

Improving Authentication and Authorization on SynBioHub

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Abstract

Synthetic Biology is an emerging discipline which uses engineering principles to shape biological behavior. The Synthetic Biology Open Language (SBOL) is a standard for describing biological constructs which enables engineering workflows that previous formats, such as GenBank and FASTA, could not. SynBioHub is an online repository for storing and sharing genetic designs. It uses the SBOL standard and an RDF triplestore to store designs, as well as supporting file attachment and external links. Several research efforts in synthetic biology have adopted SynBioHub and SBOL. These research efforts have revealed key areas for improvement in SynBioHub. Improving user sharing and permissioning is a primary target for improvement. The existing system has basic support for sharing with different privilege levels. Unfortunately, its architecture makes it difficult to extend and improve. Due to this difficulty, many features which would make SynBioHub more collaborative have not been implemented. This work aims to make synthetic biology more collaborative by providing a better foundation for experimentation and innovation in user sharing and permissioning. The existing authentication and authorization (auth) system is not centralized; it mixes concerns between page rendering and permissions management. The new system separates auth into its own software layer, separate entirely from page rendering. This new layer is itself split into separate authentication and authorization steps. New feature development and refinement will be made easier by the strong separations between the different components of SynBioHub.