INFORMATION SYSTEM FOR ALICE EXPERIMENT DATA ACCESS

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Abstract - The main goal of this paper is the presentation of Dcs ARchive MAnager for ALICE Experiment detector conditions data (DARMA), which is the updated version of the AMANDA 3 software currently used within ALICE experiment at CERN. The typical user of this system is either a physicist who performs further analysis on data acquired during the operation of the ALICE detector or an engineer, who analyses the detector status between iterations of experiments. Based on the experience with the current system, the updated version aims to simplify the overall complexity of the previous version, which leads to simpler implementation, administration and portability of the system without sacrificing the functionality. DARMA is realized as an ASP.NET web page based on Model-View-Controller architecture and this paper provides a closer look at the design phase of the new backend structure in comparison to previous solution as well as the description of individual modules of the system.

Introduction - The ALICE experiment studies the ultrarelativistic heavy ion collisions provided by the Large Hydron Collider (LHC. Most of the values monitored by the DCS are stored into the central database, where every detector uses its own schema to prevent the possible conflicts. Many different ways to access the data from this database were used – from the simple client server tool AMANDA to currently used AMANDA 3 package, which allows the concurrent access to DCS archive using multiple clients. Usage of the AMANDA 3 brings to light the need of designing the new solution. Acronym DARMA (Dcs ARchive MAnager) was chosen as the name of this information system.

Goals

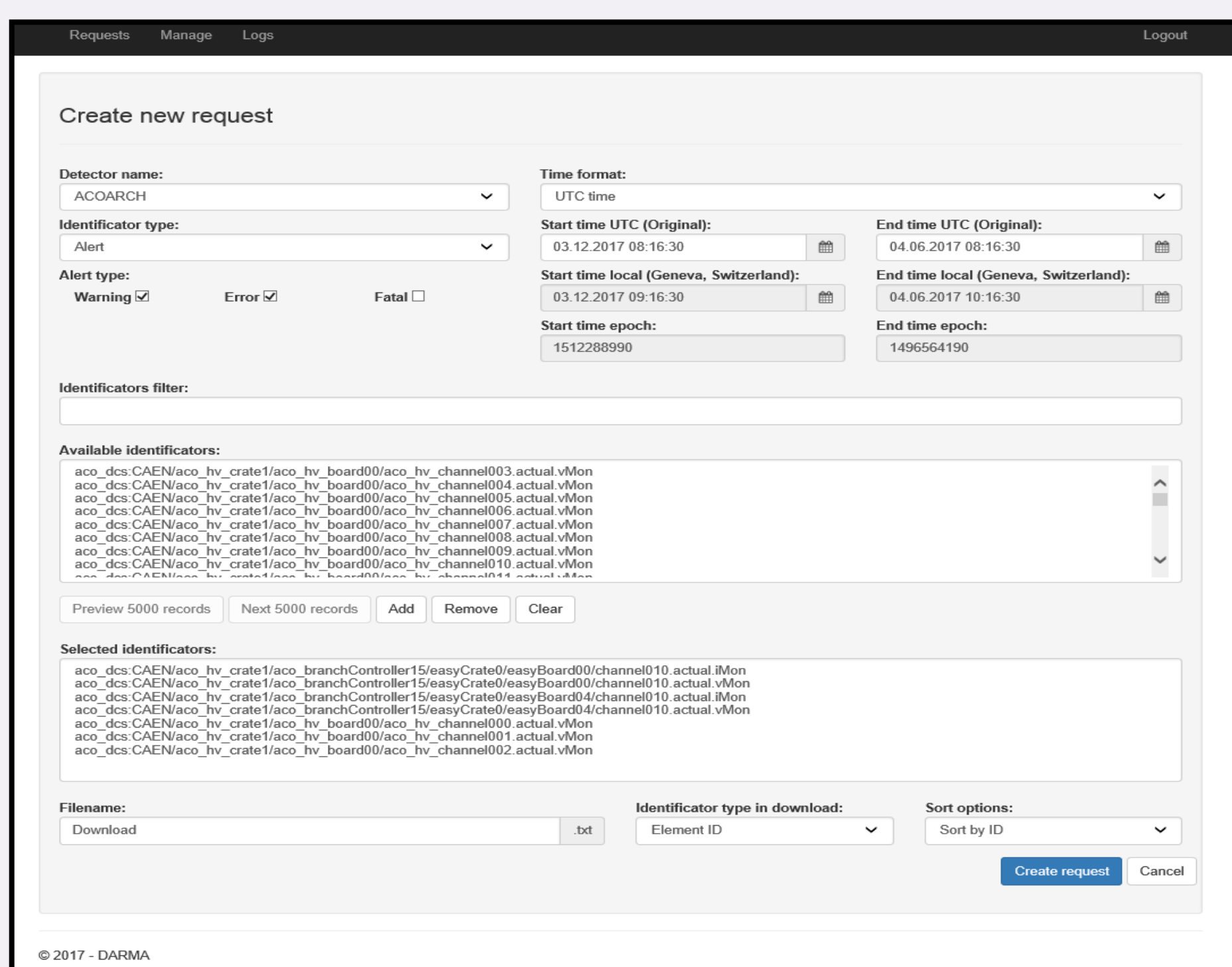**Simplify the IS used for data access**
- Easier implementation
- Easier administration
- Better portability

Improve the functionality of the IS
- Reduction of the backend structure of the IS
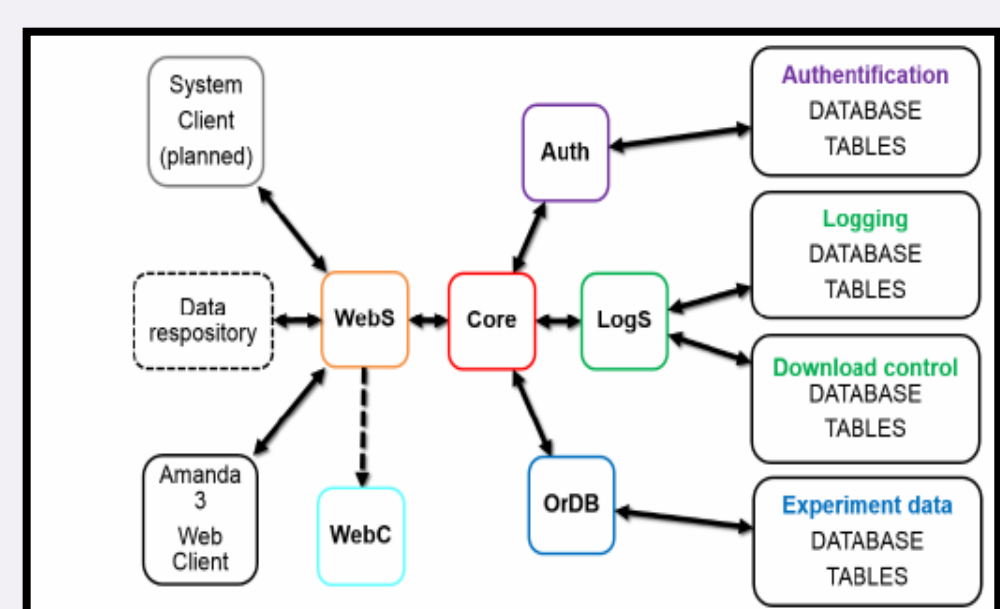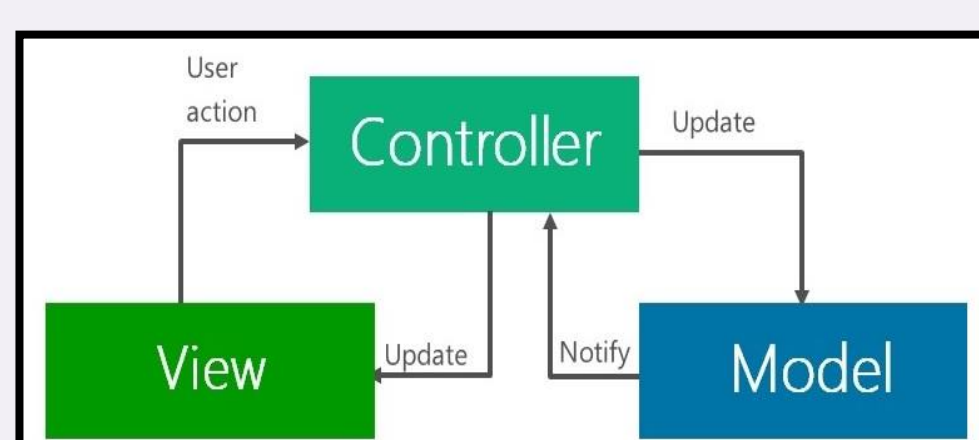- Development and implementation of new features

Design changes (vs. AMANDA 3)
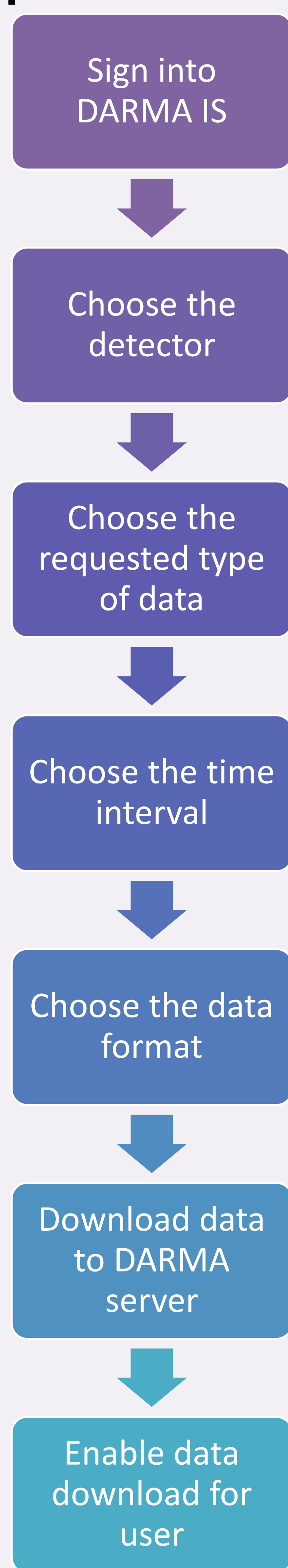- more up-to-date design
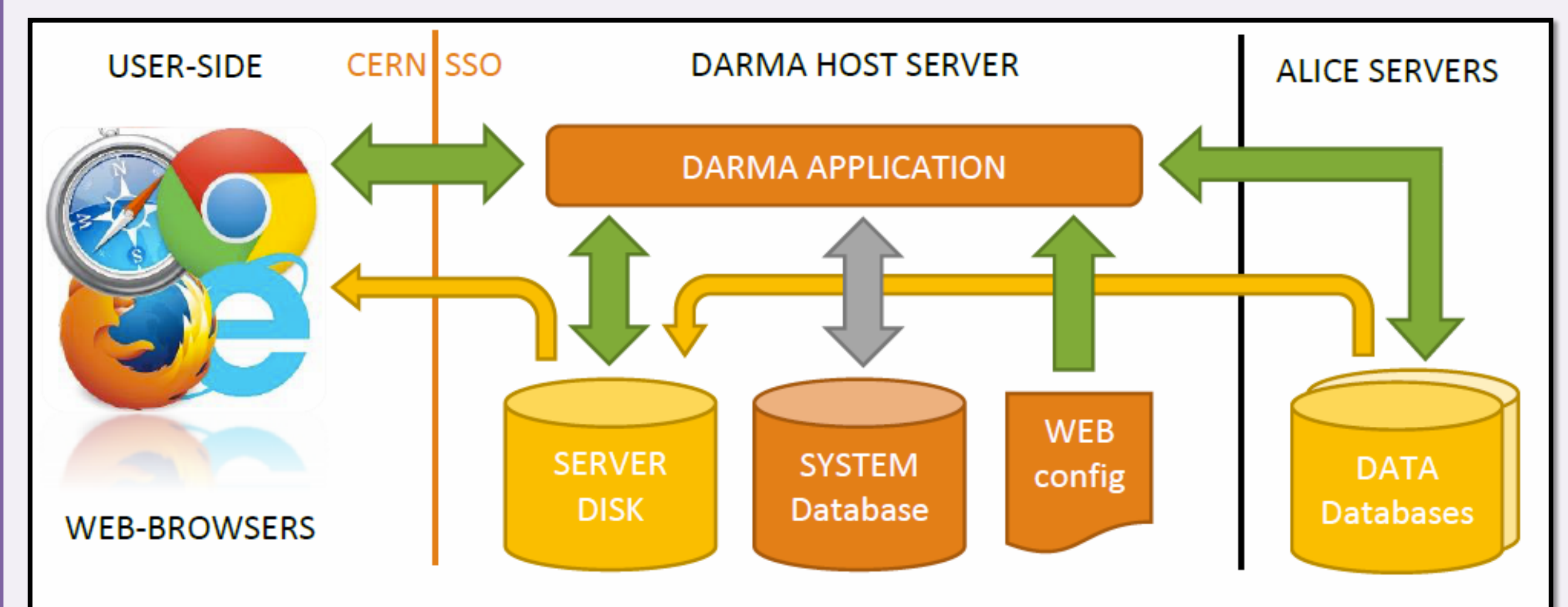

Backend changes (vs. AMANDA 3)
- DARMA provides the data using the web page designed on the base of MVC architecture
- AMANDA was realized as decentralized system with WCF services

Download process

- Sign into DARMA IS
- Choose the detector
- Choose the requested type of data
- Choose the time interval
- Choose the data format
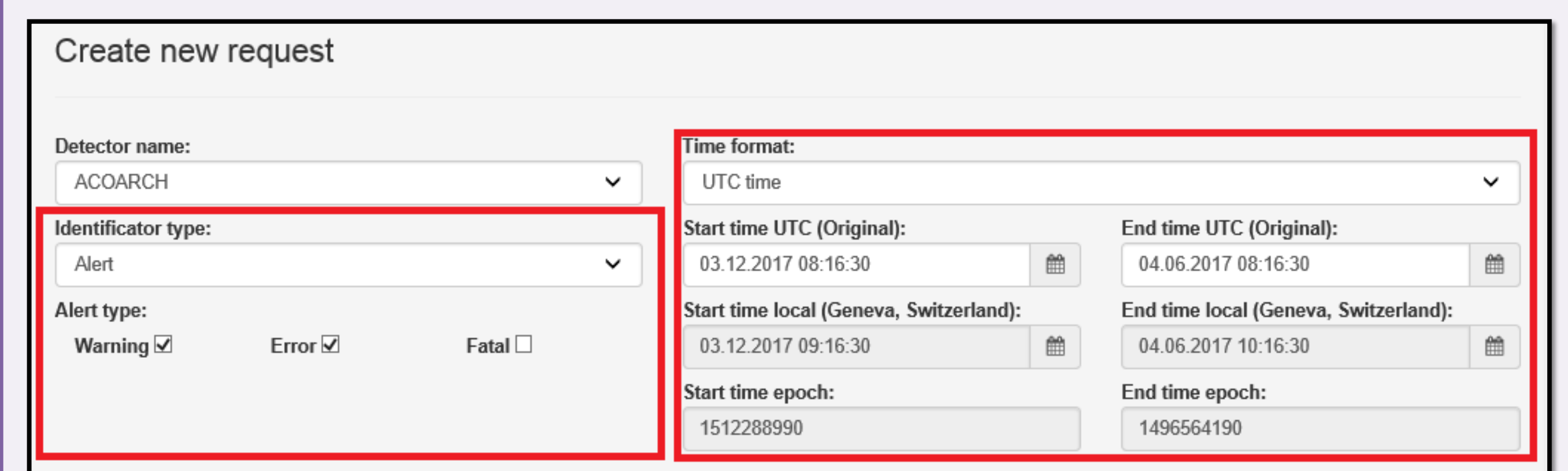- Download data to DARMA server
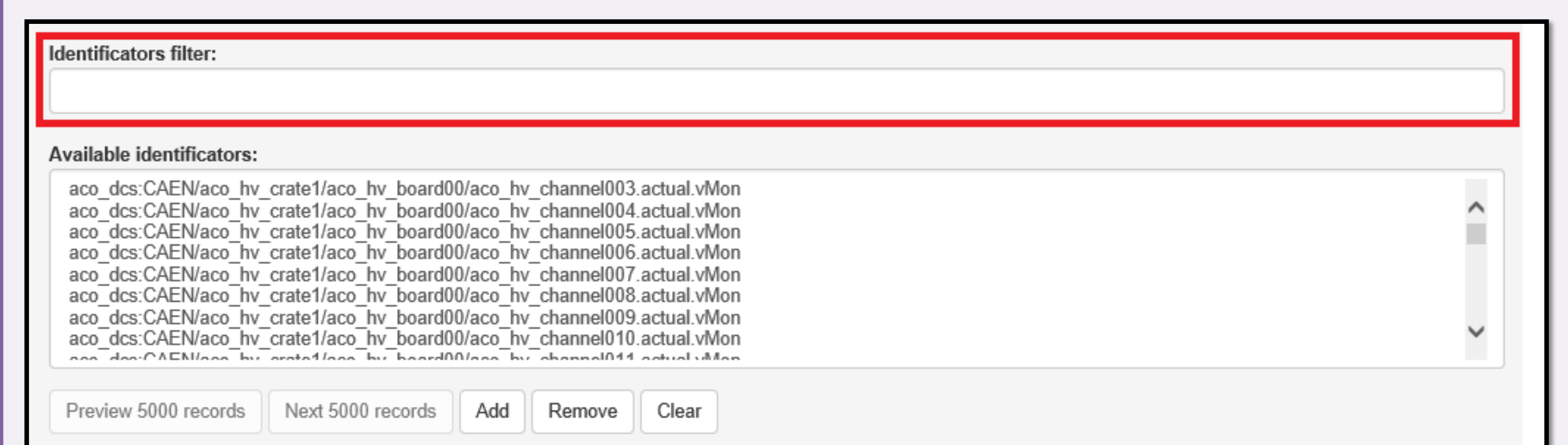- Enable data download for user

DARMA architecture

Functionality changes (vs. AMANDA 3)
- downloading list of alarms for particular elements or aliases
- automatic time conversion between UTC time, time in EPOCH format and local time

- filter is able to find any part of desired element name or alias

- sharing requests between DARMA users
- progress bar displaying the process of download

Conclusion - A DARMA (Dcs ARchive MAnager) is the information system used for downloading the historical data from the DCS experiments and provide them for further analysis. System was developed with respect to main features of its previous version – AMANDA 3, which was implemented into CERN infrastructure in 2014. In comparison to AMANDA 3, DARMA is running with significantly reduced backend structure, designed using the MVC architecture. Besides these changes, new structure of the system database was developed, and some functionality changes were also realized with goal of make using of DARMA intuitive and simple.