

Research Environments to Store Manipulate and Manage Digital Content

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Overview

Research Environments – internally referenced as "work spaces" during the active period of the Bamboo Technology Project – were adopted, extended, and deployed to provide basic capabilities for collaboration, content management, and scholarly analysis tailored to humanities research. Project Bamboo's Research Environments were built by adapting and enhancing existing collaboration and content-management platforms, including [HUBzero](#), [Alfresco ECM](#), and [Drupal](#). Each of these were identified as platforms that could be run by an institution's Library or Information Technology organization to provide a broad range of end-user scholars with the means to simply and easily assemble collaboration, content management, and analytical capabilities suitable for their particular research requirements. Project Bamboo also explored [OpenSocial](#) as a framework for a platform-independent approach to developing and deploying tools for arts and humanities scholarship; see [Tool integration atop the OpenSocial API](#).

Using HUBzero as a 'substrate' during the initial months of the project, and then shifting focus to Drupal as a more suitable candidate for curation workflows at the core of work proposed for a next phase of software development, Project Bamboo implemented a [CMIS](#) interface to the [Fedora Commons repository](#), marrying a storage technology widely deployed in institutions of higher education and an emerging standard interface for RESTful operations on digital content. The Project Bamboo Book Model was implemented as Fedora objects, as well as a Repository Browser interface that provided user access to book objects. This work is described in [Bamboo Book Model - CMIS Binding and Fedora Repository Implementation](#).

Tools were integrated in the HUBzero Research Environment to demonstrate analytical operations on content stored in the environment's local, Fedora-based store; the integration user interfaces developed for HUBzero were proven to be portable by deploying them as Drupal modules after modest refactoring. See [Tool integrations in Research Environments](#).

A Drupal instance was integrated with a secured instance of the Bamboo Services Platform to demonstrate client integration in the Bamboo Trust Federation; see [Client Environment-Tool-Service Integration with Bamboo IAM infrastructure](#). (This Drupal instance was the platform for running a partially-completed module for managing user identities and profiles via the Bamboo IAM suite of services; the Account Services Module is described on the page [Account Services UI - Bamboo IAM Client - Drupal Module PoC](#); Bamboo IAM is described in overview on the page [identity and Access Management - Authentication and Authorization](#).)

Though a Proof of Concept was not undertaken in the funded phase of the Bamboo Technology Project, architecture and design work aimed at simple synchronization of client application ('local') groups with a master set of groups utilized across multiple applications in the Bamboo Ecosystem is documented in [Managing groups across applications and platforms](#).

Alfresco ECM was used as the basis of a pilot study to validate functional requirements of a platform intended to provide basic capabilities for collaboration, content management, and scholarly analysis tailored to humanities research. See [Alfresco ECM Pilot and User Research](#). This platform was then deployed as a production service at UC Berkeley, branded as [Research Hub](#); see [Research Hub atop Alfresco ECM at UC Berkeley](#). In partnership with the California Digital Library, the [Research Hub](#) was integrated with the UC3 Merritt and DataCite repository for long-term access and preservation of digital content; see [Managing digital content preservation via integration with an institutional archive](#).

The following are links to the wiki pages beneath this one, referenced in the paragraphs above:

Links to code and APIs

The following are links to the Project Bamboo source code repository on Sourceforge:

- [Fedora-CMIS interface](#)
- [Repository Browser interface \(for Drupal\)](#)
- [Alfresco integration with UC3 Merritt and DataCite](#)

Javadoc for the Fedora-CMIS interface can be found at <http://javadoc.projectbamboo.org/fedora-cmis/>.