Proposal Workflow Management System

A web-based application for replacing the manual approval process of grant proposal submission

Abstract

The process of creating a research proposal and submitting it for final approval is a very time consuming process as any proposal may require multiple parties to review and ~~authorize~~ approve it and involves various ~~every~~ steps. Sometimes these issues are related to absenteeism, such as when a chair-person who must review, authorize, or deny a proposal is away from their office. While much of the process of approval is often completed in a manual, analog, or non-digital fashion, ~~there are digital and online solutions available~~ we are proposing an automated application which can solve those problems which can be more time and resource saver to any academic institutions. The current state of the digital systems for the approval process leaves much to be desired, however as many flaws exist in the current security model for such applications. They are included with the business logic and even hard to change and understand. Currently, security in the industry makes use of Role Based Access Control (RBAC) policies, which are predetermined rules for access at the time that the program is written, however security roles and authorization policies may and often will change. Such agility need makes it harder to adapt changes with the existing applications.

Thus, there is a need for flexibility in changing security policies. We propose a separation of code and policy and give a global abstracted view of the whole workflow to the general users. By utilizing the Extensible Access Control Markup Language (XACML) and making use of Attribute Based Access Control (ABAC) policies we can enforce more fine-grained restrictions on resources and actions.  ~~create a database free of the restrictions of coding access and authorization policies into it.~~  With XACML we can create these changeable policies apart from the database, and then at a later date integrate the two. Not only will this help avoid the costly work of recoding when security policies change, it will also allow for a more flexible control of security policies demanded by an organization making use of such application. Thus this management system can demonstrate a good use case for implementation of XACML using ABAC policies. Also to fulfill and handle the future demanding availability and scalability of data we will incorporate the NoSQL storage such as MongoDB that can be more applicable for such distributed big data and real-time web applications.

Keywords:

Security, Workflow, Delegation, Obligation, Big Data