

# Making DSpace Your Own

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## A word about “expertise”

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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*.

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## Why make DSpace your own?

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

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## Before you begin

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- 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

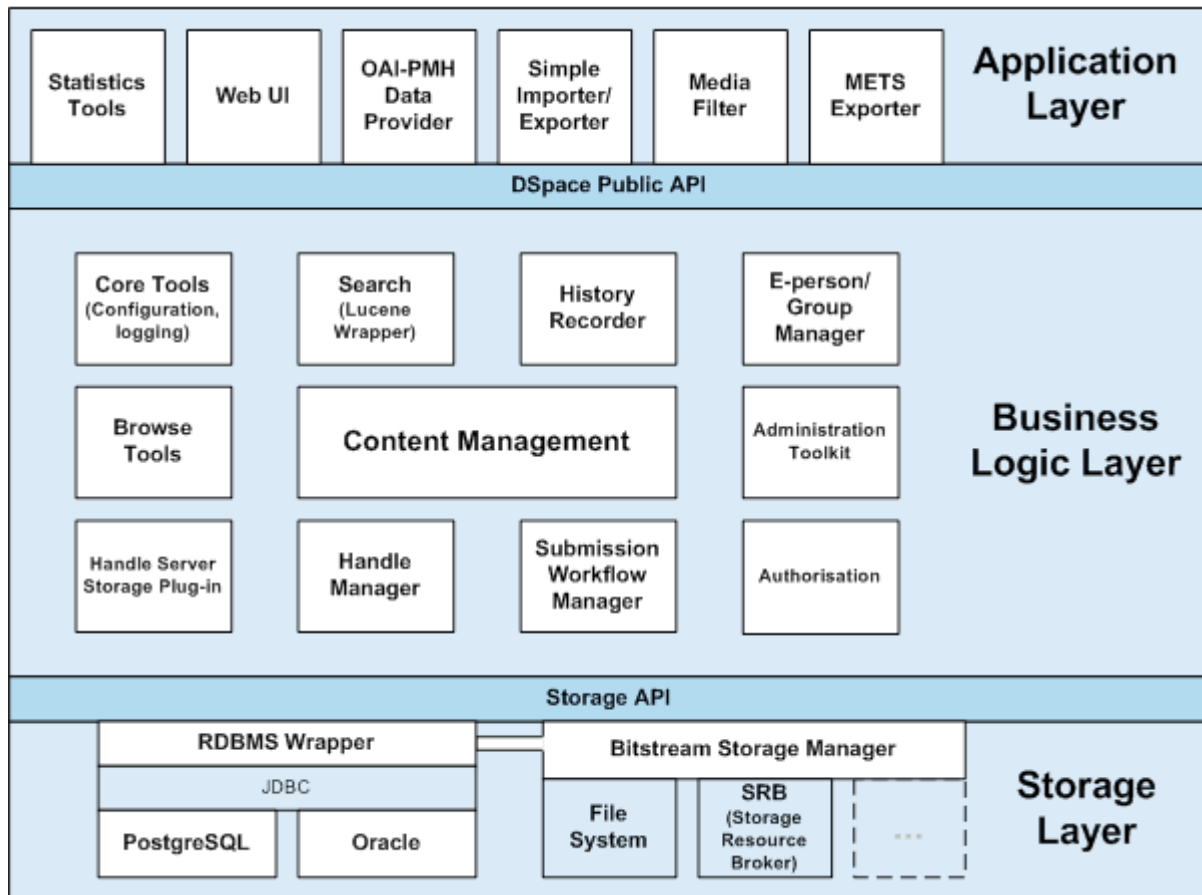


Image borrowed from  
<http://dspace.org/technology/system-docs/architecture.html>

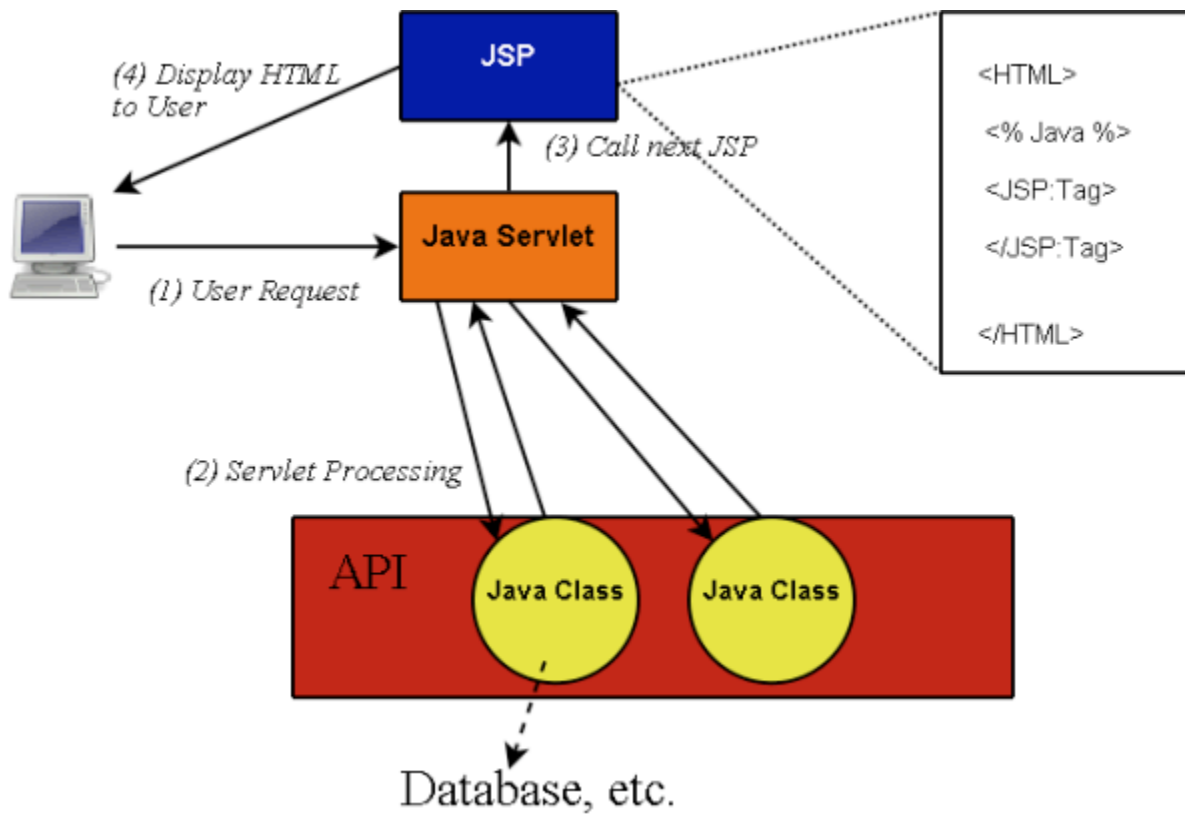
- The Three Layers of DSpace
  - Application Layer (UI) = JSPs (XHTML/CSS) & Servlets
  - Business Logic Layer = Java Classes / Objects
  - Storage Layer = Database & Filesystem APIs
- Ease of customization decreases from top-down!

## Understanding Java Basics

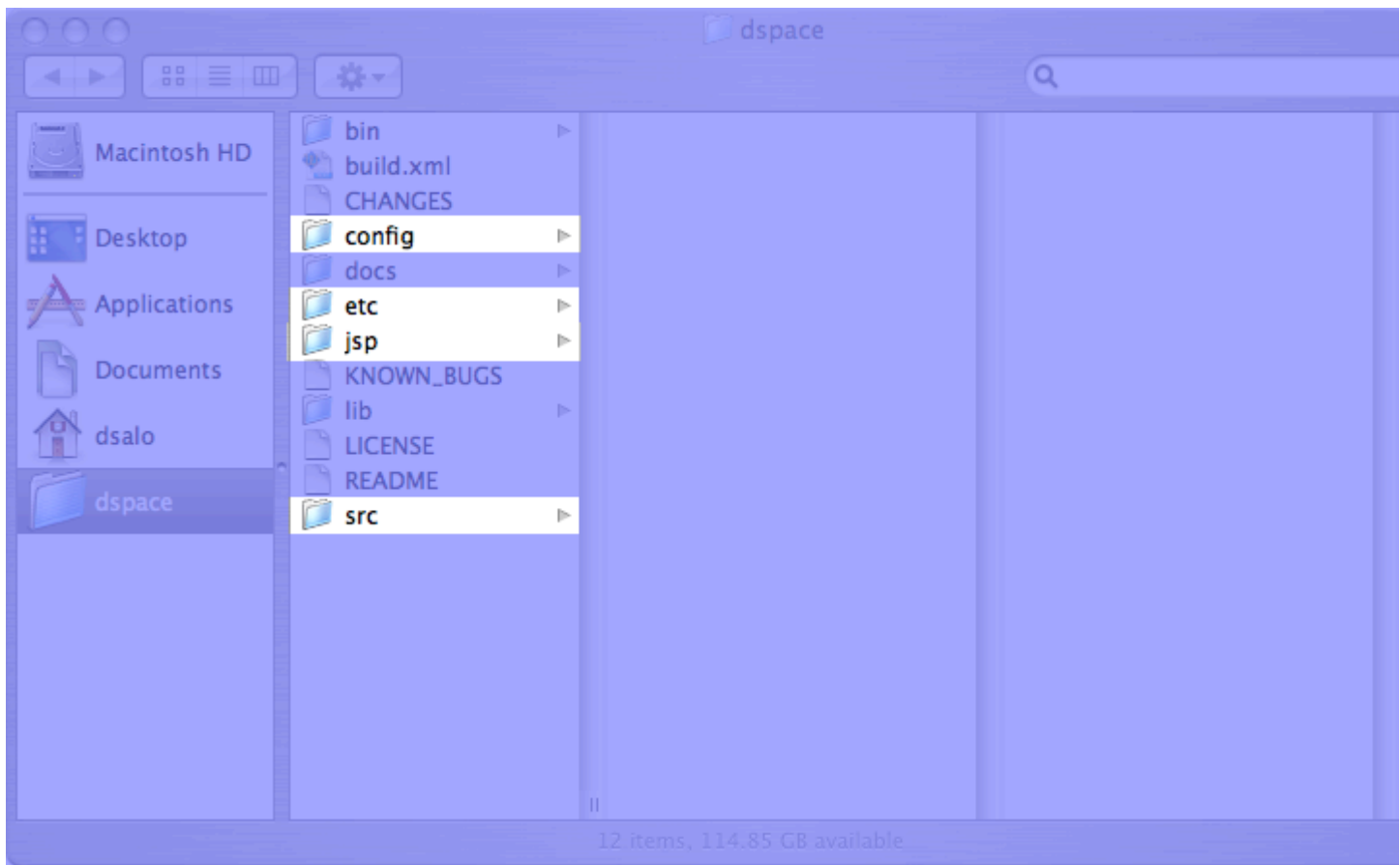
- Here's a **very** basic understanding of Java code in DSpace:
  - **JSPs** (Java Server Pages) *create* HTML for the browsers to display. JSPs usually contain one or more...
  - **JSP Tags**, which help to "build" the webpage, and usually contain code useful to many different JSPs. JSPs also rely on...
  - **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.

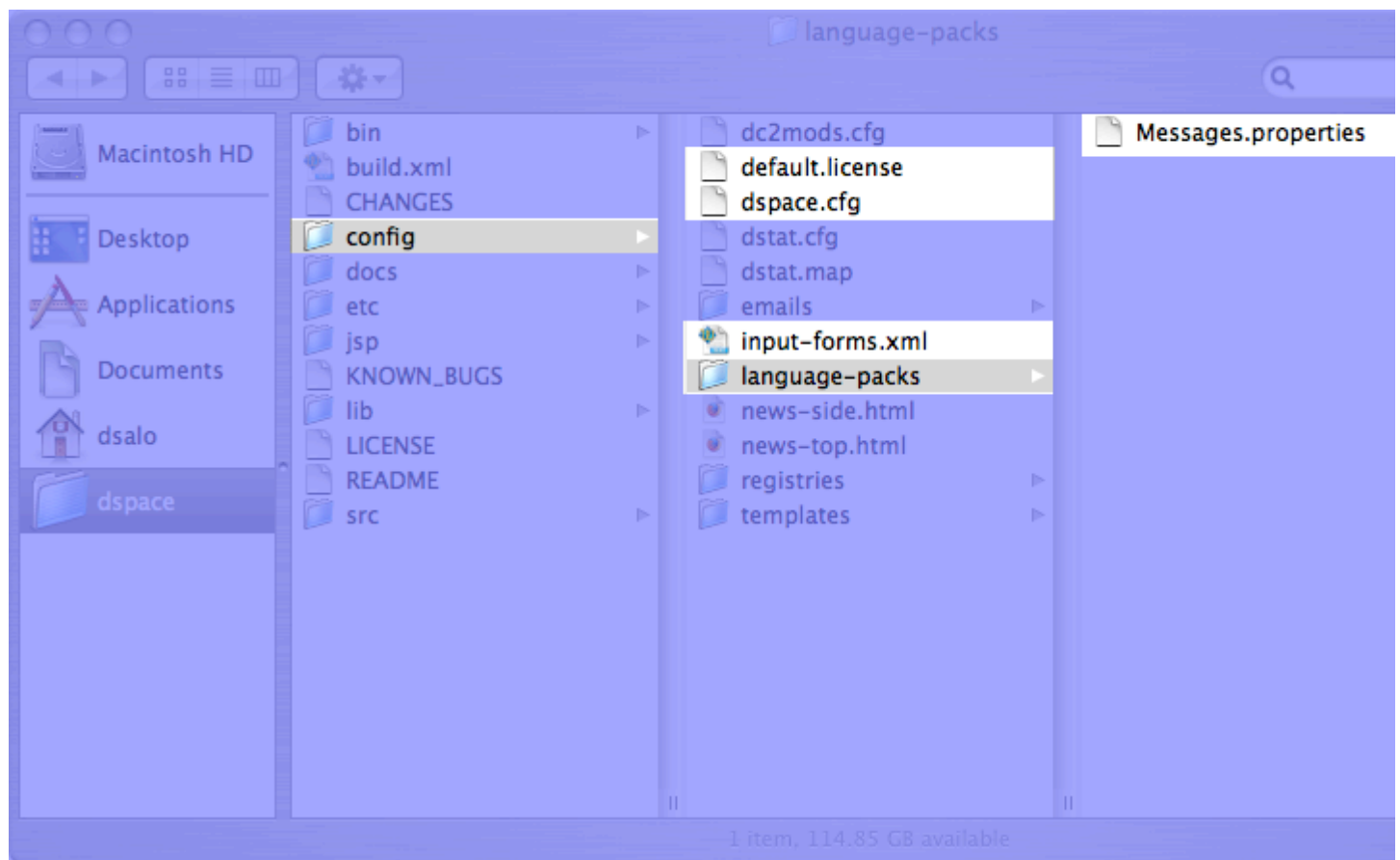


## DSpace out of the box

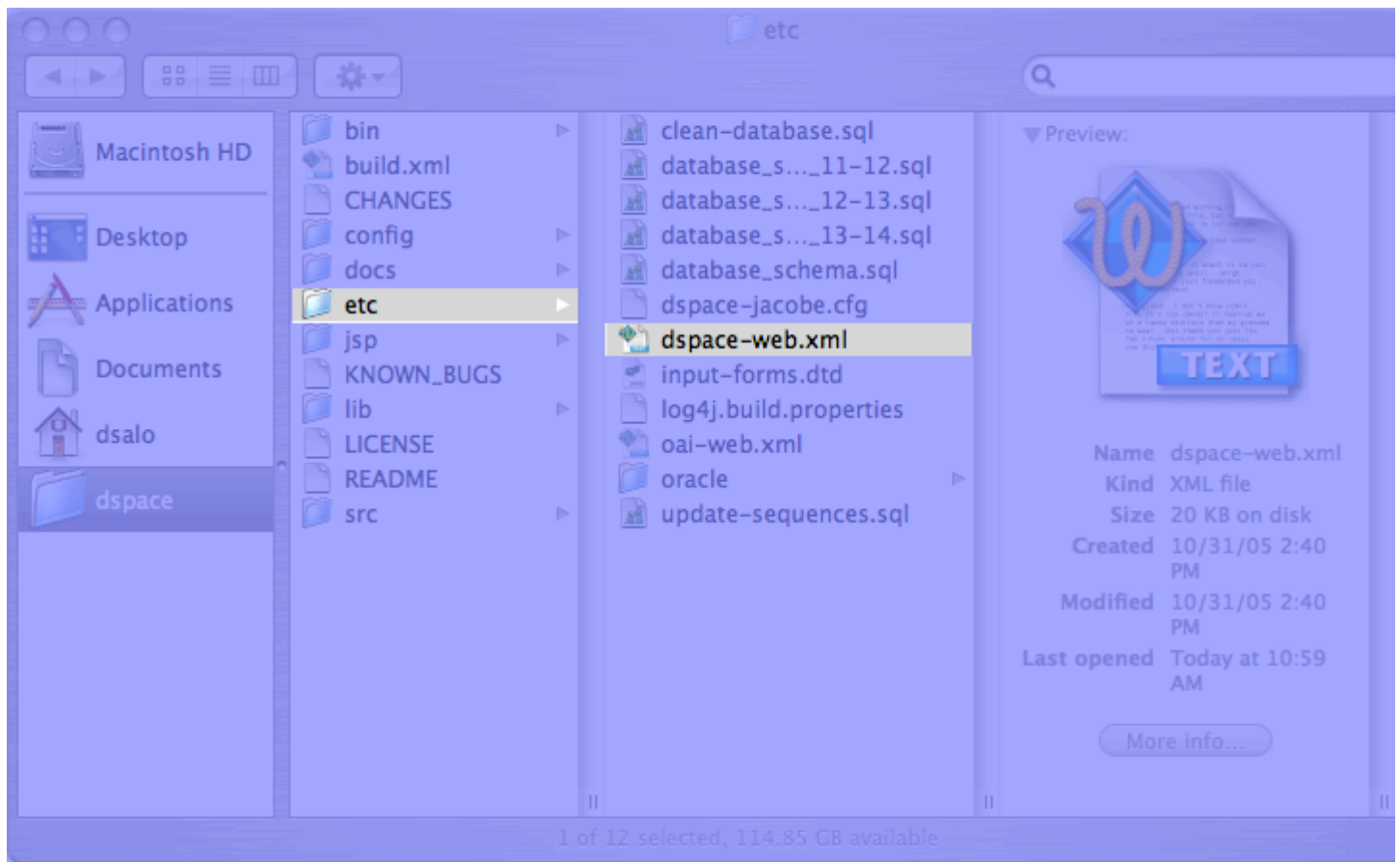


- Source directories (*[dspace-source]*) (SHOWN ABOVE)
  - All customizations take place here!
  - */config/* - DSpace configurations
  - */jsp/* - DSpace JSPs
  - */src/* - DSpace Servlets & Classes
- Installed directories (*[dspace]*)
  - Home to all "live" configuration files, properties, Java libraries (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

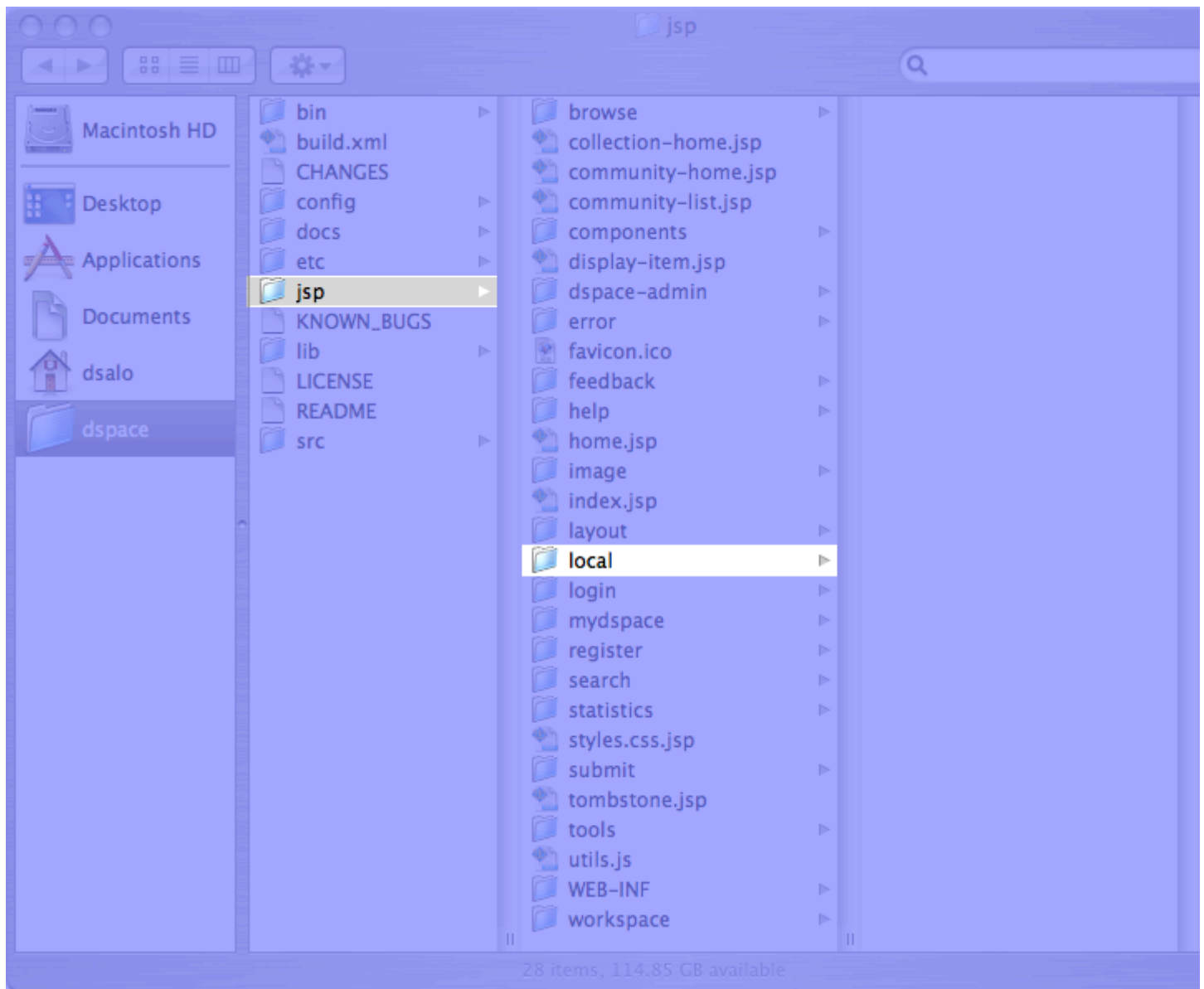
## The config folder



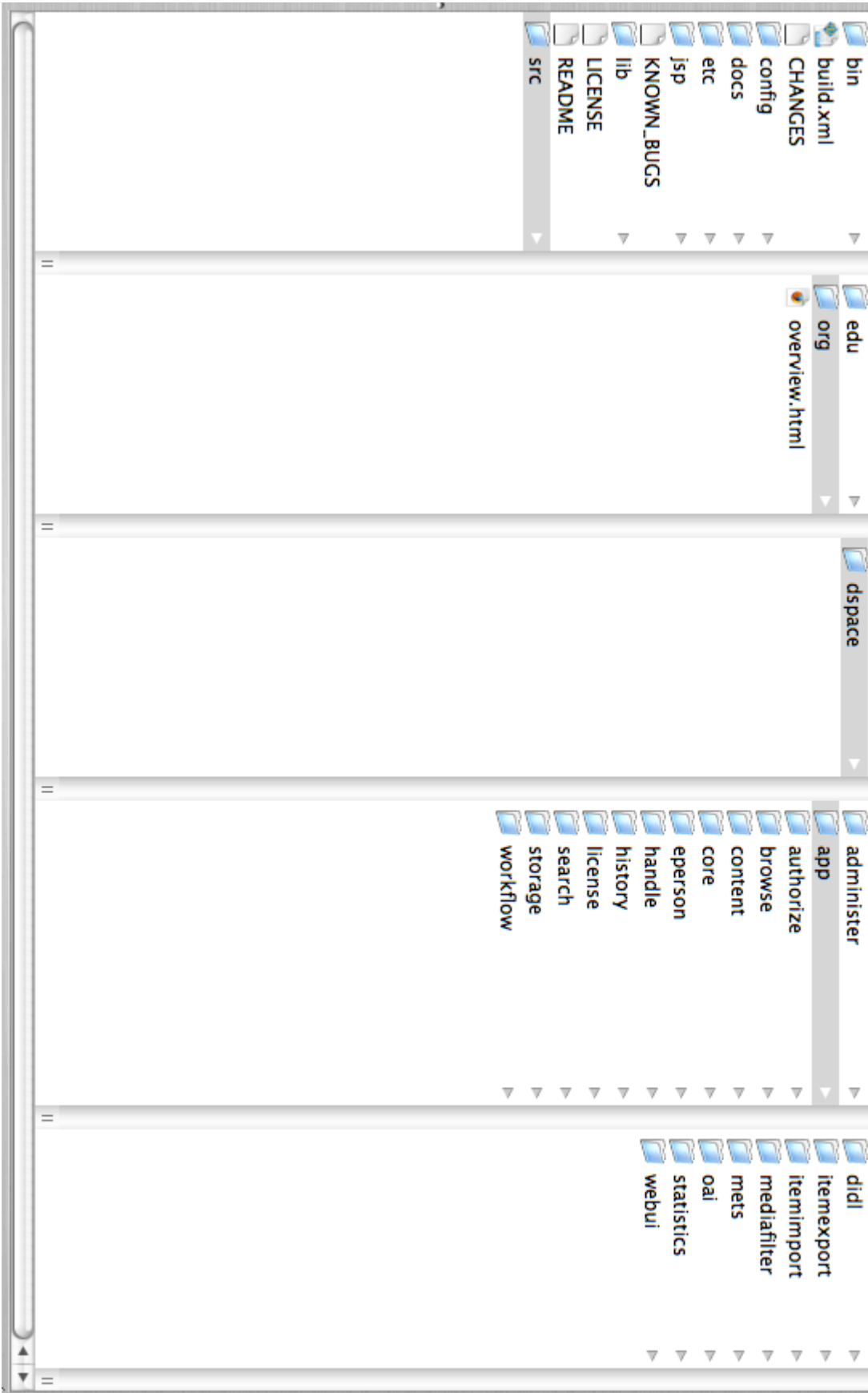
# The etc folder



# The jsp folder



# The src folder





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## Basic Customizations - Text

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`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

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## Basic Customizations - XHTML

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- 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.

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## Basic Customizations - CSS

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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/> - Has CSS and XHTML tutorials, references, etc.
- Holy CSS Zeldman! - <http://www.dezwozhere.com/links.html> - All things CSS. Links to references, tips, tutorials, templates, etc.

Links from above:

- George Mason's Archival Repository - <http://mars.gmu.edu:8080/dspace/>

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## Basic Customizations - Header/Footer

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All Header, Footer, Navigation customization in `/jsp/layout/`

The screenshot shows the DSpace 1.3.2 default installation page. The header features the DSpace logo and a link to "About DSpace Software". The main content area is divided into three columns. The left column contains navigation links: "Search DSpace" with a search box and "Go" button, "Advanced Search", "Home", "Browse" with sub-links for "Communities & Collections", "Titles", "Authors", and "By Date", "Sign on to:" with links for "Receive email updates", "My DSpace authorized users", "Edit Profile", "Help", and "About DSpace". The middle column displays "DSpace 1.3.2 >", "DSpace is Live" with a welcome message, a search box with "Go" button, and "Communities in DSpace" with a list of communities: "Test Community [22]" and "Tim's Community [42]". The right column contains a blue box with the text "This is a default installation of DSpace!" and a paragraph explaining that it can be extensively configured by installing modified JSPs and altering the site configuration. The footer includes the W3C XHTML 1.0 logo and copyright information: "DSpace Software Copyright © 2002-2005 MIT and Hewlett-Packard - Feedback".

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## Basic Customizations - Header/Footer

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

```
<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").

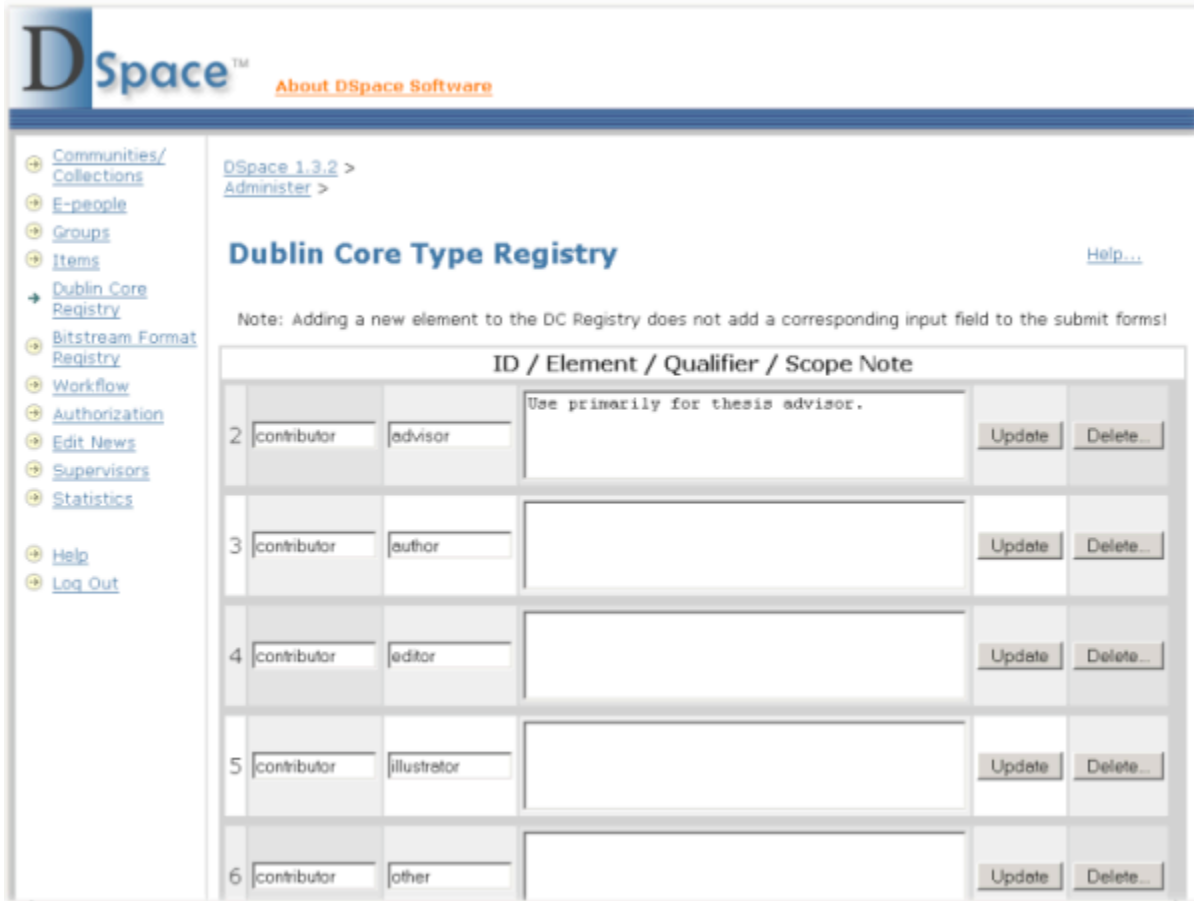
There's not many `locbar` options, but if you don't like that default Location Bar, you can turn it off by specifying `locbar="off"`.

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>)



The screenshot shows the DSpace Administration UI. The top navigation bar includes the DSpace logo and the text "About DSpace Software". The left sidebar contains a menu with items like "Communities/Collections", "E-people", "Groups", "Items", "Dublin Core Registry", "Bitstream Format Registry", "Workflow", "Authorization", "Edit News", "Supervisors", "Statistics", "Help", and "Log Out". The main content area is titled "Dublin Core Type Registry" and includes a "Help..." link. A note states: "Note: Adding a new element to the DC Registry does not add a corresponding input field to the submit forms!". Below the note is a table with the following structure:

ID	Element	Qualifier	Scope Note	Update	Delete
2	contributor	advisor	Use primarily for thesis advisor.	Update	Delete
3	contributor	author		Update	Delete
4	contributor	editor		Update	Delete
5	contributor	illustrator		Update	Delete
6	contributor	other		Update	Delete

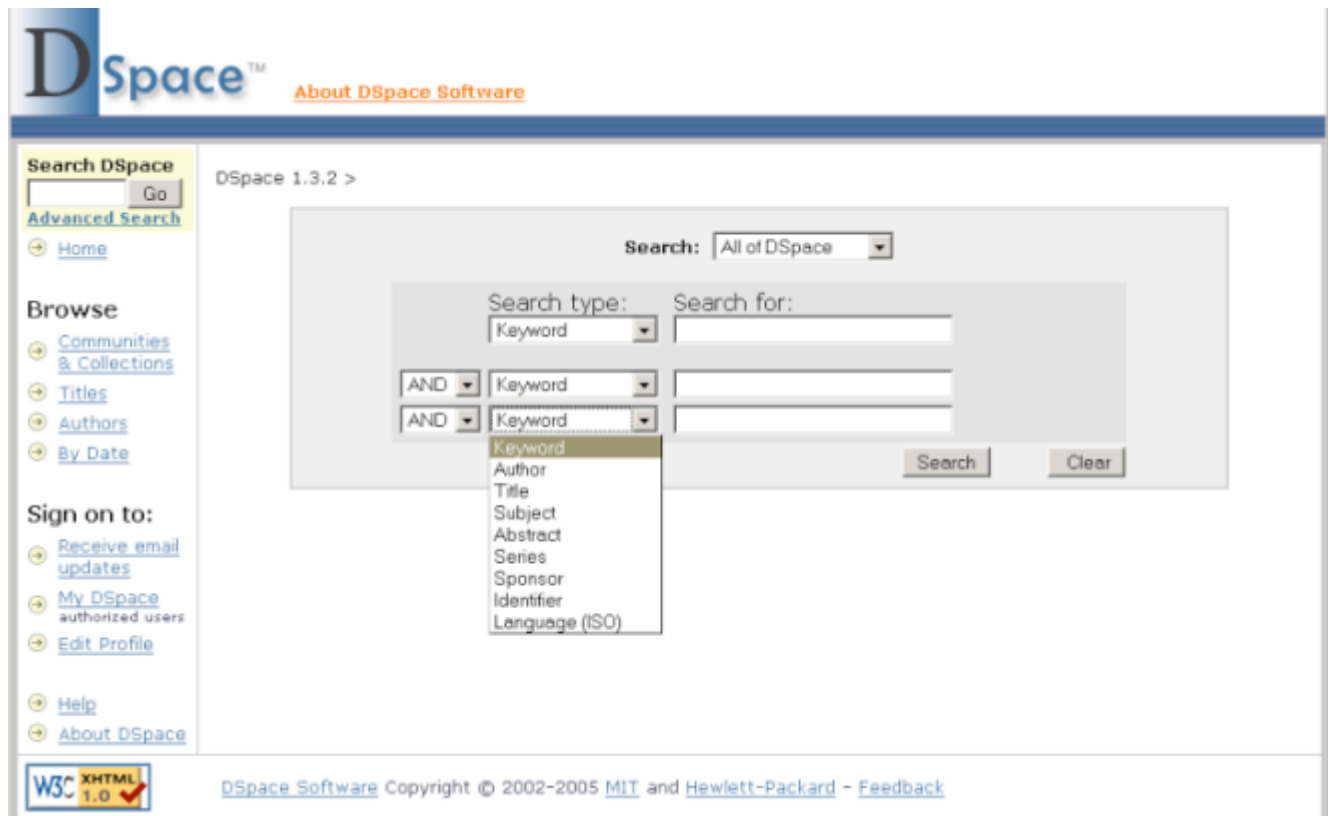
*\*However* - Do not remove any DSpace internal metadata fields

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
```

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## Intermediate Customizations - Search

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

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

In dspace.cfg:

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

Example: [UIUC's IDEALS Repository](#)

Links from above:

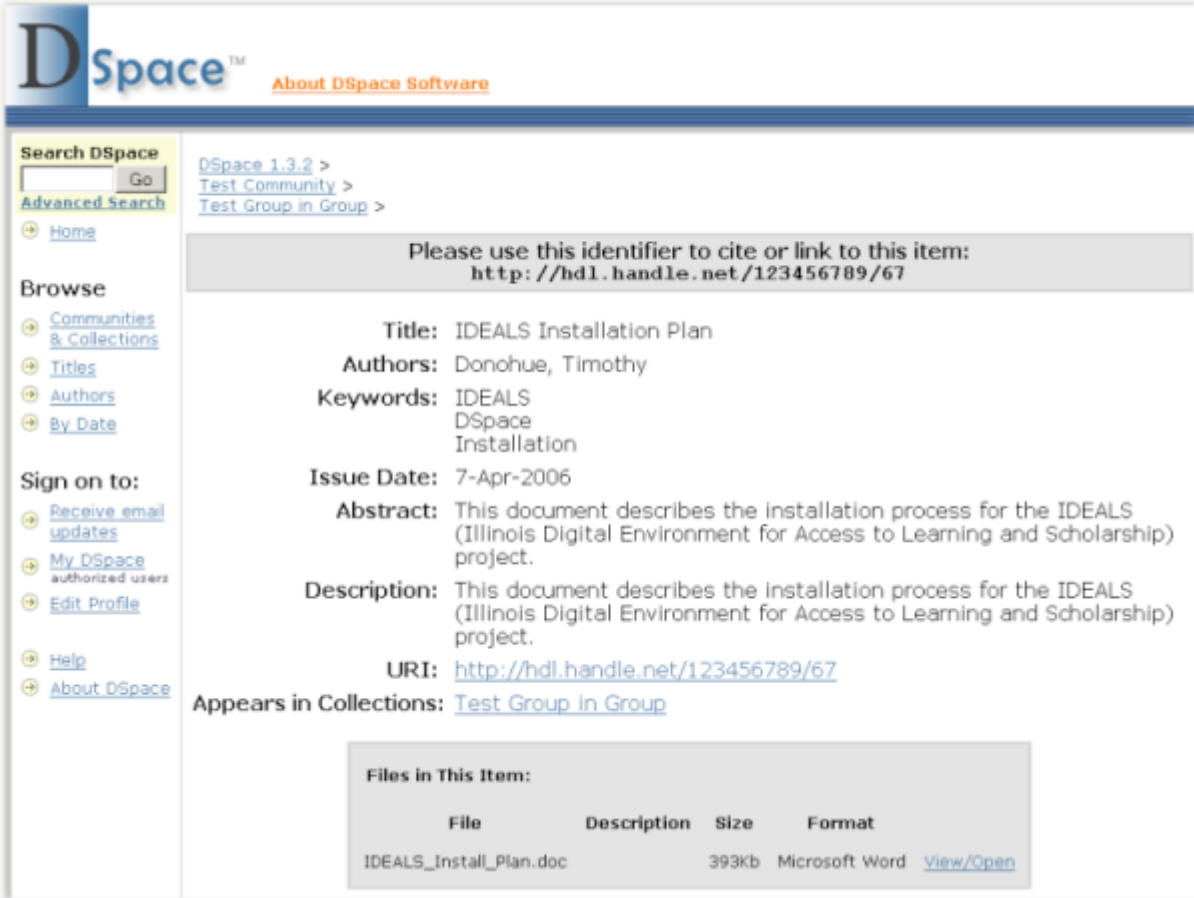
- IDEALS Advanced Search - <http://ideals.uiuc.edu/advanced-search>

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## Intermediate Customizations - Item Display

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



The screenshot shows the DSpace user interface. At the top left is the DSpace logo and a link to 'About DSpace Software'. Below the logo is a search bar with a 'Go' button and links for 'Advanced Search', 'Home', 'Communities & Collections', 'Titles', 'Authors', and 'By Date'. There is also a 'Sign on to:' section with links for 'Receive email updates', 'My DSpace', 'Edit Profile', 'Help', and 'About DSpace'. The main content area displays the following metadata:

Please use this identifier to cite or link to this item:  
<http://hdl.handle.net/123456789/67>

**Title:** IDEALS Installation Plan  
**Authors:** Donohue, Timothy  
**Keywords:** IDEALS  
DSpace  
Installation  
**Issue Date:** 7-Apr-2006  
**Abstract:** This document describes the installation process for the IDEALS (Illinois Digital Environment for Access to Learning and Scholarship) project.  
**Description:** This document describes the installation process for the IDEALS (Illinois Digital Environment for Access to Learning and Scholarship) project.  
**URI:** <http://hdl.handle.net/123456789/67>  
**Appears in Collections:** [Test Group in Group](#)

**Files in This Item:**

File	Description	Size	Format
IDEALS_Install_Plan.doc		393kb	Microsoft Word <a href="#">View/Open</a>

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## Intermediate Customizations - Item Display

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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:

- Manitoba's M-Space - <https://mspace.lib.umanitoba.ca/handle/1993/178>

## Intermediate Customizations - Submission

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

The screenshot shows the DSpace submission interface. At the top, the DSpace logo is on the left, and a link 'About DSpace Software' is on the right. Below the logo is a progress bar with seven steps: 'Describe', 'Describe', 'Describe', 'Upload', 'Verify', 'License', and 'Complete'. The 'Describe' steps are highlighted with red circles. The main heading is 'Submit: Describe Your Item'. Below this, there is a paragraph of instructions: 'Please fill in the requested information about your submission below. In most browsers, you can use the tab key to move the cursor to the next input box or button, to save you having to use the mouse each time. (More Help...)'

The form contains three main sections:

- Authors:** A heading 'Authors' followed by two input fields. The first field is for 'Last name' with the example 'e.g. Smith'. The second field is for 'First name(s) + "Jr"' with the example 'e.g. Donald Jr'. An 'Add More' button is to the right of the second field.
- Title:** A heading 'Title' followed by a single input field containing the text 'My Brand new Paper'. Above the field is the instruction 'Enter the main title of the item.'
- Other Titles:** A heading 'Other Titles' followed by a single input field. Above the field is the instruction 'If the item has any alternative titles, please enter them below.' An 'Add More' button is to the right of the field.

## Intermediate Customizations - Submission

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)



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## DSpace Community

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### 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](#)

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## DSpace Community

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### 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

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## On the Horizon

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### 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/>

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## Contact Info

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