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# ANGLES: A Web-Based XML Editor

## Digital Humanities Start-Up Grant
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## Introduction

The ANGLES project is an experiment in digital humanities tool development. The project proposes a new solution to the adoption gap that has developed between scholars with digital materials and technical developers designing the applications scholars are using in their research. The aim of ANGLES is to go beyond the exploratory, hermeneutic coding of a small group of scholars and to build on the success of the "barnraising" small institute model by combining a model of intensive code development (the "code sprint") with participatory design exercises, testing and feedback from domain experts gathered at internationally-recognized disciplinary conferences. This approach is intended to address the need of a new software product to generate users, provide better technical development by having potential users to explore code as it is being created, and allow the scholarly and developer communities to more clearly elucidate their intellectual, methodological, and technological needs in a structured collaboration process. As a pilot for this "community roadshow" approach to tool development in the digital humanities, the ANGLES Project will develop a web-based editor for working with XML markup through engagement with the large and active community of scholars, teachers and developers who work with the TEI.

## Activities from October 1, 2012 – July 31, 2013

### Initial technology selection and development

To achieve usable results in the short timeframe of the project, the ANGLES team elected to develop on top of an existing browser-based code editor. The Ace editor (http://ace.c9.io/) is an open-source project under active development. Ace has also been incorporated into larger, commercial projects, most notably the code sharing platform GitHub. Given this level of uptake in the software community, Ace seemed a solid choice for the smaller ANGLES project. The project team, led by Jim Smith, conducted a thorough review of the Ace codebase and began preparing documentation and build tools to allow developers to begin contributing to ANGLES.

### Poster presentation & code sprint at Text Encoding Initiative (TEI) Members' Meeting

Since the main technology under development in the ANGLES Project is a web-based editor for working with XML markup, the TEI Members' Meeting was an important locale for project performance. The 2012 meeting and conference was held November 6-10 at Texas A&M University in College Station, Texas.

The project team submitted a proposal for a pre-conference workshop and a poster presentation; both proposals were accepted. In accordance with the project plan submitted with the original grant application, the ANGLES project funded a group of developers to attend the conference, participate at the "code sprint" workshop, and talk to potential users from the TEI community. The following core developers participated in the first ANGLES workshop:

- Jim Smith, Maryland Institute for Technology in the Humanities (MITH)

- Doug Reside, New York Public Library
- Hugh Cayless, New York University
- Trevor Muñoz, Maryland Institute for Technology in the Humanities (MITH)

The day-and-a-half long code sprint was open to other conference attendees. During this time the core team was joined by five other participants on a drop-in basis. Development tasks completed at this event included:

- Prototype of completely in-browser validation of permitted elements
- Simple API for XML (SAX) parsing of XML document in the editor
- Test integration with Google Drive (as an example storage service)
- Set-up and design of basic demo page

All code is publicly available from the project's GitHub repository:
https://github.com/umd-mith/angles

During the main conference, Trevor Muñoz presented a poster on plans for the project and outcomes of the first code sprint. The poster can be viewed at:
http://dx.doi.org/10.6084/m9.figshare.106812

*Additional Development at MITH*

After the first code sprint at the TEI Members' Meeting, the MITH team continued some development work to capitalize on insights from the first event and to prepare for subsequent events.

The MITH team made significant changes to the project's codebase to make development easier. Under the supervision of Trevor Muñoz and Jim Smith, the application was re-architected to use Backbone.js (http://backbonejs.org/) a Javascript framework designed to support full-featured applications in the browser. This technical decision was intended again to align ANGLES with a larger community of open source developers. Writing plug-ins or alternative interfaces for ANGLES will thus not require learning project-specific conventions but merely adopting conventions of the Backbone.js community. Also, this decision would allow ANGLES to easily decouple development from the Ace editor project in the future if this seems desirable. By using the Backbone framework to communicate with Ace, we have created a stable API, which could take a different editor in the future if need be. Additionally, despite progress on a technical implementation of validation against a TEI schema purely in a web browser, the MITH team made a decision to setup up a small web service to provide more full-featured validation using server-side tools such as Jing (http://www.thaiopensource.com/relaxng/jing.html). This web service will complement the more-basic browser-based validation solution for the time being.

*Code Sprint at Digital Humanities 2013*

The project team organized a smaller, more-focused code sprint at the Digital Humanities 2013 conference, held July 16-19, 2013, in Lincoln, Nebraska. For this second code sprint, the goal was to meet and work with other developers of complex Javascript applications for the digital humanities. The rationale was that these developers were most likely to adopt a complete ANGLES editor into their digital projects; also, the project team hoped that this community might have best practices and insights to share. As the major disciplinary conference, Digital Humanities was also targeted as a crucial site of performance for the ANGLES grant.

The following developers participated in the second ANGLES code sprint:

- Raffaele Viglianti, Maryland Institute for Technology in the Humanities (MITH)
- Jim Smith, Maryland Institute for Technology in the Humanities (MITH)
- Doug Reside, New York Public Library
- Trevor Muñoz, Maryland Institute for Technology in the Humanities (MITH)
- Gregor Middell, Julius-Maximilians-Universität Würzburg
- Wayne Graham, Scholar's Lab, University of Virginia
- David McClure, Scholar's Lab, University of Virginia
- Eric Rochester, Scholar's Lab, University of Virginia
- Sean Pue, Michigan State University
- Wout Dillen, Centre for Manuscript Genetics, Antwerp
- Andrew Hankinson, McGill University

A full report of the outcomes from this second code sprint will be included in the project's final report. However, the project team derived some preliminary insights from this event. The next stages of development will focus on making the ANGLES code base even easier for other developers to work with and incorporate. This will include: better packaging, build tools, and "getting started" documentation, as well as an increased focused on testing existing code.

## Changes in Methods, Roles, or Work Plan

Based on the experience of the first code sprint—good engagement but low turnout—the project team changed its recruiting approach for events to focus more on other coder-scholars from the digital humanities community rather than broader categories of digital humanities practitioners. Partly this is a reflection of the type of tool being created (an XML code editor) which requires more upfront development and may be less suitable for periodic "roadshow" type events. The team's final report will reflect further on insights and challenges related to creating utilitarian software for the digital humanities.

The project also experienced some personnel changes. Between the first and second event, Raffaele Viglianti joined MITH as a research programmer. Viglianti carried out much of the development after the first event, taking over from Jim Smith. Viglianti's experience with both TEI XML and Javascript applications has been a great asset to the project. At the same time, due to a change in his position, Hugh Cayless, a core developer at the first event was not able to join

the team for the code sprint at Digital Humanities 2013.

Finally, due to a crowded calendar of events at MITH and for the team of core developers, the project did not hold a code sprint between the TEI Members' Meeting (in November 2012) and the Digital Humanities conference (in July 2013). The team plans to hold the final planned event near the end of the grant performance period. The location and date of this event are still to be determined. The project may need to request a short no-cost extension to accommodate the scheduling of this event.

## Next Steps

In the upcoming performance period (August 1, 2013 - September 30, 2013), the project team will:

- Integrate suggestions from the second code sprint for better packaging and build tools
- Increase test coverage of the existing code base
- Organize and run a third code sprint focused on user interface design and usability
- Prepare the final white paper including critical reflection on the "roadshow" model of development for digital humanities software.