Building New Interfaces for Shocker Open Access Repository

Sai Deng

Building New Interfaces for Shocker Open Access Repository

Abstract

Wichita State University Libraries recently upgraded its DSpace based institutional repository, Shocker Open Access Repository (SOAR), to the new version 1.6.2 with an XML-based interface "Manakin". Manakin gives the possibility of creating different interfaces called "themes". Themes provide branding for various communities and new visual effects for images and other collections. This article will address the customization of Manakin and the implementation of new features from an institution's experience. It will cover the process to prepare and create the local theme, test the interfaces for communities and collections and in different browsers. The experiences and techniques shared can be applied by other institutions that are interested in implementing Manakin. This article will also give some reflections on working with a team for an open-source system from the perspective of a Metadata Catalog Librarian in a medium sized library.

Originate, Create, Renovate, and Innovate: Leading Revolution in the Academic Library

Building New Interfaces for Shocker Open Access Repository

Sai Deng
Wichita State University
Wichita, Kansas

Abstract

Wichita State University Libraries recently upgraded its DSpace based institutional repository, Shocker Open Access Repository (SOAR), to the new version 1.6.2 with an XML-based interface "Manakin". Manakin gives the possibility of creating different interfaces called "themes". Themes provide branding for various communities and new visual effects for images and other collections. This article will address the customization of Manakin and the implementation of new features from an institution's experience. It will cover the process to prepare and create the local theme, test the interfaces for communities and collections and in different browsers. The experiences and techniques shared can be applied by other institutions that are interested in implementing Manakin. This article will also give some reflections on working with a team for an open-source system from the perspective of a Metadata Catalog Librarian in a medium sized library.

Introduction

Shocker Open Access Repository (SOAR) is the DSpace-based institutional repository (IR) at Wichita State University (WSU) Libraries, and it is used to store scholarly works and digital objects from faculty and students. The library recently upgraded its DSpace from 1.4.2 to 1.6.2 and changed its interface from JavaServer Pages (JSP) to Manakin.

Manakin is an XML-based DSpace user interface initially developed at Texas A&M University. It was released with DSpace version 1.4 and later became the default interface for DSpace 1.5 (Texas Digital Library, 2008). Compared to the JSP interface, Manakin introduces a modular interface layer that allows customization in community, collection and item level, and doesn't require Java knowledge to do customizations. It is built on Apache Cocoon framework, a web development framework using pipeline based architecture. The core elements in this XML user interface are sitemap, aspect and theme. Sitemap is a set of XML files that configure the cocoon components. Aspects are functions that provide a set of coupled features for the system. Theme stylizes the content generated by Manakin. The web pages are structured based on Digital Repository Interface (DRI) schema. As illustrated in figure 1 (Phillips et al, 2007), the aspect chain generates DRI documents, and theme stylizes the DRI documents and produces XHTML web pages for display.
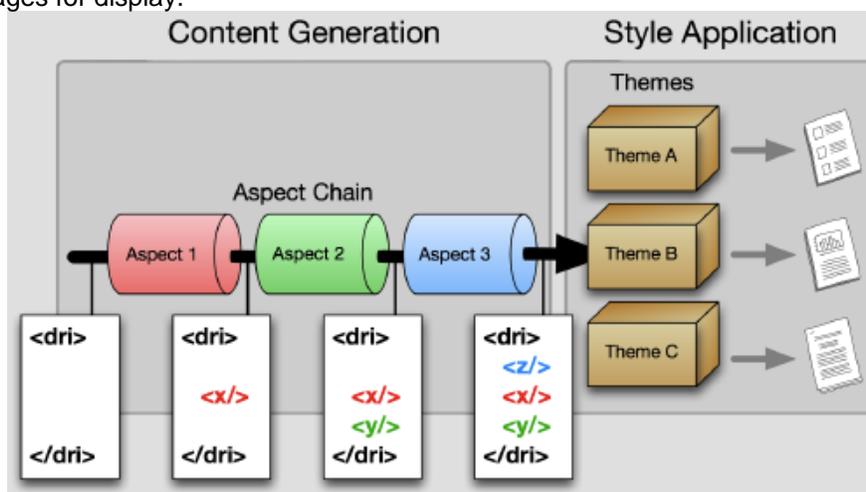

Figure 1: The Manakin Architecture

During this process, the Extensible Stylesheet Language (XSL) within the themes transforms the DRI pages to XHTML pages, and the content is also localized for the user who requests a page in a particular language.

This article will elaborate on the Manakin interface customization process and provide some reflections on Manakin as well as the project. It will cover how the library prepares and creates the local theme, experiments with different themes for communities and collections, tests the interface in various browsers and modifies it based on the feedback from a Focus Group Meeting. It will discuss some details including modifying page structures, customizing content, and adding new navigation menus (e.g. "Share" for social networking and "Information" for help files). More technical information can be found in a related presentation (Deng, 2010) delivered in the 2010 KLA-CULS (Kansas Library Association- College and University Library Section) conference.

2

The Interface Customization Process
Searching for Manakin Documentation and Instances

In creating the Manakin interface, first, some documentations and training materials were searched for online, including DSpace system documentation (DSpace, 2002-2010), DSpace wiki (DSpace, 2010), Texas Digital Library (TDL) training material (Phillips & Williams, 2009), and National Institute for Technology in Liberal Education Information Services (NIS) camp training documents (NITLE, 2009). Tim Donohue's Manakin overlay presentation (Donohue, 2009) and other online discussions and documentations were also referred to. At the same time, the team looked at some Manakin examples such as Texas A&M's Repository (Texas A&M) and IDEALS at University of Illinois at Urbana-Champaign (UIUC). More Manakin interfaces were looked up in the DSpace site. By checking these documentations and instances, the team found that many features seemed interesting, such as Texas A&M's community list expanding and collapsing, NITLE's image gallery theme and UIUC's additional "Information" menu.

Based on Manakin Developer's Guide (Phillips, 2005), the Manakin interface can be customized in three tiers, and these tiers require different levels of technical skills. One tier is to add or modify aspects and it needs Java knowledge; the second one is the theme tier, and it requires XML and XSLT expertise; the third one is HTML/CSS style tier, and it only needs some XHTML and CSS proficiency. The library's focus was to customize the theme mainly through XML, XSLT and CSS changes based on our expertise and experiences.

Navigating File Directory and Locating the Theme Templates

The Unix Administrator from the University Computing Center upgraded DSpace from 1.4 to 1.6.2 in a test server. After getting a general understanding of Manakin, the Metadata Librarian and DSpace Tech Support logged into the system, trying to navigate the directories and find the templates packaged with the software. It took the team quite some time to locate the theme templates because there were two different versions: source and release. The library installed the release version, and much documentation was based on the source version. After finding the theme templates, they were copied to the library's "themes" folder in the source DSpace for testing and customization.

Identifying Areas for Customization

Based on past interface design experiences and some internal discussion, the team identified some areas for customization. These areas were: header, footer, navigation bar, homepage news, messages, headings and records display. Two tools were used to assist the interface design: Firefox Firebug and Internet Explorer (IE) 8 Developer Tools. These tools can help to check the page structure, elements' ids and CSS classes.

Creating the Local Theme

The Metadata Librarian copied "Reference" and "Kubrick" themes to the "themes" folder and started to make a local theme "wsu" based on one of the themes. Figure 2 shows the file structure of the themes folder at WSU Libraries. It is very important to understand the file structure and be aware where to make changes so as to create the local theme.
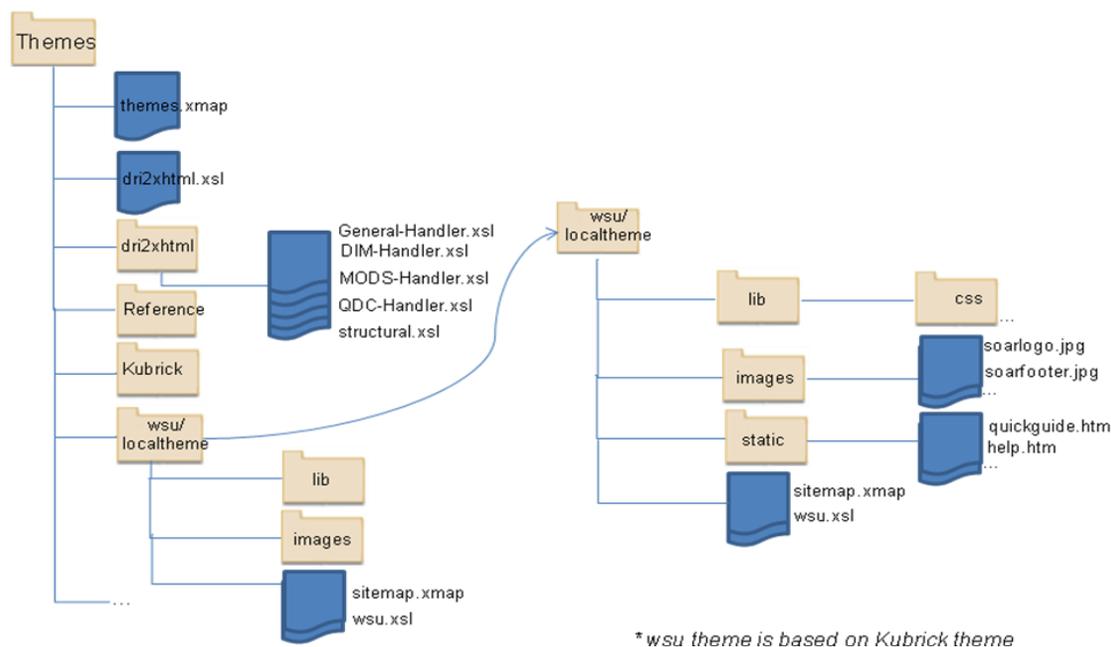
Figure 2: "Themes" File Structure at WSU Libraries

The "wsu" theme was initially tested and built based on the "Reference" theme, but later was switched to the "Kubrick" theme after some internal feedback. Under the "themes" folder, there were a general "sitemap" file, a "dri2xhtml" file and folder. Sitemap is the heart of a theme, and it configures cocoon components and decides how the theme processes the DRI document generated by the aspect chain. A general sitemap and a sitemap for each theme were included. In the general sitemap, the ThemeMatcher matches the sitemap URI against the theme rules. The selected theme was identified by the sitemap parameters {theme} and {themeName}. XSLT will convert DRI documents to XHTML pages. There were several XSLT files under the "dri2xhtml" folder, for example, structural, DIM-Handler and General-Handler, which deal with general structural components, items, collections and communities display and bitstream display. The "dri2xhtml" XSLT file will import the other XSLT files. Theme customization can be handled by changing images, XSLT files and CSS. Under the local "wsu" theme, there were a "lib" folder containing CSS files, images, static pages, a wsu theme sitemap and a wsu XSLT file. Static pages are designed for help and about files.

During the theme customization process, first, the templates were copied to our "themes" folder. The Manakin configuration file (xmlui.xconf) was changed to define the theme paths. Its rule is that specific themes will be applied first, if not found, the default theme will be applied. Next, sitemap.xmap was modified by changing its "theme-path" and "theme-name" to the local ones. In customizing the header, the logo was switched by defining the background image link in the CSS file. Headings and messages were customized in the "messages" XML file and heading styles were adjusted in the CSS. To customize the footer, in the "Reference" theme test, the footer section was copied from structural.xsl to wsu.xsl and was modified. For the "Kubrick" theme, wsu.xsl was created based on Kubrick.xsl and the "footer" template was modified. In order for any change take effect, DSpace needs to be rebuilt using Maven and Ant software building tools.

Other institutions' IR interfaces were consulted and their codes were borrowed and adjusted for the WSU interface. DSpace-tech list was consulted in order to get help to solve problems and make decisions. One customization was to add an "Information" menu in the navigation bar for help files following the UIUC practice. A "ds-option-set-head" heading (h3) and a "ds-information-option" section (div) was added to the

4

sidebar menu's "dri:options" template. Since "log in" and "search" had been included in the menu, the additional top left "log in" button and the front page "search" division were disabled following Stellenbosch University's documentation (Gibson, 2010). Because the Manakin customization is different from general website design, some steps need to be followed strictly to make changes. By consulting different documentations, the front page news was customized, static pages for "help" and "about" information were added and other changes were also made.

Other Function and Theme Testings

The library experimented with a collapsing and expanding feature for the community list by implementing the steps documented in DSpace wiki and the code from Texas A&M IR site (Texas A&M). However for the final interface, this function was disabled because it impeded statistics from showing on the top level of the communities. The image gallery theme (NITLE, 2010) was installed and tested for pottery, herbarium and other image collections; it includes a grid-view, popup metadata and a zoom-and-pan viewer on the image view interface. Nonetheless, since the library purchased image zoomer from @mire, a DSpace support company, the image gallery theme was disabled for the final interface as well. Besides the image zoom module, two other modules for document streaming and audio-video streaming were also purchased from @mire and installed by the company. The various theme templates were tested in several communities. A Graduate School theme with the Graduate School logo was also created, but the library decided not to use it so as not to confuse it with the "SOAR" branding. This indicated an intersting point: it is an institution's decision on whether multiple interfaces are preferable to a single consistent design and whether several brandings are more fitting than a single branding.

Browser Testings

Interfaces were tested in differet browsers after the local theme was built. Many browsers handle CSS in a more standard way like Mozilla Firefox, Opera and Google Chrome, and a general CSS will work for them. IE works differently from the other browsers; many positioning and other problems would show up if only using the general CSS. In IE, special CSS files were used for version 6, 7 and 8. Manakin used a browser selector mechanism, but sometimes it didn't load the right CSS due to cocoon caching and other issues. At WSU Libraries, CSS hacks mainly designed for IE were added to the main css to make the pages display correctly after encountering the browser selector problems. During the testing process, the Manakin font-sizing mechanism, which produces variable font sizes based on the character count of the heading text, caused display problems. It showed huge fonts in some browsers and appropriate font size display depended on defining various size percentage in CSS files for different browsers and the correct loading of the stylesheet in these browsers. To make things easier, after checking the DSpace community discussion, this mechanism was commented out in "structural" XSLT file and a header template without font sizing was added to the local "wsu" XSLT file.

Focus Group Meeting

The library had a focus group meeting after the initial interface was complete. The focus group was comprised of librarians from administrations, systems, reference and cataloging. The general feedback was positive and several suggestions were received, for example, making the record display labels and the download link more prominent, adding "Send to my Facebook" for records, and displaying the statistics number on the top level of the communities. Based on the feedback, the team changed the color and font weight of the record summary view labels in the CSS after looking at the summary view defined in the "MODS-Handler" XSLT file, adjusted bitstream table label order by copying part of the bitstream template from the "General-Handler" XSLT file to the local XSLT and made modifications. The statistics number display was added by changing the DSpace configuration file. The expression of the messages were adjusted in the "messages" XML file, e.g., "View" was rephrased to "View/Download" for the corresponding bitstream label. The team also added a "Share" menu to the sidebar following the

University of Auckland's practice. It allowed the url of a page or a record to be sent to Facebook, Twitter, MySpace and other social networking places. See figure 3 for the final Manakin interface. In a similar way, SiteMeter, a web counter displaying statistics in visitors, page views, country maps and visit durations was included to the sidebar. They were both coded as part of the "dri:options" in Manakin.
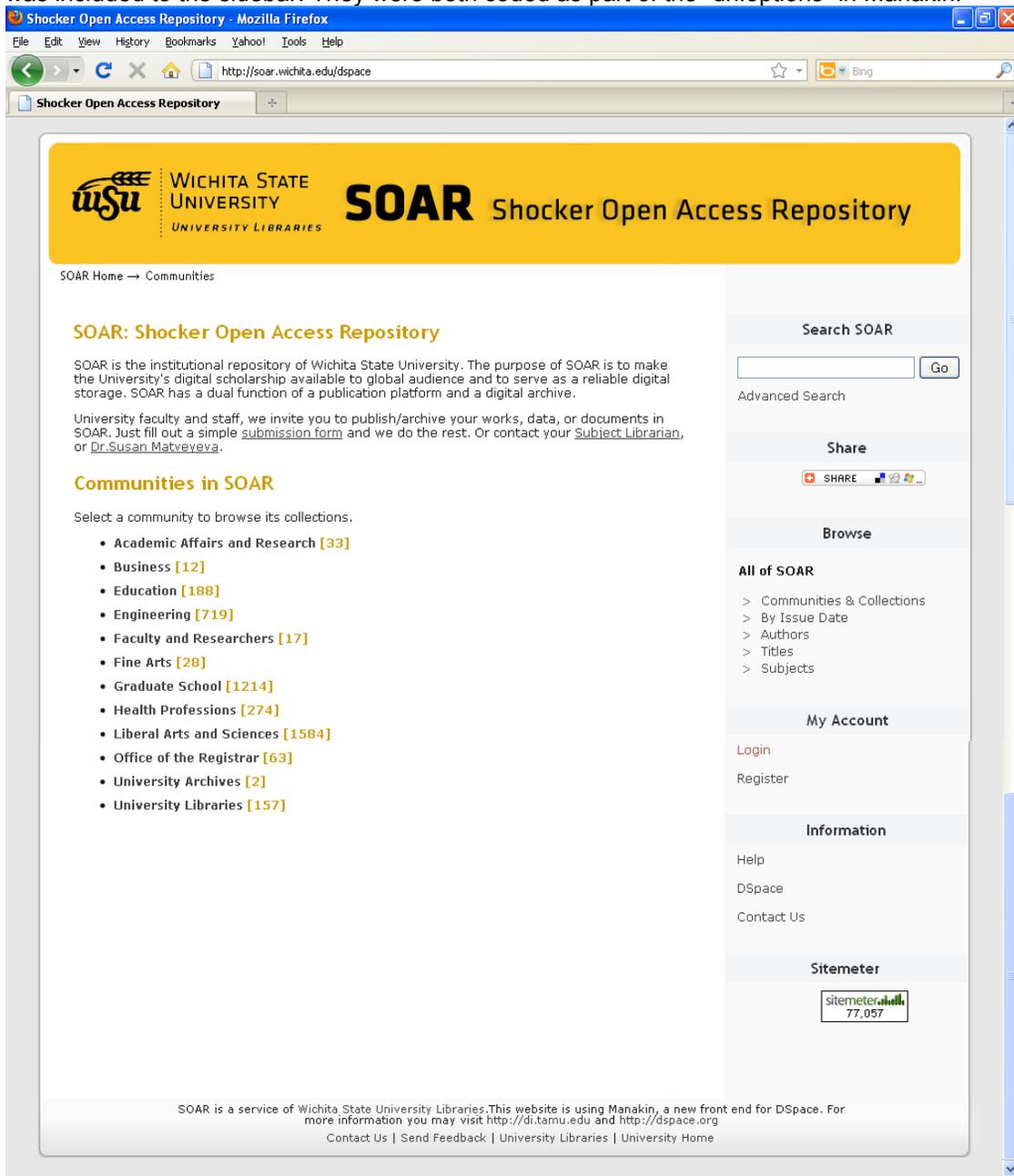

Figure 3: Manakin Interface for SOAR

Issue Discussion
Good Things about Manakin

Manakin promotes community and collection branding. It allows department pages in DSpace to be consistent with the department website if it is preferred by the department, and it makes it feasible for faculty collection pages in DSpace to be consistent to the faculty website if it is favored by the faculty and the library. It allows special visual effects and structural layout for some collections (e.g. images, maps), and makes it possible to share modular extensions and new features.

Discussion from the Design Perspective

There were some interesting discussions on Manakin in DSpace Tech-list (DSpace Community, 2010). Several issues were raised from the Manakin design approach: the templates are not associated with individual pages, which makes customization harder; the Manakin templating approach is more confusing than templating in other systems; the structural XSLT file is huge and difficult to modify; the program processing flow is not easy to follow. The community is considering the evaluation and redesign of Manakin.

Some Reflections on the Project

The SOAR upgrade and enhancement was a team effort of the Project Coordinator, the Unix Administrator, the DSpace Tech Support and the Metadata Librarian. In a small or medium-sized institution, it is a question on how to best utilize the human resources when a development team is not available. At WSU Libraries, the Unix Administrator did the system upgrade, the function implementations by the DSpace Tech Support and the interface by the Metadata Librarian. The IR Librarian coordinated the whole project. The Metadata Librarian worked on the Manakin interface due to her varied website creation experiences and the fact no Java and XML/XSLT programmers were available. She turned to DSpace-tech list for help many times; it was a sharp learning curve but the experience was rewarding.

Conclusion

Manakin is a new DSpace XML interface that provides the possibility of creating different themes for communities, collections and items, and it requires a certain degree of effort to build the interface. The processes elaborated and practices shared in this article will be beneficial to institutions that are interested in implementing Manakin for their IRs. It is never easy to run an open-source digital library and keep it up to date in a small or medium sized library. From the Metadata Librarian's experiences, the willingness to learn new things, finding inspiration and good practices from other institutions, working with a team and consulting the large DSpace community all helped to accomplish this project.

Acknowledgements

References

Deng, S. (2010). Building new interfaces for Shocker Open Access Repository. KLA-CULS (Kansas Library Association- College and University Library Section) 2010 Conference. Emporia, KS, Oct. 15, 2010. Retrieved from: http://soar.wichita.edu/dspace/handle/10057/3254

Donohue, T. (2009). Making DSpace XMLUI your own. Retrieved from: http://www.slideshare.net/tdonohue/making-dspace-xmlui-your-own

DSpace (2002-2010). DSpace system documentation: Manakin [XMLUI] configuration and customization. Retrieved from: http://ir.uz.ac.zw/dspace/ch07.html

DSpace (2010). DSpace XMLUI-Manakin. Retrieved from: https://wiki.duraspace.org/display/DSPACE/Manakin

DSpace Community (2010). "Manakin questions" thread. DSpace-tech list. Retrieved from: http://www.mail-archive.com/dspace-tech@lists.sourceforge.net/msg12292.html

Gibson, H. (2010). Asset presentation. Retrieved from: http://ir.sun.ac.za/wiki/index.php/Asset_Presentation

NITLE (2009). NIS camp: Developing interfaces and interactivity for DSpace with Manakin. Retrieved from: http://nitlecamp.pbworks.com/f/manakin-workshop-slides.pdf

NITLE (2010). Manakin Image Gallery theme. Retrieved from: http://dspace.nitle.org/handle/10090/12005

Phillips, S. (2005). Manakin developer's guide. Retrieved from: http://drcdev.ohiolink.edu/handle/123456789/28

Phillips, S., Green, C., Maslov, A., Mikeal, A., & Leggett, J. (2007). Manakin: A new face for DSpace. *D-Lib Magazine*, Vol. 13, No. 11/12. Retrieved from: http://www.dlib.org/dlib/november07/phillips/11phillips.html

Phillips, S. & Williams, S. (2009). Texas Digital Library (TDL) training document. Retrieved from: http://scott.phillips.name/wp-content/uploads/2009/05/tdl-manakin-training.pdf

Texas A&M. Texas A&M Repository. Retrieved from: http://repository.tamu.edu/

Texas Digital Library (2008). DSpace Manakin. Retrieved from: https://wikis.tdl.org/tdl/DSpace_Manakin

UIUC. IDEALS@UIUC. Retrieved from: https://www.ideals.illinois.edu/

University of Auckland. ResearchSpace@Auckland. Retrieved from: http://researchspace.auckland.ac.nz/

Sai Deng is the Metadata Catalog Librarian at the Wichita State University Libraries, Wichita, Kansas.