

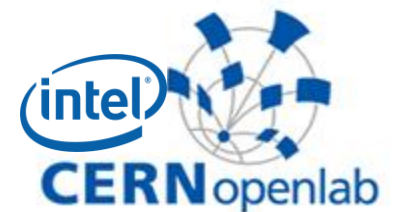


> 9th Dec 2016

CERN openlab workshop

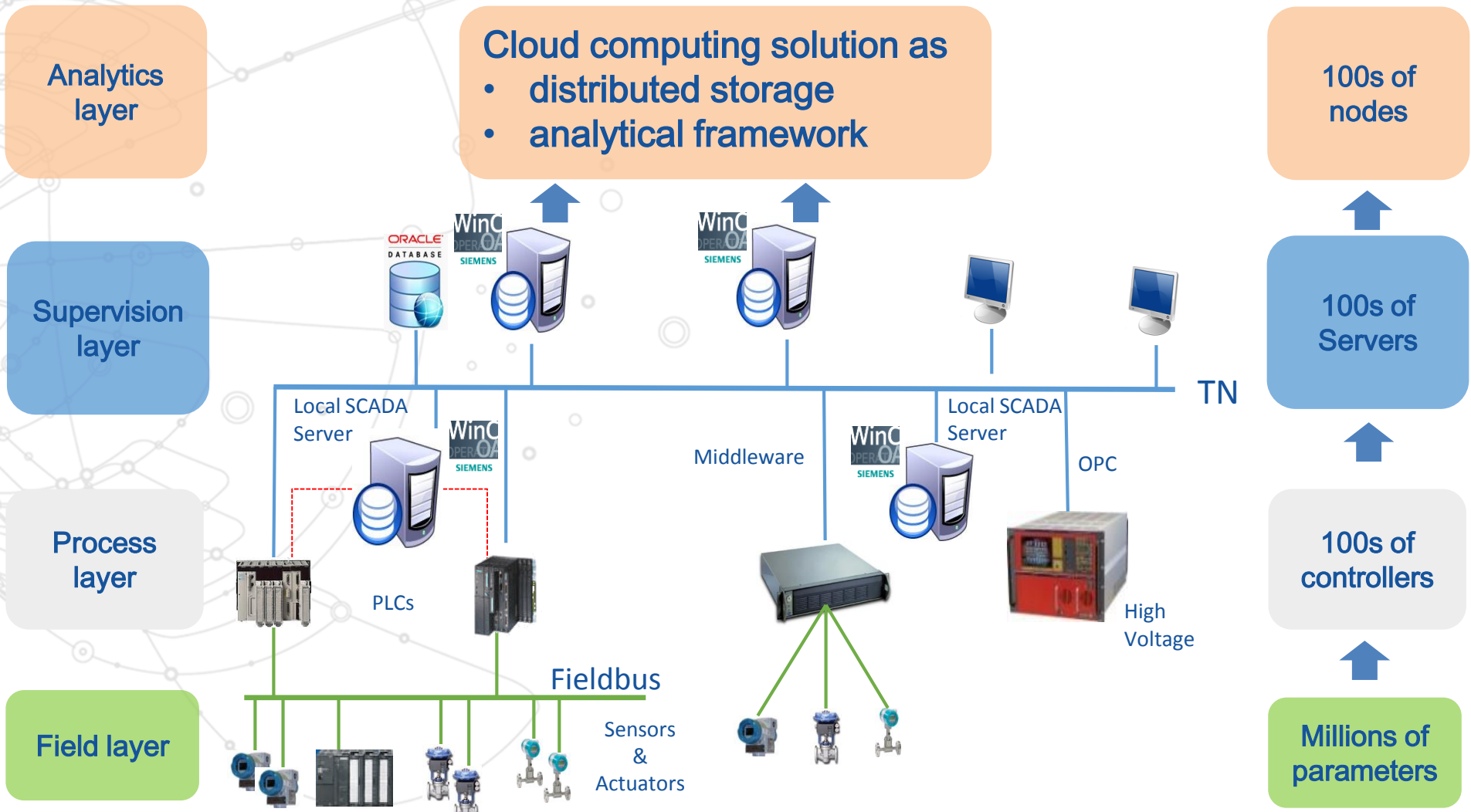
Intel Big Data Project: Industrial Controls

BE/IT



Use-case 2: Industrial Controls

Big Data Analytics for Industrial Control Systems



Objectives

BE/IT collaboration

› Data integration:

- Many heterogeneous data sources (different control applications and control hardware)
- Multi data formats (process values, control alarms, events, logs)

› Efficient Data Ingestion

- No impact on the industrial sources
- Different on-line analysis requirements for the various control analysis
- Transparency for the control apps

› Performance, scalability and benchmarking

- Based on Spark, Impala processing
- Optimal data partitioning/indexing

› Data visualization and information discovery

- Development environment for industrial control analysis

WinCC OA integration with the analytical platform

- › Distributed SCADA system:
 - Similar paradigm of “internet of Things”
- › Evaluation of multiple solutions:
 - Kafka, ZeroMQ, Flume ...
- › Double aspects:
 - Communication: on-line / offline
 - Data format heterogeneity
- › Prototype development
- › Testing/Evaluation (Big Bench as benchmark)
- › Publication/s of the results

Phase 2

Full Scalability

- › Scale the system to the full control infrastructure
 - +200 industrial projects
- › Evaluation of hardware performances
 - 200 nodes cluster
 - Intel® CoFluent™ Technology for prediction
 - Comparison against RSA equivalent system
- › Running control analysis against the data generated by the entire control system

Phase 1

| Date | Milestone | Resources |
|-------------------|---|--|
| Start + 3 months | Learning phase | ~1 person fulltime, synergy with Siemens ETM project |
| Start + 6 months | Evaluation of methods to integrate WinCC OA | Kafka, ZeroMQ, Flume, Protobuf ... |
| Start + 9 months | Prototype development | Spark, HDFS, Impala |
| Start + 11 months | Evaluation and reporting | ~10 Nodes, Big Bench |
| Start + 12 months | Conference publication | ICALEPCS / CHEP |

Phase 2

| Date | Milestone | Resources |
|-------------------|------------------------------|------------------------------|
| Start + 18 months | Scale system to 200 projects | Intel® CoFluent™, 100s nodes |
| Start + 21 months | Evaluation | Intel BigBench, RSA |
| Start + 24 months | Publication | ICALEPCS / CHEP |

2 years



Any Questions

Thank you for your attention!