

## RESEARCH

# Extending the interoperability of tagtog and PubAnnotation

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## Abstract

**Introduction:** *tagtog* is a web-based tool for the manual and automatic semantic annotation of written language [1, 2]. The domain of annotated texts is often the biomedical literature and moreover other sources are also treated (e.g. tweets, users' complaints, news reports, etc.). Users of the tool can collaborate together to create annotated text corpora. Furthermore, automatic named-entity recognizers and relationship extractors can be used to accelerate the annotation process. The tool can be accessed interactively via the web interface or programmatically via REST API. At the time of writing, the API is in beta status and public online documentation is provided [3].

**Previous BLAH participations:** The first submitting author participated in the first two editions of the BLAH hackathon [4], and co-organized the BLAHmuc hackathon, September 2016, Munich. In the three combined participations, several of the proposed goals were achieved, among others: a) the conversion of tagtog format to PubAnnotation format, b) the retrieval of PubAnnotation annotations through tagtog's REST API (example: [5]), and c) the effortless exportation of annotations made on the tagtog editor directly into the PubAnnotation repository [6]. We hope these contributions benefit the PubAnnotation repository and the biomedical community by making use of the increasing annotations efforts performed on the tagtog editor.

**Goals for BLAH3:** For the new BLAH3 edition, we plan to extend the interoperability of tagtog with other tools and formats. Specifically, our two main goals are: 1) adapt to PubAnnotation's and TextAE's interfaces to allow users utilize the tagtog interface for any PubAnnotation resource, and 2) work together with PubAnnotation authors to co-design and test a successful OpenID-based user authentication with the goal of increasing the ease of use and security for final users.

**Keywords:** web editor; annotations; API; interoperability; text mining; OpenID

## Goal 1: Have tagtog be a viewer & editor of any PubAnnotation resource

Currently, the tagtog interface can only be used as a monolithic system. That is, tagtog annotations can only be viewed on the tagtog interface itself. In this respect, we prize the versatility of the TextAE editor, which can freely be used as an interchangeable module anywhere a final user decides to. As a first step to induce a similar level of freedom for the tagtog editor, our goal is to 1) allow, via API, the input of any annotations (e.g. in PubAnnotation format) to display those on the tagtog interface and 2) have the changes made on the tagtog editor be saved into the PubAnnotation repository if the user decides so. For this, a mandatory

requirement is to remove the current need of tagtog of associating every annotation with a tagtog project, i.e., annotations must be independent from projects. All these things combined, will effectively allow tagtog to be used as a viewer and editor of any PubAnnotation resource, i.e., any project, document, or annotation.

## Goal 2: Co-design and test an OpenID-based authentication for PubAnnotation

tagtog allows via a setting hook to have user annotations made on tagtog (either on the interface or via API) be stored directly (without user intervention) into an associated PubAnnotation project. However, an important security flaw of the current implementation is that tagtog stores PubAnnotation passwords as plain text (not encrypted) due to limitations with the tagtog to PubAnnotation interface. At the BLAHmuc hackathon, we discussed with PubAnnotation authors (viz. Dr. Jin-Dong Kim) possible collaborative efforts to help design and test an OpenID-based authentication for PubAnnotation. This would allow tagtog, other tools, or even users of the PubAnnotation API, to securely access and store data to the PubAnnotation repository. Our goal, therefore, is to realize this collaboration and consequently make use in tagtog of the new PubAnnotation-provided OpenID authentication.

### Competing interests

The authors declare that they have no competing interests.

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