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Request for All - Generalized Request Framework for PhEDEx

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PhEDEx has been serving CMS community since 2004 as the data broker. Every PhEDEx operation is initiated by a request, such as request to move data, request to delete data, and so on. A request has its own life cycle, including creation, approval, notification, and book keeping and the details depend on its type. Currently, only two kinds of requests, transfer and deletion, are fully integrated in PhEDEx. They are tailored specifically to the operations' workflows. To be able to serve a new type of request it generally means a fair amount of development work.

After several years of operation, we have gathered enough experience to rethink the request handling in PhEDEx. "Generalized Request Project" is set to abstract such experience and come up with a request system which is not tied into current workflow yet it is general enough to accommodate current and future requests.

The challenges are dealing with different stages in a request's life cycle, complexity of approval process and complexity of the ability and authority associated with each role in the context of the request.

We start with a high level abstraction driven by a deterministic finite automata, followed by a formal description and handling of approval process, followed by a set of tools that make such system friendly to the users. As long as we have a formal way to describe the life of a request and a mechanism to systematically handle it, to serve a new kind of request is merely a configuration issue, adding the description of the new request rather than development effort.

In this paper, we share the design and implementation of a generalized request framework and the experience of taking an existing serving system through a re-design and re-deployment.

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