**MONARC: Monitoring the Archiving Infrastructure of CERN Control Systems**

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**CONTEXT**

- Archiving infrastructure is a “primary process” to monitor
- Need for a supervision application
- Based on software stack developed for industrial control systems (WinCC OA, JCOP, UNICOS)
- Internal know-how, ease of integration to CERN eco-system

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**REQUIREMENTS**

- Inventory
  - List of schemas
  - Schema version
  - PL/SQL packages
  - Archiving groups
  - Archiving policies
  - Partition policy
- Configuration
  - Retention policy
  - Partition policy
- Archiving Contract
  - Number of data archived per day
  - Contract monitoring
  - Contract modification
- Performance Monitoring
  - Detection of long-standing queries
  - Detection of blocking sessions
  - Detection of schema errors

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**APPROACH**

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**DEVICE MODEL**

- Based on WinCC OA CTRL managers
- Dedicated manager to auto-discover schemas on cluster
- Dedicated manager to monitor each DB instance
- Dedicated manager compute and enforce contracts

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**DATA ACQUISITION**

- 250+ schemas monitored
- ~15 configuration attributes per schema
- 135+ archiving contracts
- 10+ periodic queries for performance monitoring
- 5 CTRL managers to perform the inventory, performance and contract monitoring

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**MONARC HMI**

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**SCHEMA TUNING**

- Identification of schemas with long standing queries
- Analysis of problematic queries (types, properties)
- Configuration of different archive groups to improve performances
- Optimization of partition schemes depending on the type of queries

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**USE CASE EXAMPLES**

**SCHEMA TUNING**

- All CV applications need to extend their data retention period from 1 year to 3 years
- 30+ Oracle schemas impacted requiring 60+ individual SQL queries
- Use the inventory and configuration modules of MONARC to update the schemas in a couple of clicks

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**MASS CONFIGURATION**

- Archiving contract consistently violated by one application
- Most of the archived events come from a handful of signals
- Creation of a specific archive group for the noisy signals
- Definition of custom retention policy for the new group to limit the total amount of data

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**NOISY APPLICATIONS**

- Archiving contract consistently violated by one application
- Most of the archived events come from a handful of signals
- Creation of a specific archive group for the noisy signals
- Definition of custom retention policy for the new group to limit the total amount of data