DSpace at MIT: Meeting the Challenges

Michael J. Bass
Hewlett-Packard Company
mick_bass@hp.com
+1 617 253 6617

Margret Branschofsky
Massachusetts Institute of Technology
77 Massachusetts Avenue, Cambridge MA 02139
branschofsky@mit.edu
+1 617 253 1293

ABSTRACT
DSpace is a joint development effort by HP and MIT to establish an electronic system that will enable MIT faculty and researchers to capture, preserve, manage, and disseminate their intellectual output, and that will enable the Institute to maintain its intellectual heritage. The effort further aims to facilitate sharing of intellectual content and metadata among institutions by minimizing barriers to adoption and federation. This brief paper describes the motivation behind the project, its goals, objectives, progress, and references to detailed definition & design materials.

Categories and Subject Descriptors
H.3.6 [**Library Automation**], H.3.5 [**Online Information Services**], E.1 [**Data Structures**]

General Terms
Management, Design, Economics, Experimentation, Legal aspects

Keywords
Digital Libraries, Archive, Architecture, Application Service Platform, Digital Media, Metadata, Federation, Repository

1. MOTIVATION
The continuing advance of digital information systems, digital media, and ubiquitous networks has enabled shifts in established value networks by which scholarly research is accomplished. The economics and required competencies to deal in digital media differ significantly from those of traditional print-oriented solutions. Indeed, digital media and associated enabling technologies have begun to blur the ways in which institutions can work together to advance a scholarly research agenda.

In this shifting environment, research libraries and academic publishers must find new ways to work together that enable the overall needs of researchers and consumers of research to be met. Specifically, libraries must develop the capability to deal with digital media holdings. Researchers and technology providers must understand and deliver solutions to the core problems associated with long-term management of a large and diverse corpus of digital media. Individual institutions must discover the right organizational, technological, and economic parameters that enable long-term sustainability of emerging solutions.

Definition and development of DSpace was commissioned jointly by HP and MIT to contribute to the resolution of these issues.

JCDL'01, June 24-28, 2001, Roanoke, Virginia, USA.
ACM 1-58113-345-6/01/0006.

2. GOALS AND OBJECTIVES
HP and MIT have identified the following project goals:

1. Lead, rather than react, in the creation of digital-media solutions enabling research institutions to work effectively.
2. Provide the library with the reliable, long-term capability to provide services around diverse types of digital media.
3. Provide a platform that is widely adopted: at MIT, at other academic research institutions, and elsewhere.
4. Provide a platform for further research.
5. Ensure interoperability with other concurrent efforts

The following objectives are derived from the project's goals:

1. Create a system to be initially deployed at MIT, addressing:

   (a) digital asset store, (b) models for long-term economic viability, (c) submission and retrieval, (d) resource discovery, (e) authentication and authorization, (f) rights management, (g) community, and (h) extensible services
2. Package the system such that it can be easily installed and adopted by other institutions, including:

   (a) installation/configuration, (b) human support & consulting, (c) support for relevant protocol and metadata standards, (d) interfaces to support legacy institutional systems, (e) published APIs for use by external systems (f) federating features that use these protocols to share content and metadata with other DSpace instances, and with other systems
3. Identify and establish specific follow-on research efforts to be conducted upon the established platform

3. Progress and Status
HP and MIT have assembled a design and rollout team, interviewed and surveyed potential submitters and retrievers, and identified potential early adopters.

We have established DSpace as an open-source development effort, and created a prototype system that reproduces much of the functionality of existing pre-print archives. We have captured detailed design objectives, an architectural response to those objectives, and an implementation direction and version plan.

4. REFERENCES
[1] <http://www.dspace.org> DSpace Home Page.

[2] <http://www.dspace.org/doso/> DSpace Design Objectives, Architecture, Implementation Information.

[3] <http://sourceforge.net/projects/dspace/> DSpace Open Source Development Page.