FINAL REPORT
FACADE2: MIT AND HARVARD COLLABORATION

INTRODUCTION

Changing technologies in the generation of architectural drawings have transformed architectural practice and that of other design disciplines. As a result of these new technologies, architects and designers from across the globe can work collaboratively on a project using digital material. This has translated into an overwhelming number of born-digital architectural records in a diversity of text-based and vector-based files that, in some instances, should be captured and preserved in archival repositories enabling future teaching, learning, and scholarly research. These born-digital records are produced by a diversity of evolving, mostly commercial, software products (characterized by technologies that continue to undergo rapid and continuous change). The capture and preservation of these born-digital architectural records is indeed very much a concern both for architectural firms and architectural archives alike. Although the robust community of digital preservation is addressing this global issue, to date the efforts are primarily at a bit preservation level. Archivists at many organizations are dealing with the reality of CAD (Computer Aided Design) files that cannot be made fully accessible because strategies for long-term access of these software-dependent digital objects are not yet mature. Further, the workflow and process of capturing both files and necessary metadata, including structure and context, has not been robustly field-tested.

The capture and preservation of born-digital architectural records was previously studied by MIT between 2006 and 2009 through a project entitled *FACADE: Future-proofing Architectural Computer Aided Design*[i] that created a collection of digital files provided by architects who allowed them to access building project data to use as a research test bed. MIT developed a "project information model" (PIM) that underlies the relationship between various CAD files and versions, and between CAD files and other project communications and documentation. They also developed a tool referred to as the "curator's workbench" (CWB) that allows curators of architectural collections to add metadata through a web-based computer application. This tool needed to be further tested, developed, and refined for a diversity of reasons. The Library Lab of Harvard University's Office for Scholarly Communication offered a framework for a cross-institutional collaboration between the Frances Loeb Library of Harvard University's Graduate School of Design and the MIT Libraries to collaborate in upgrading the CWB. Both institutions understood this as a first step in the further development of what is envisioned in the long-term as a shared production tool, workflows, and a shared repository for the collecting, archiving, access and preservation of electronic architectural files.

This first step in this collaboration focused on upgrading the CWB for the tagging of architectural files, along with the testing of the tool across two institutions. Technically, the CWB allows metadata to be added to the original filing system (as received) through tagging multiples files at one time, and also allows the identification of significant files that could require additional archival description and preservation. It is a web-based tool for creating, editing and managing metadata for an architectural project, specifically the metadata pertaining to individual project files that constitute the corpus being

described. The metadata conforms to a specific ontology known as the "project information model" (PIM) mentioned above, that was loosely derived from an emerging building industry standard known as "building information model" (BIM). Thus, the CWB is a PIM instance editor. Numerous other tools, scripts and workflows, and procedures also contribute to the generation of a complete PIM instance, but the CWB represents the primary curatorial and administrative interface to it. It was expected that the CWB would undergo substantial iterative development during the project, as various needs and requirements emerged before it could be considered a production-ready tool. The proposed work was both infrastructural and functional. Technical support was primarily by the Berkman Center technical team.

PROJECT RESULTS

Early on in the project the curatorial team concentrated on two things: reviewing and expanding the vocabularies for the CWB description tabs (disciplines, document types, project stages/phases, project divisions); and in acquiring files from architects. The latter led to the consideration of gift agreements vs. non-exclusive license agreements with architects in order to acquire born-digital architectural files for use in testing. Further review through Harvard University legal counsel enabled reaching an agreement, and the team was successful in acquiring files from Harvard Professor Hashim Sarkis' *Fisherman's Housing in Tyre*, Beirut. In parallel the team also reviewed a workflow improvements document which contains a list of target areas from the original FACADE research project that could use further development, and drafted a list of enhancements. It conducted, with the technical support team, a technical review of the existing CWB and provided the source code for review to the technical support team, who in turn provided it to the software development team.

The software development team completed development for and debugging of the initial version of the CWB. A local test environment was installed and available for testing. Several iterations of testing and feedback were carried out, and the local testing environment was updated to incorporate the larger data set of files (from the *Fisherman's Housing in Tyre* project). Another set of iterations of testing and feedback were carried out with the goal of obtaining an improved version of the application, before releasing a final product. The curatorial team also worked with a student, in the development of a platform-independent, folder and file sorting tool. The tool essentially takes a simple input - an address for a folder on the computer- and the specified folder is then scanned recursively until it accounts for every single file and folder residing within the main folder.

Having scanned the folder, the tool performs the following functions: first, it builds a tree structure with the base folder situated at the top and each sub folder and file forming the rest of the hierarchy; second, having recorded all the files in the base folder, it records the different files types that exist in the base folder and keeps a log of the number of files under each file type. This log is displayed in the main

window of the folder and file sorting tool for a quick cross check before the user decides to export the data into a more readable format. The export function of the folder and file sorting tool writes out two pre-formatted Excel sheets with both the folder hierarchy and the number of files under each file type. The need for this tool was raised when trying to account for file types and quantity of files, and it was understood that it could be a useful tool to integrate into the workflow for the acquisition of files, and maybe even incorporated in the long-run into the functionality of the CWB.

After the first two iterations of testing, development of FACADE2 progressed more slowly than expected because, once reviewed by the technical support team, unexpected functional and technical bugs were discovered during testing of the latest version. The developer continues to work on addressing these high-priority issues, as well as completing important implementation details for the software, such as access to a local file store (the priority for implementation of which was not fully understood by the developer). There is an understanding between the technical support team of the next steps with the developer.

There is also the understanding between the Harvard and MIT teams that, as a result of the software developer's work, a set of updates to the code will be available soon. The technical support team will then install and test on local servers before making the environment available to the FACADE2 client team to test more heavily. In the spirit of collaboration, it is also understood that the code will be shared between the two institutions involved and even beyond (as an open-source project) so that the steps taken forward, albeit slower than expected, may be shared with those who can commit towards the long-term view of a shared production tool in the future.

---

[1] *Preserving Coumputer-Aided Design (CAD).* Published in association with Charles Beagrie Ltd and Jisc's Digital Curation Centre. ISSN: 2048-7916 DOI: http://dx.doi.org/10.7207/twr13-02