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Modular and scalable RESTful API to sustain STAR collaboration's record keeping

STAR collaboration's record system is a collection of heterogeneous and sparse information associated to each members and institutions. In its original incarnation, only flat information were stored revealing many restrictions such as the lack of historical change information, the inability to keep track of members leaving and re-joining or the ability to easily extend the saved information as new requirements appear.

In mid-2013, a new project was launched covering for an extensive set of revisited requirements. The requirements led us to a design based on a RESTful API, back-end storage engine relying on key/value pair data representation model coupled with a tiered architecture design. This design was motivated by the fact that unifying many STAR tools, relying on the same business logic and storage engine, was a key and central feature for the maintainability of records. This central service API would leave no ambiguities and provide easy service integration between STAR tools.

The new design stores the changes in records dynamically and allows tracking the changes chronologically. The storage engine is extensible as new field of information emerges (member specific or general) without affecting the presentation or the business logic layers. The new record system features a convenient administrative interface, fuzzy algorithms for data entry and search and provides basic statistics and graphs. Finally, this modular approach is supplemented with access control, allowing sensitive information and administrative operations away from public users.

In this contribution, we will review the requirements, present our design and its benefits as well as illustrate the power of the approach using practical examples for record keeping in a large collaboration like STAR.

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