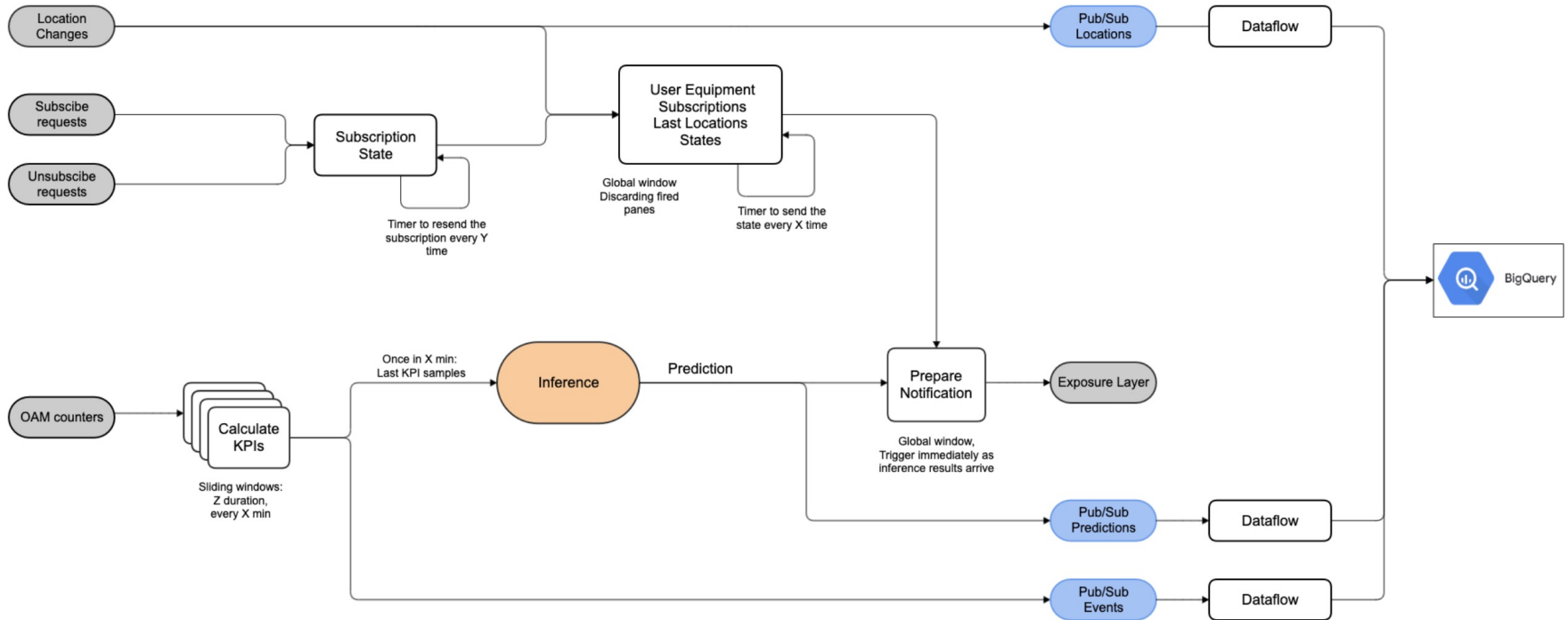


Use Case Example

Analytics Use Case Example



Analytics Use Case Example



Operational Aspects

- Deploy using flink-Kubernetes-operator
 - Runs on its own namespace
 - Beam pipelines may run on separate namespaces
- Application mode
- Microservices, scale each pipeline separately
- Monitoring
 - Flink built in metrics
 - Applicative metrics using Beam Custom metrics
 - Metrics are exported via Open Telemetry to Metrics Explorer

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