Making DSpace Your Own

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A word about “expertise”

Dorothea Salo started at GMU in July 2005. She knew no Java, had never worked with DSpace previously, and understood nothing about Tomcat server administration.
If she can customize DSpace, so can you.

Why make DSpace your own?

- Branding
  - Library branding
  - Service branding
- Markup quality and accessibility
- User-interface improvements
- Specific institutional needs

Before you begin

- DSpace version 1.3.2 (current "stable" version)
  - Coming soon...DSpace 1.4
- Have test and production servers
  - You will break things
  - If you don't, you aren't trying hard enough
  - Never, ever, ever roll out a change on the production server first!
- Establish a downtime schedule for the production server
- Plan to document and comment!
DSpace Architecture Overview

The Three Layers of DSpace
- Application Layer (UI) = JSPs (XHTML/CSS) & Servlets
- Business Logic Layer = Java Classes / Objects
- Storage Layer = Database & Filesystem APIs
- Ease of customization decreases from top-down!

Understanding Java Basics

- Here's a very basic understanding of Java code in DSpace:
  - **JSPs** (Java Server Pages) create HTML for the browsers to display. JSPs usually contain one or more...
  - **JSP Tags**, which help to "build" the webpage, and usually contain code useful to many different JSPs. JSPs also rely on...
  - **Java Servlets**, which perform any requests a User makes through the UI, and provide JSPs with all the information they need to create the next webpage. Servlets make calls to...
  - **Java Classes**, which define and retrieve information about the "objects" within the system.
- Since an example always helps...
Understanding Java Basics

Vastly simplified diagram of Java interactions in DSpace.

Diagram:
- **User Request**
- **Java Servlet**
- **JSP**
- **API**
- **Java Class**
- **Database, etc.**

Steps:
1. User Request
2. Servlet Processing
3. Call next JSP
4. Display HTML to User

Code Snippets:
- `<HTML>`
- `<% Java %>`
- `<JSP:Tag>`
- `</JSP:Tag>`
- `</HTML>`
DSpace out of the box

- Source directories (`dspace-source`) (SHOWN ABOVE)
  - All customizations take place here!
  - `/config/` - DSpace configurations
  - `/jsp/` - DSpace JSPs
  - `/src/` - DSpace Servlets & Classes
- Installed directories (`dspace`)
  - Home to all "live" configuration files, properties, Java libraries (including `dspace.jar`)
  - Usually home to log files, reports, search indices, and "bitstreams" themselves!
- Web Application directory (Tomcat's `webapps` directory)
  - Home to all compiled Servlets and JSPs
The config folder
The etc folder
The jsp folder
Basic Customizations - Text

Messages.properties - contains 99.9% of text in DSpace

Format of Messages.properties:

jsp.community-home.heading1 = Community home page
    (Heading within /jsp/community-home.jsp)
jsp.mydspace.general.goto-mydspace = Go to My DSpace
    (General text shared by pages in /jsp/mydspace/)

Keys in Messages.properties referenced in JSP with:
<fmt:message key='jsp.community-home.heading1'/>

- DSpace is working towards full I18N (Internationalization).
- Text corresponds to a property "key" named after the JSP or Tag in which it appears.
  - e.g. jsp.community-home.heading1 is a heading within /jsp/community-home.jsp
  - e.g. jsp.mydspace.main.text1 is a block of text on /jsp/mydspace/main.jsp
  - e.g. jsp.general.search.button is the text that appears on ALL search buttons in DSpace

Basic Customizations - XHTML

- In JSPs, Java code is surrounded by <%= java code%> or <%= java variable%>. Anything outside of that is XHTML (except for JSP Tags).

<table class="miscTable">
<tr>
<td class="oddRowEvenCol">
<%= topNews %>
</td>
</tr>
</table>

- Make changes in /jsp/local for easier DSpace upgrades!

Need to learn or refresh your XHTML? Here's a few good references:

- W3Schools - http://www.w3schools.com/ - Has CSS and XHTML tutorials, references, etc.
- Intro to XHTML (from Web Developer's Virtual Library) - http://www.wdvl.com/Authoring/Languages/XML/XHTML/ - A basic introduction to the differences between XHTML and HTML.
Basic Customizations - CSS

All CSS actually resides in /jsp/styles.css.jsp:

```
.metadataFieldLabel { font-family: "verdana";
  font-size: 12pt;
  font-style: normal;
  font-weight: bold;
  color: #000000;
  text-align: right;
  <%= padding %> }
```

*Remember* - make changes in /jsp/local/styles.css.jsp!

Example: George Mason's Archival Repository (MARS)

Need to learn or refresh your CSS? Here's a few good references:

- W3Schools - [http://www.w3schools.com/](http://www.w3schools.com/) - Has CSS and XHTML tutorials, references, etc.
- Holy CSS Zeldman! - [http://www.dezwozhere.com/links.html](http://www.dezwozhere.com/links.html) - All things CSS. Links to references, tips, tutorials, templates, etc.

Links from above:


Basic Customizations - Header/Footer

All Header, Footer, Navigation customization in /jsp/layout/
Basic Customizations - Header/Footer

Specify layout to use from /jsp/local/layout near top of each JSP:

```xml
<dspace:layout style="myStyle"
             navbar="myNavigation"
             title="<%= name %>">

JSP will use the following:
header-myStyle.jsp
footer-myStyle.jsp
navbar-myNavigation.jsp

By default, each JSP uses the "default" style and navigation bar.
Examples: Toronto's T-Space, Oregon State's ScholarsArchive
Can also set navbar="off" for no navigation bar!

Although not shown above, there's also a locbar attribute which controls the Location Bar (i.e. "breadcrumbs").
There's not many locbar options, but if you don't like that default Location Bar, you can turn it off by specifying locbar="off".

Links from above:

- Toronto's T-Space - https://tspace.library.utoronto.ca/
- Oregon State's ScholarsArchive - http://ir.library.oregonstate.edu/dspace/
Intermediate Customizations - Metadata

Any custom fields can be updated/added from the Administration UI (http://myUniversityDSpace/dspace-admin)

*However - Do not remove any DSpace internal metadata fields

DSpace 1.3.2 Internal Metadata fields:

- date.accessioned
- date.available
- date.issued
- description.provenance
- format.extent
- format.mimetype
- identifier.uri
- language.iso
Intermediate Customizations - Search

Customize the advanced search options from /config/dspace.cfg and /jsp/search/advanced.jsp

Intermediate Customizations - Search

Change search indexes in /config/dspace.cfg:

search.index.1 = author:contributor.*
search.index.2 = author:creator.*
search.index.3 = title:title.*
search.index.4 = keyword:subject.*
search.index.5 = abstract:description.abstract

*Remember - After editing, you must re-index everything!

[dspace]/bin/index-all
Intermediate Customizations - Search

BUT, change interface in /jsp/local/search/advanced.jsp:

```html
<select name="field1" id="tfield1">
    ...
    <option value="author">
        <fmt:message key="jsp.search.advanced.type.author"/>
    </option>
    ...
</select>
```

In dspace.cfg:

```ini
search.index.1 = author:contributor.*
search.index.2 = author:creator.*
```

Example: [UIUC's IDEALS Repository](http://ideals.uiuc.edu/advanced-search)

Links from above:

- IDEALS Advanced Search - [http://ideals.uiuc.edu/advanced-search](http://ideals.uiuc.edu/advanced-search)
Intermediate Customizations - Item Display

Metadata displayed on item screen is in /config/dspace.cfg and /config/language-packs/Messages.properties

Change order of fields in /config/dspace.cfg:

```
webui.itemdisplay.default = dc.title, \
    dc.title.alternative, dc.contributor.*, \
    dc.subject, dc.date.issued(date), dc.publisher
```

Change "pretty" name of fields in Messages.properties:

```
metadata.dc.title = Title
metadata.dc.title.alternative = Other Titles
metadata.dc.contributor.* = Authors
```

*Remember - Rebuild DSpace when you are done!

Example: Manitoba's M-Space

Links from above:

Intermediate Customizations - Submission

Customize the submission input forms from /config/input-forms.xml

General format of /config/input-forms.xml:

```
<page number="1">
  <field>
    <dc-element>contributor</dc-element>
    <dc-qualifier>author</dc-qualifier>
    <repeatable>true</repeatable>
    <label>Authors</label>
    <input-type>name</input-type>
    <hint>Enter the names of the authors of this item below.</hint>
    <required></required>
  </field>
...
```

Example: UIUC's IDEALS Repository (Requires login)
DSpace Community

How you can help:
- Help test - DSpace Testathon
- Report bugs - Add to DSpace Bug list on SourceForge
- Help others - Answer questions on dspace-general and dspace-tech
- Fix bugs / Add functionality - Follow DSpace patch guidelines and announce your work on dspace-devel

DSpace Community

How to get help:
- DSpace System Documentation and DSpace Wiki can be helpful in resolving configuration issues, or finding some basic "how-to" information
- What to do if you encounter an unknown error:
  - Find the error message text in [dspace]/log/dspace.log or [tomcat]/logs/
  - Search DSpace Technical FAQ and dspace-tech Mailing List Archives to see if this is a Frequently Asked Question
  - Email dspace-tech, send the Error Message text, and describe how you encountered the error

On the Horizon

Manakin XML User Interface
- Started at Texas A&M - now an established DSpace Working Group
- XML/XSLT based User Interface installed "on top of" DSpace
  - Highly customizable, complete separation of presentation layer
- Texas Digital Library Repository - currently running Manakin
- Manakin Demo Site
- First "stable" release sometime this summer?

Links from above:
- Manakin - http://wiki.dspace.org/Manakin
- Texas Digital Library - http://repositories.tdl.org/handle/2249.1/1
- Manakin Demo Site - http://labs.di.tamu.edu:8080/

Contact Info

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