

ALMA

SERVICES  
COMPANY

# ALPA

Software package developed by ALMA Services Company  
as a unified integrated information system for production automation

**ADCS, MES**



# ISSUES ADDRESSED

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-  Abundance of heterogeneous data sources
-  Duplicate data entry and reports
-  Lack of a unified system (single window) for specialists at all levels
-  Difficulty to meet information security requirements when connecting to APCS/ TMS
-  Limited transfer of process data to a local or corporate information system
-  Lack of consolidated information on business process KPIs





# APPLICATION AND REFERENCES

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## Application

The ALPA software package is tailored for application at process trains with continuous production.

As part of product incorporation, a number of typical process models and rotating equipment models were developed **for the following processes:**

- separation, incl. w/o excessive pressure
- flotation
- heat exchange processes
- pumping and stock management (incl. calculation of free capacity and remaining time until the tank farm is full (the so-called “self-sufficiency”))

## References

When implementing Manufacturing Execution System (MES) based on the ALPA software, the design solutions were applied that have proven themselves when delivering similar objectives **at the following facilities:**

- oil processing facilities (bringing the physical and chemical properties of the oil emulsion to commercial requirements of the Tax Code of the Russian Federation)
- production trains 1 and 3 at Stavrolen LLC
- divisions of Norilsk Nickel MMC (flotation departments as part of Bystrinskoye MMC, divisions of the Polar Division)
- commodities production (divisions delivering mixing, storage and shipment of commercial products) at Omsk Refinery

# BENEFITS OF IMPLEMENTING ADCS

## ✓ Safety

- Alarm settings for APCS in accordance with the regulations
- Alarm system rationalization
- Reduced number of incidents

## ✓ Enhanced personnel performance

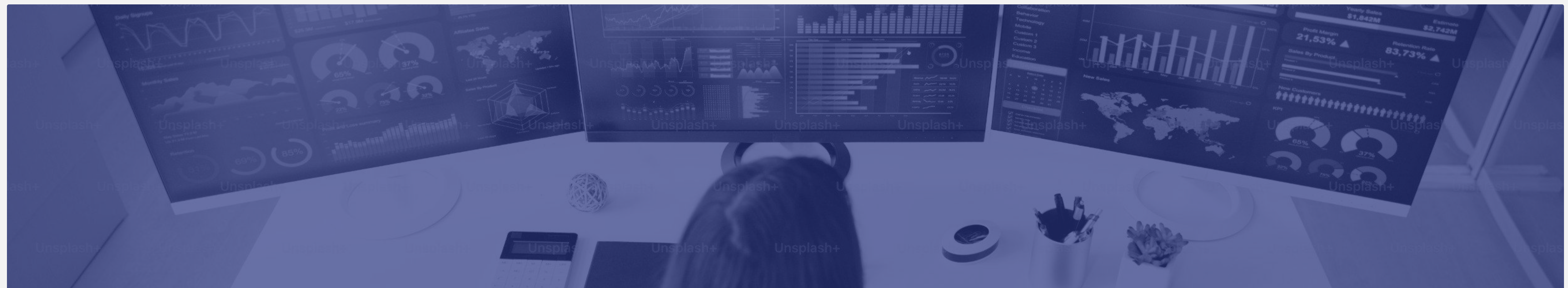
- Optimized response time to emergency events
- Fast reports generation
- Automated data exchange with sources and consumers
- Integration with the existing information systems

## ✓ Minimizing equipment downtime

- Automated equipment monitoring
- Failures prediction
- Reduced number of incidents

## ✓ Cost reduction

- Enhanced energy efficiency
- Proactive detection of emergencies
- Reduced repair costs





# ADCS SUBSYSTEMS

## ALPA.Historian

- ✓ Unified real-time database
- ✓ Providing data

## ALPA.Platform

- ✓ Integration and collection of data from various sources
- ✓ Monitoring the main process equipment state
- ✓ Analysis of production processes
- ✓ Identification of pre-emergency situations

## ALPA.UI

- ✓ Heat map
- ✓ Event Management
- ✓ Mnemonic diagrams
- ✓ Reports
- ✓ Dashboards

Data collection subsystem. Subsystem for long-term storage of parameter values and events

ALPA.Platform

ALPA.Historian

Reports generation and displaying subsystem

ALPA.UI

Production accounting subsystem

ALPA.UI

Information display subsystem

ALPA.UI

Monitoring subsystem and alarm management

ALPA.Platform

ALPA.UI

Production process analysis subsystem

ALPA.Platform

ALPA.UI

Monitoring subsystem  
Configuration subsystem

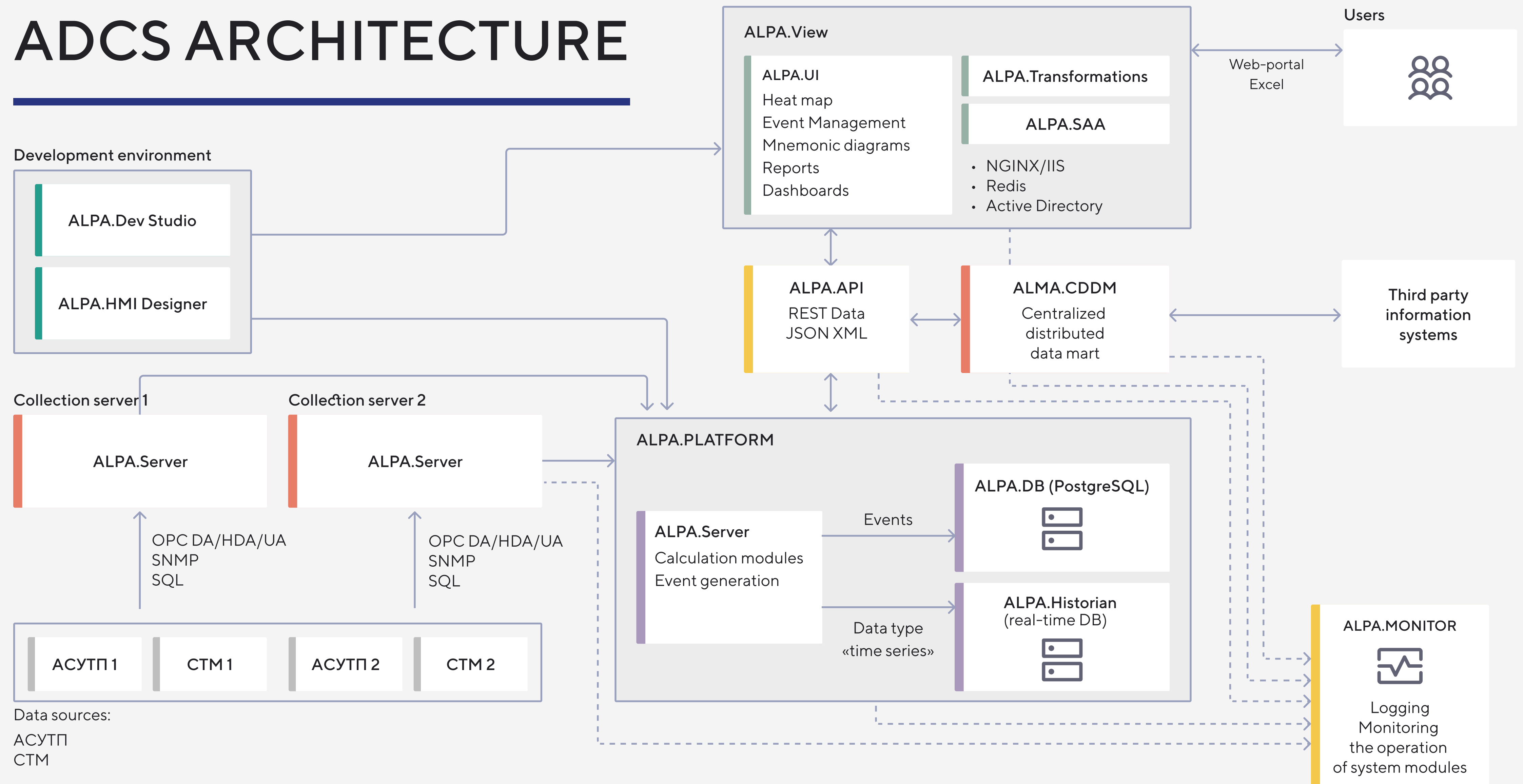
ALPA.Platform

ALPA.UI





# ADCS ARCHITECTURE

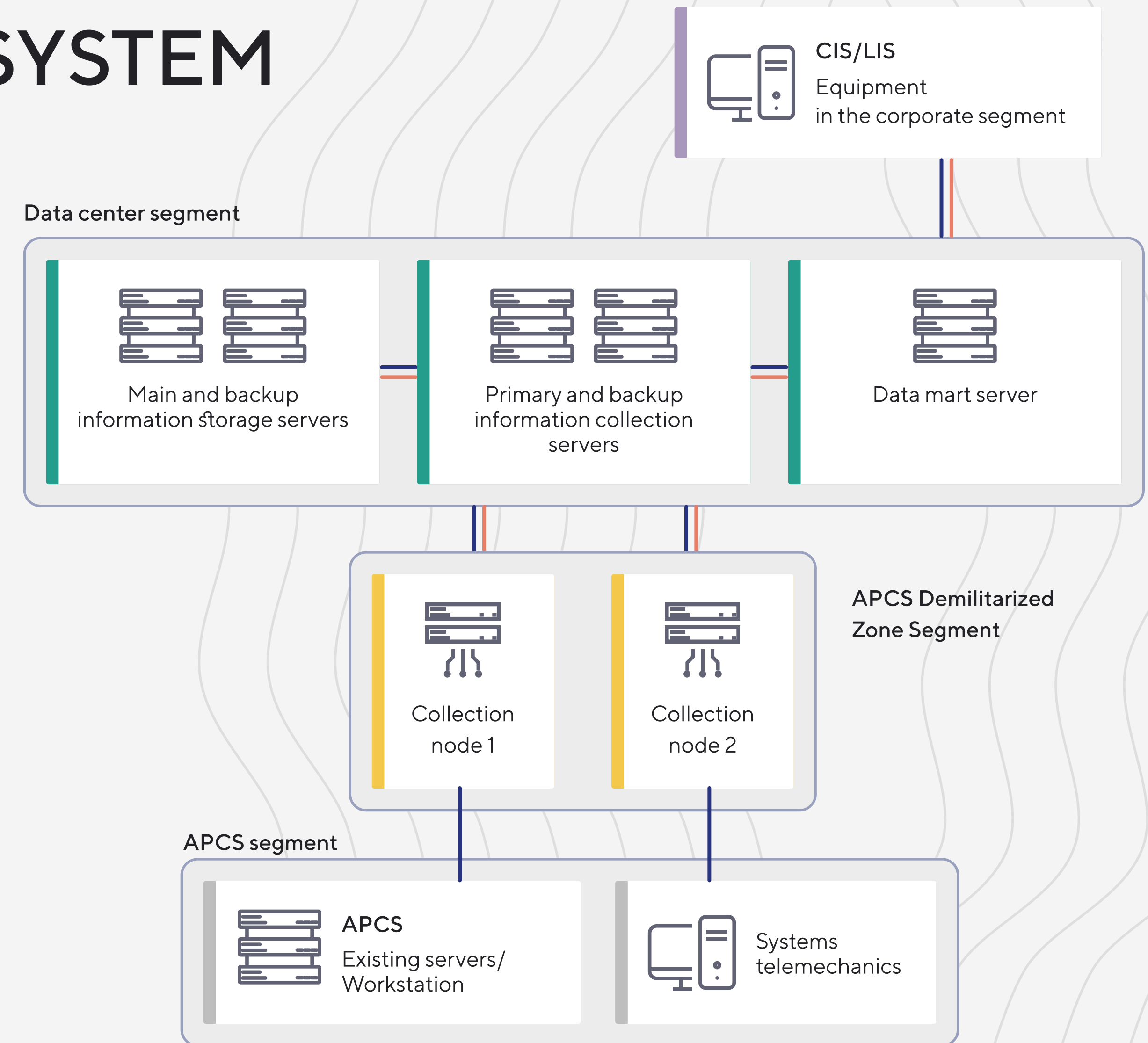




# DATA COLLECTION SUBSYSTEM ALPA.PLATFORM

Provides reliable data collection, long-term storage, unification of calculations

- ✓ Real-time data collection from different types of sources
- ✓ Single configuration for the entire enterprise
- ✓ A unified methodology for calculating actual values for all media in a project
- ✓ Reliable distributed architecture





# INFORMATION DISPLAY SUBSYSTEM ALPHA.UI

## Information display formats:

- heat map
- tables
- mnemonic diagrams
- trends





Mobile device support



Configurable Workspaces



The interface is entirely in Russian



ТПП "ПОВХНЕФТЕГАЗ"

ЦИТС ВАТЬЕГАН

ЦДНГ - 1

ЦДНГ - 3

БКНС-1,1р

Н2-БКНС -1,1Р

Н1а-БКНС -1,1Р

Н3-БКНС -1,1Р

Н4-БКНС -1,1Р

БКНС -3,3Р

ДНС-1

м/р ВАТЬЕГАНСКОЕ

ЦДНГ - 3

Обзор

Тепловая карта

Управление событиями

Просмотр

Анализ

История

Подробные представления

Мнемосхема 1

Мнемосхема 2

Тренды

Информация - ТПП Повхне

Отчеты за сутки

Отчеты событий

Отчеты за месяц

Отчеты событий

Документация

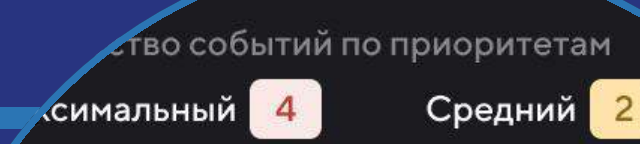
ТР

ТС

Object tree icon

Object tree





## EVENTS DETAILS





# COLLECTION, STORAGE, MEASUREMENT AND ANALYSIS OF ALARM DATA IN APCs

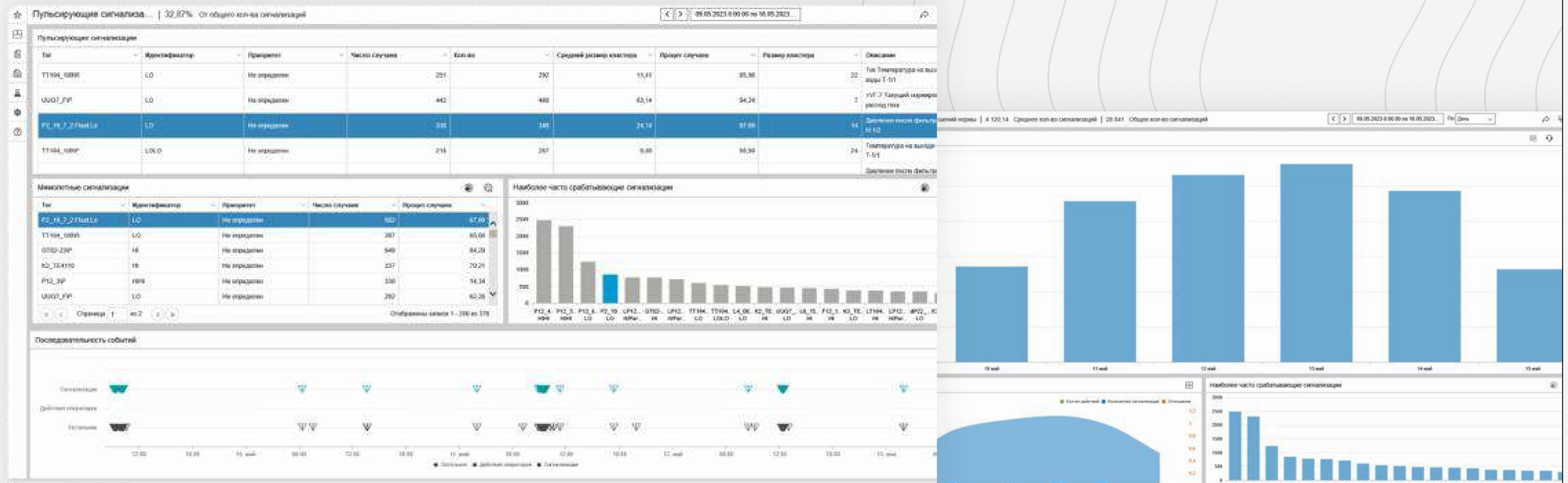
History of alarms and APCs events (Alarm & Event)

Automated evaluation of APCs alarm system operation

Reports on APCs alarm system KPI

Reports for analysis of APCs alarms

Integrates with DCS of any brand





# Thank you for attention

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