Cross-layer BPaaS Monitoring

C. Zeginis, K. Kritikos, D. Plexousakis
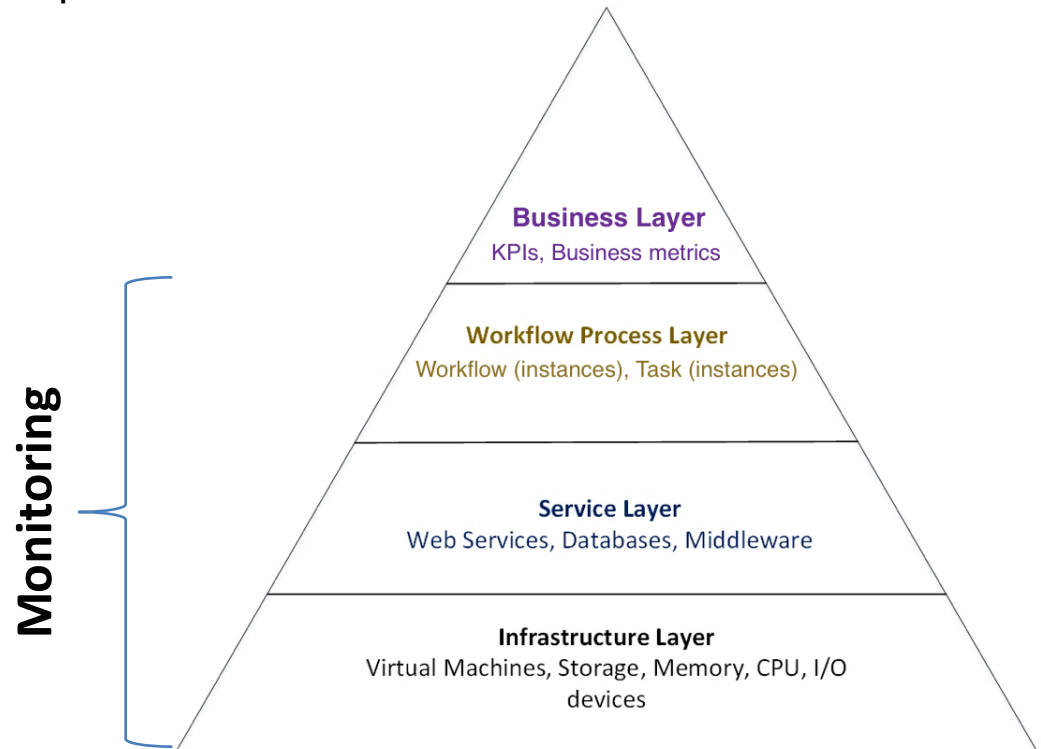
ICS-FORTH

CloudSocket
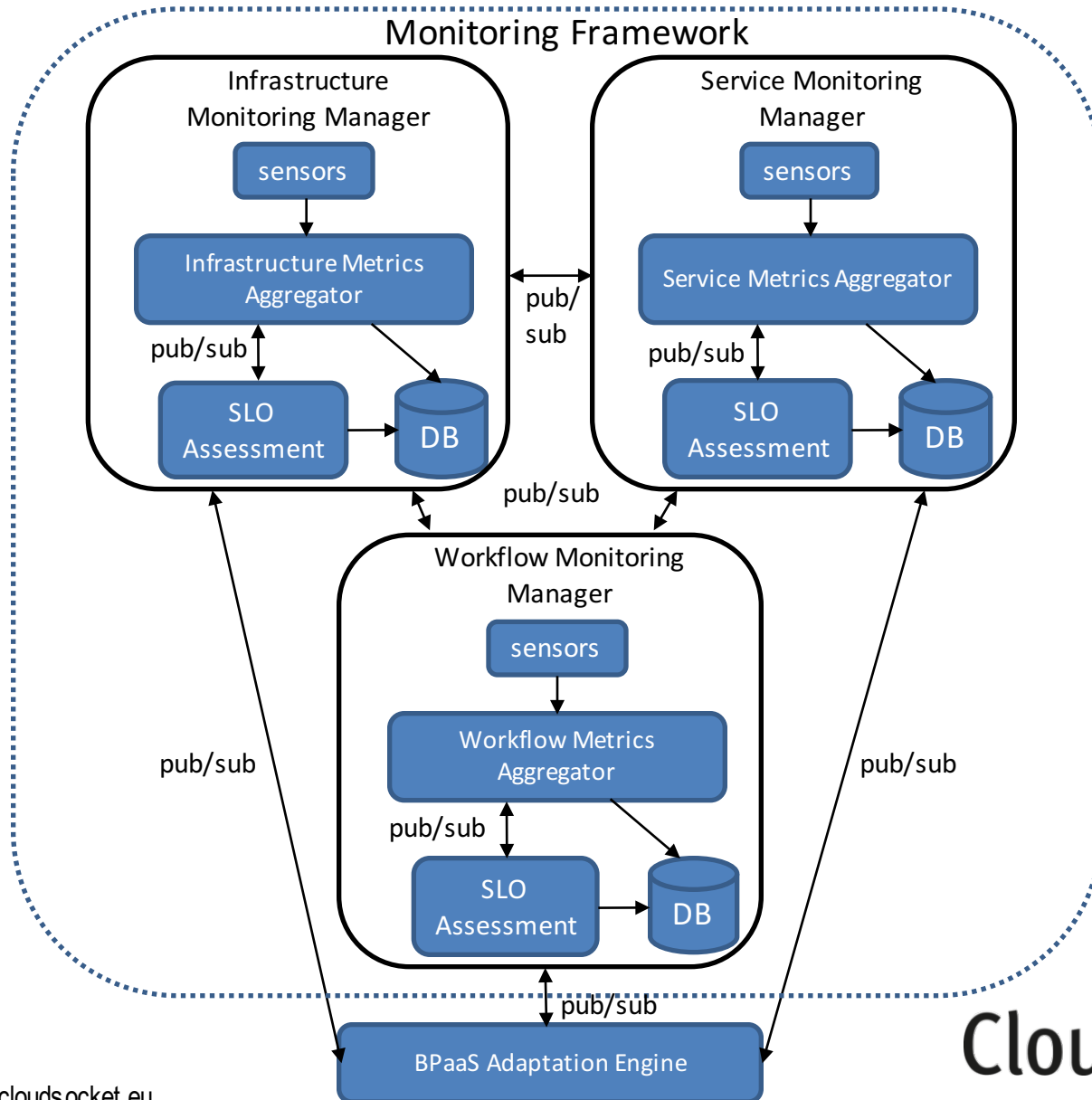
Operational Layers Pyramid

Research Question:

How a BPaaS can be monitored across all the operational layers, in order to gain a clear view about its performance?

Monitoring Framework Architecture

Cross-Layer BPaaS Monitoring

- **Cross-layer metric model** to cover the measurement gap in same or across connected layers

- Layer-specific **monitoring mechanisms**

- **Publish-subscribe** for propagation of measurements from lower to higher-levels

- **SLO condition evaluation** via Complex Event Processing (CEP)

CloudSocket

Cross-Layer Metric Dependencies Model

- Quality models for Workflow, Service and Infrastructure layers

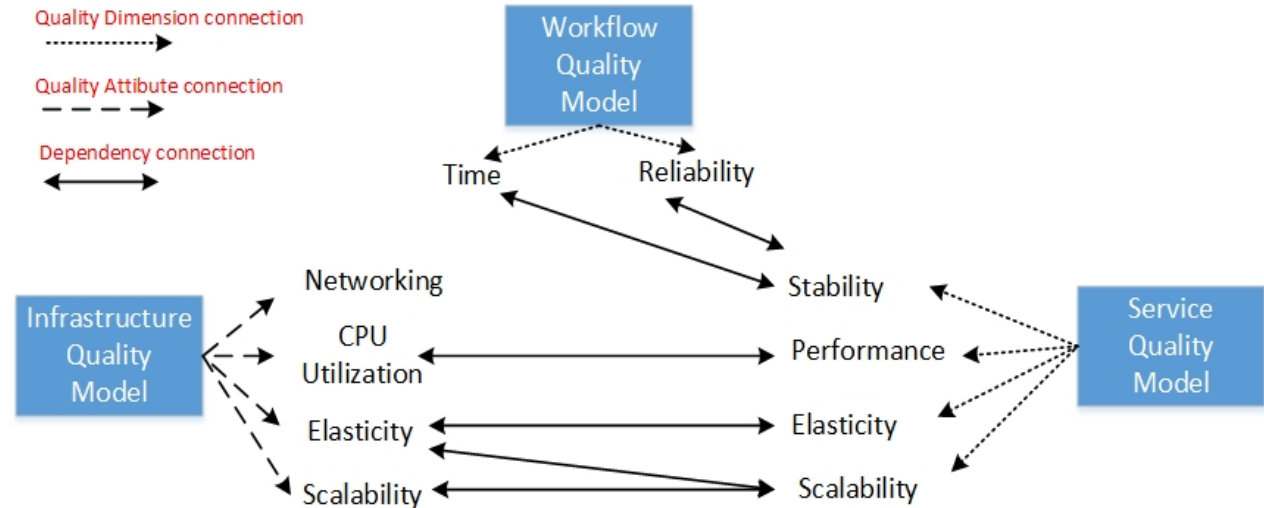- **Workflow Quality Model**
  - Time
  - Cost
  - Reliability
  - Security
- **Service Quality Model**
  - Performance
  - Stability
  - Scalability/ Elasticity
  - Security
- **Infrastructure Quality Model**
  - Performance
  - Scalability/Elasticity
  - Security

CloudSocket

Aggregating and Visualizing Monitoring Data
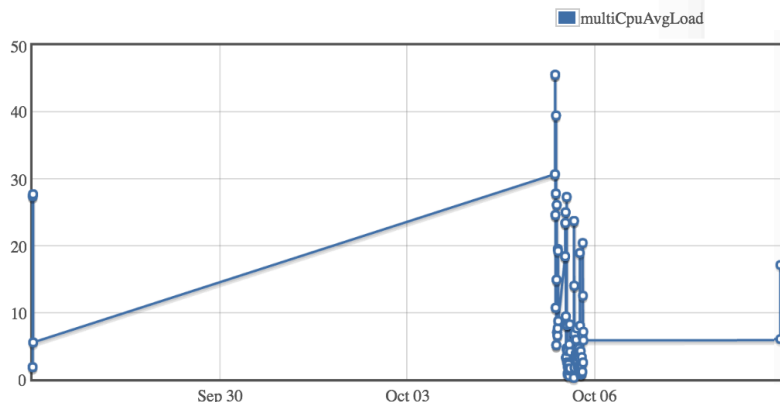
- **KairosDB** is a time-series database that stores time series in **Cassandra** (NoSQL datastore).
- Its **REST API** provides operations over measured metrics.
- KairosDB **Web UI** includes a query page whereby you can query data within the data store.
- **Aggregators** perform an operation on data points and down samples.

CloudSocket

Combined Cross-Layer BPaaS Monitoring
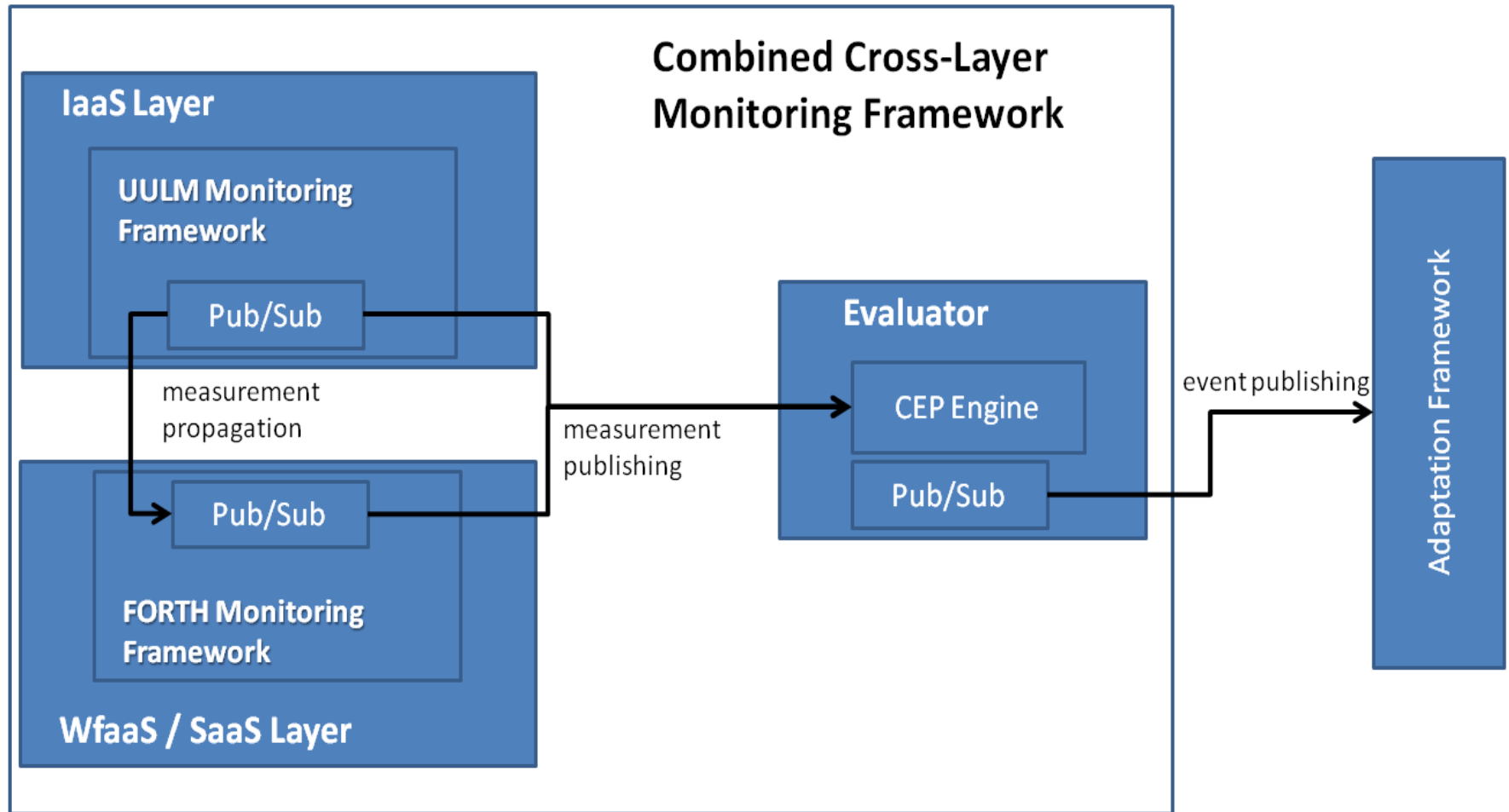
Demo

- Invoice Ninja application simple workflow

- Monitoring sensors deployed locally:
  - Service layer metrics (services' execution time)
  - Workflow layer metrics (number of customers, invoices, payments)

- Monitoring results on KairosDB UI

CloudSocket