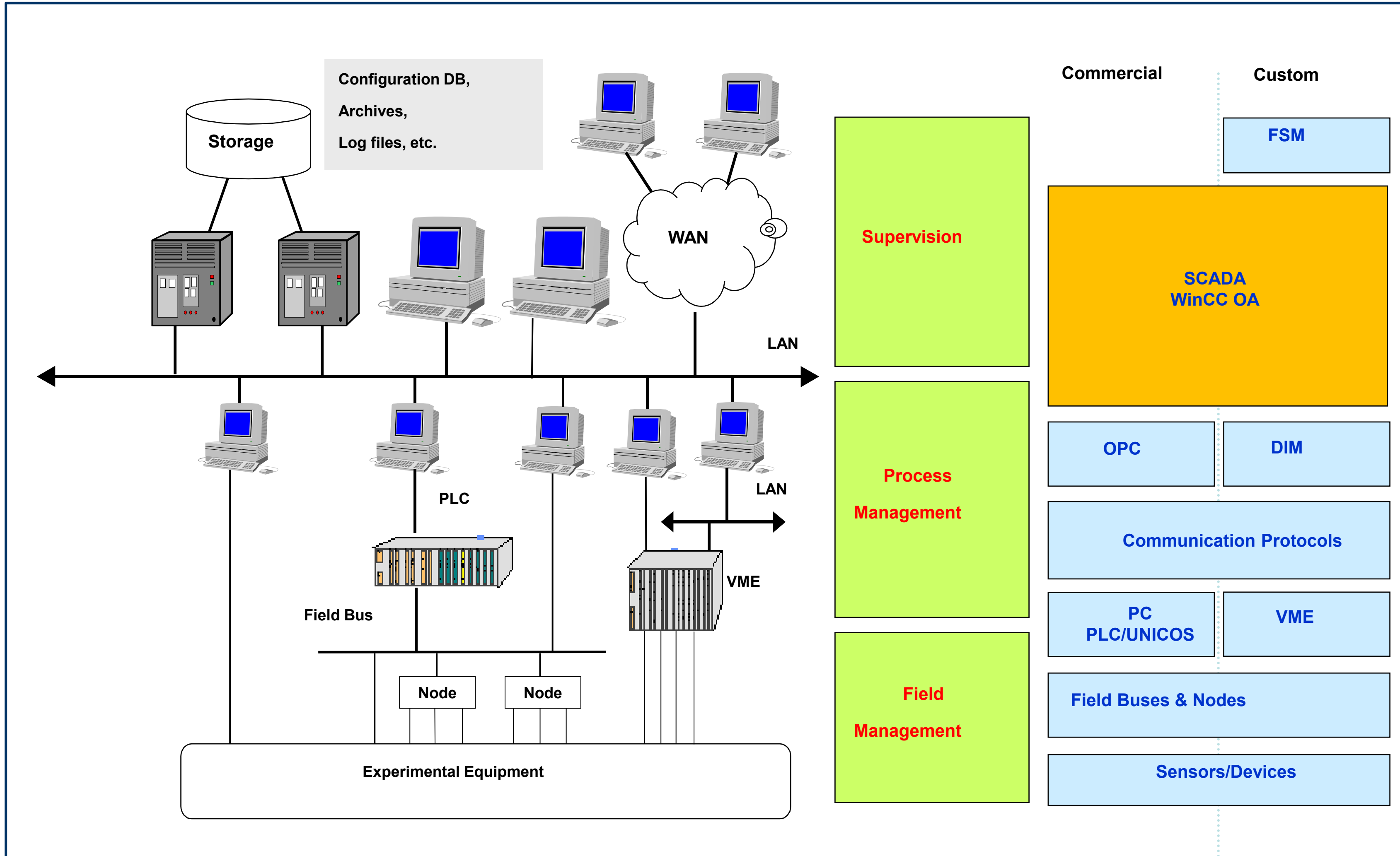


ABSTRACT

Simatic WinCC Open Architecture is a commercial Supervisory Control and Data Acquisition (SCADA) software from ETM – an Austrian Siemens subsidiary. The system has been widely adopted across CERN since it was chosen as CERN SCADA in the early 2000's. The work within this CERN openlab project revolves around data archiving – a long term storage of process value changes and alarms in Oracle database. The project is an extension of the past collaboration between CERN and ETM on improving the Oracle archiving performance. This openlab work focuses on the architecture and development of so-called Storage Framework for the next-generation SCADA system by ETM (WinCC OA version 4). The other part of WinCC OA-related activities is the validation and performance improvements of the current production systems.

SIEMENS SIMATIC WinCC Open Architecture

SCADA In a Typical Control System Architecture

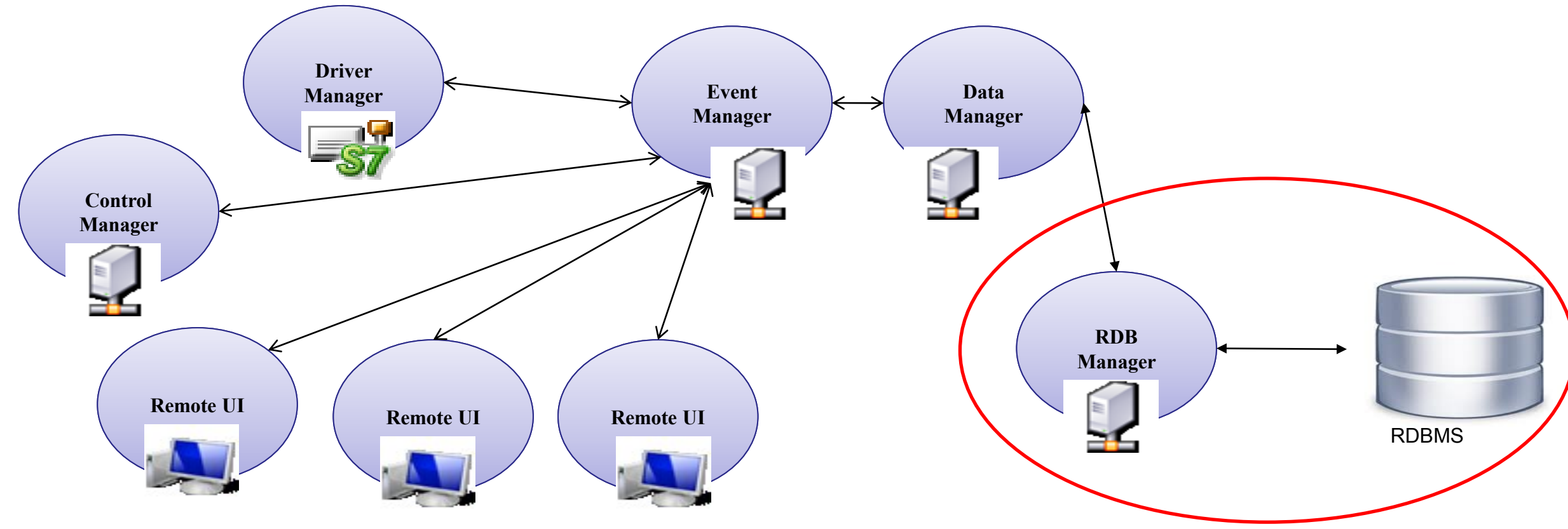


WinCC Open Architecture at CERN

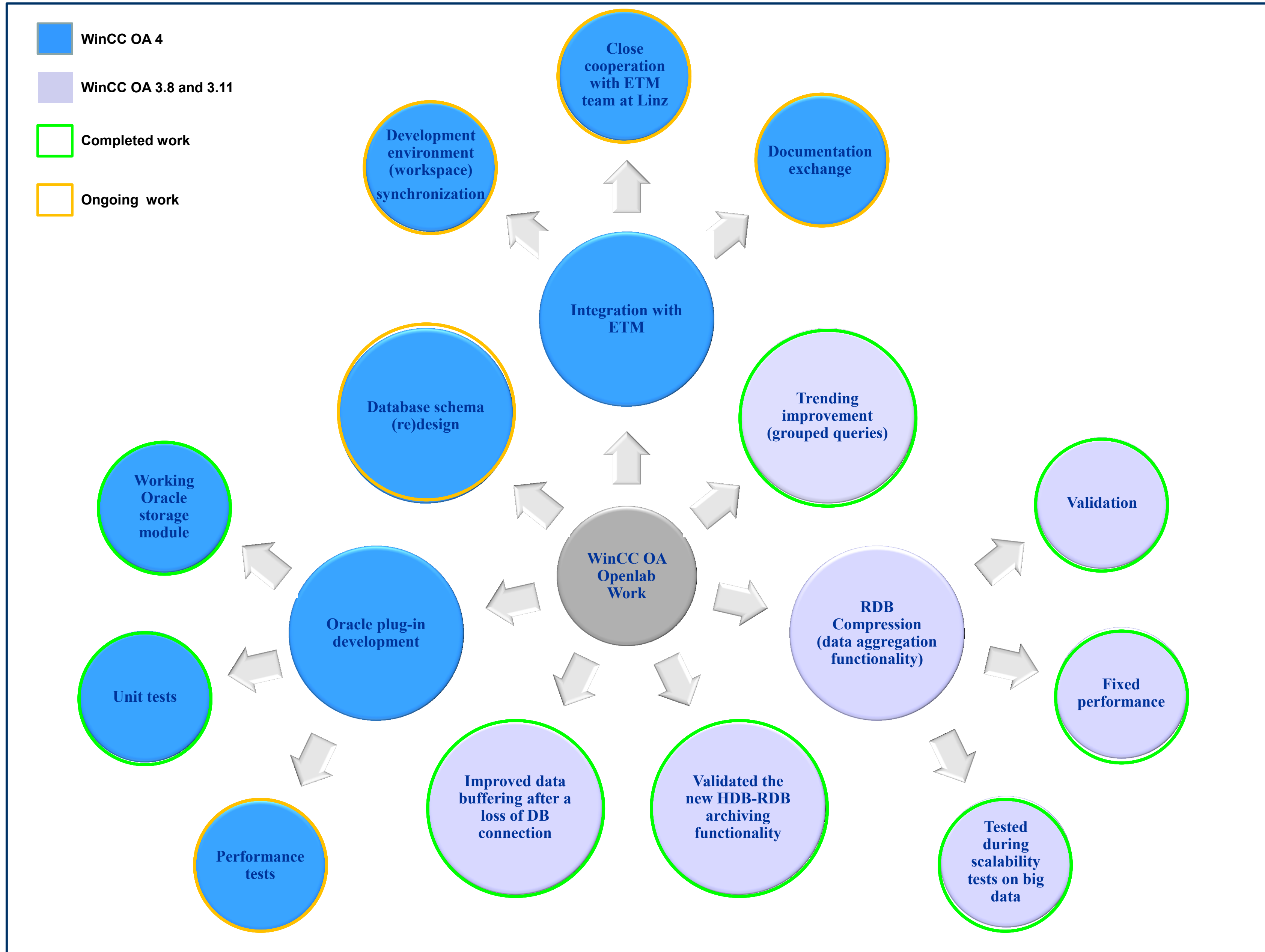
- Present at CERN since 2000
- Features
 - Human-machine interface (process visualization)
 - Devices described as data points (DP), device properties as data point elements (DPe)
 - Control device access
 - Alarm handling (display, filtering, etc.)
 - Archiving and trending
- Archiving
 - Long term storage in Oracle database
 - CERN archives process value changes (DPe values) and alarms
 - Data is archived for analytics (post mortem analysis), physics (conditions) data analysis and to plot trends for monitored values
- CERN-ETM collaboration
 - Current high archiving performance of the archiving module (RDB archiver) is a result of the long term joint effort between CERN and ETM
 - The past collaboration on the Relational Database (RDB) Archiving module performance has evolved into this CERN openlab project
 - Openlab work requires cooperation with Siemens and ETM development and architecture teams based in Germany and Austria

WinCC Open Architecture versions

- Ongoing work on two generations of WinCC OA
- Win CC OA Version 3.X
 - 3.8 SP2 currently used in production at CERN
 - 3.11 will replace the current one after the Long Shutdown one in 2013
 - Openlab work focuses on archiving performance improvements and new features validation of version 3.11
- WinCC OA version 4
 - Upcoming SCADA system to be released within few years
 - Totally new storage and component architecture
 - Storage architecture designed not only for SCADA but all Siemens products which require archiving
 - CERN is developing an Oracle archiving module (Oracle plug-in). Storage modules for other relational database products developed by ETM
 - Modules are based on the framework provided by ETM, developed jointly by ETM and Siemens
 - Openlab work focuses on Oracle plug-in development and it's integration with WinCC OA 4 SCADA prototype



Past and Current work



CONCLUSIONS

WinCC OA RDB Archiver CERN openlab project aims at developing software components to facilitate archiving into Oracle databases, which are widely used at CERN. One of the goals of the project is to make sure that the new Siemens Storage Framework for the next generation WinCC Open Architecture system corresponds with CERN specific needs in terms of performance and functionality. The work on the RDB archiver is divided into so-called development waves. With the working and unit-tested Oracle storage module for the new storage architecture (Oracle plug-in) we have completed the work on wave two and started already with performance assessment. Our initial test results on a simplified test setup are promising and in wave 3 we will carry on with the tests and plug-in module adjustment as the code base is still changing on the Siemens side due to the agile nature of the Storage Framework development.