



Getting Started with DSpace 7.0: Basic Training

DSPACE



Tim Donohue, LYRASIS

Art Lowel, Atmire

Andrea Bollini, 4Science



Workshop Schedule

- 13:00-14:15 UTC
 - What is in DSpace 7.0?
 - DSpace 7.0 Installation & Upgrade Overview
 - Configuring 7.0 to fit your needs
 - What's next? Plans for 7.1, 7.2 and beyond
- 14:15-14:30 UTC (virtual coffee/tea break)
- 14:30-16:00 UTC
 - DSpace 7.0 REST API Overview
 - DSpace 7.0 UI Branding (walkthrough) via CSS/HTML
 - Live Q&A as time allows



More DSpace 7 at OR2021

- DSpace 7.0 : Coming to a DSpace near you
(*Tues 8th, 16:00 UTC*)
- DSpace 7.0 : Enhanced Submission & Workflow
(*Thurs 10th, 9:00 UTC*)
- DSpace 7.0 : Configurable Entities
(*Thurs 10th, 9:00 UTC*)



Questions during Workshop

DSpace 7 Q&A Public Google Doc

<https://tinyurl.com/or2021-dspace7-qa>

Also find DSpace 7 team at OR2021
"Networking Sessions" in Wonder.me

Tues & Weds at 17:00UTC

Thurs at 12:00 UTC



DSPACE

When?



MONDAY, AUGUST 2, 2021*

(or before)*

Version 7.0 includes

- ★ Single (Angular) User Interface
 - Redesigned Submission, MyDSpace, Search, Admin tools
 - Enhanced User Privacy (GDPR alignment)
 - Processes available in Admin UI and on CLI
 - (Optional) Basic embedded video player
- ★ Fully-featured REST API
- ★ Support for [OpenAIRE v4](#)
- ★ (Optional) [Configurable Entities](#)
- ★ *Same backend as DSpace 6.x*



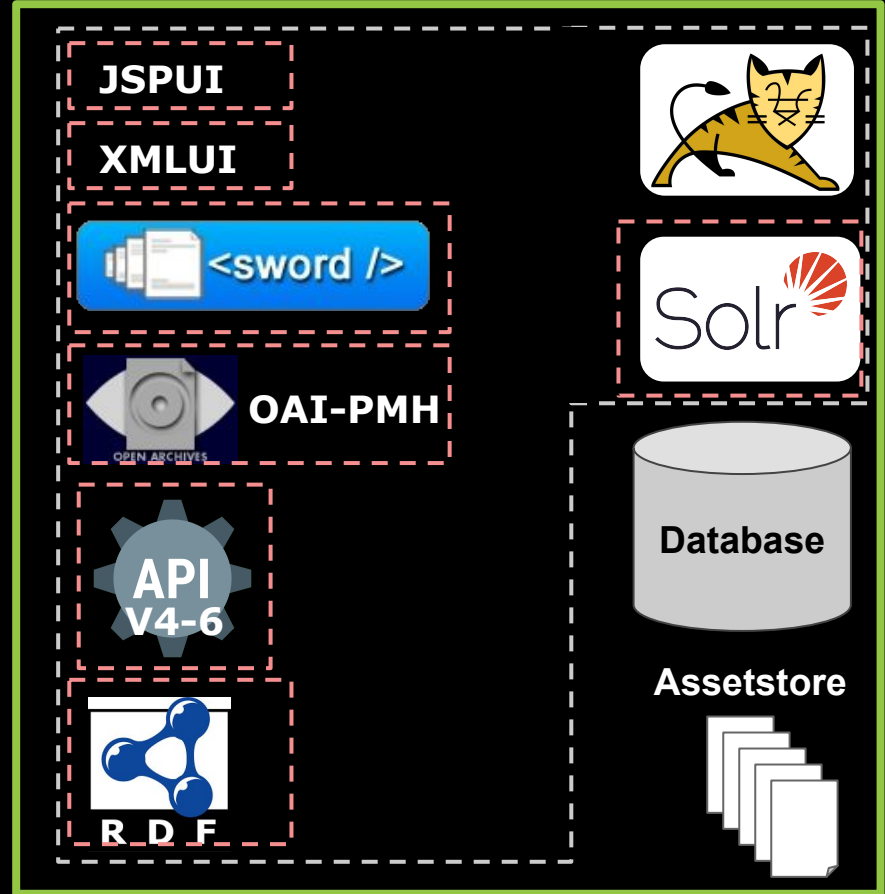
DSPACE

DSpace 6 Architecture

Front & Back End



7 separate webapps:
2 UIs, 4 web services & Solr



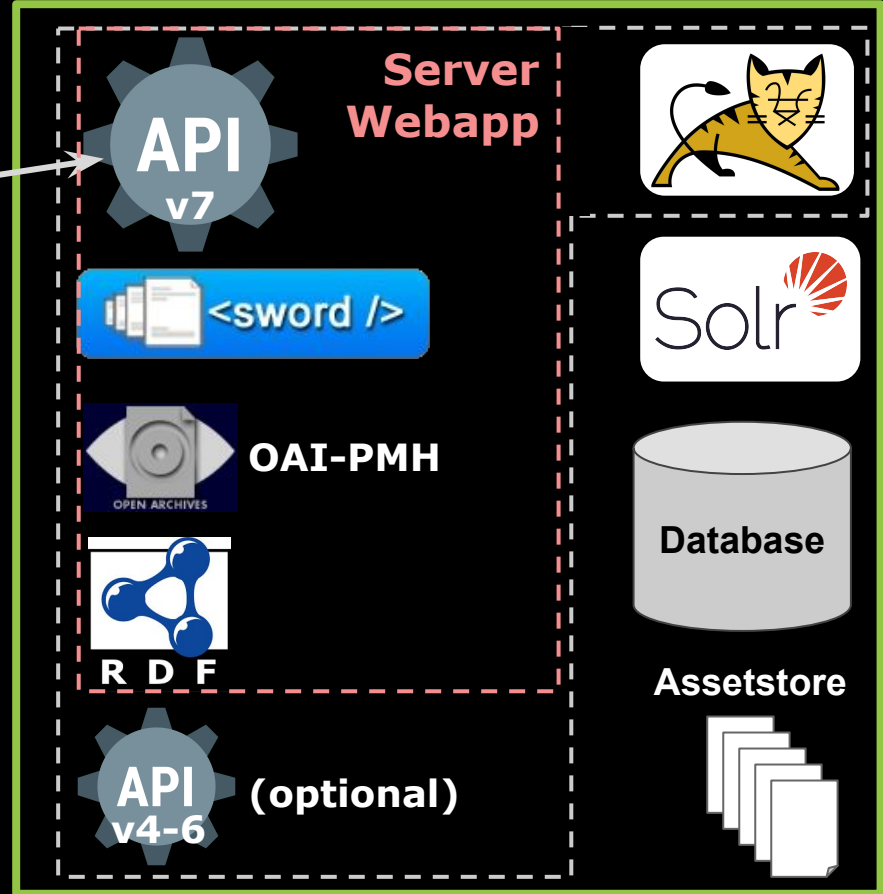
DSpace 7.0 Architecture

Back End

Front End



SEO via Angular
server-side rendering



1 backend webapp
(Solr is now installed separately)



DSPACE

A Few Technical Design Goals



Frontend (UI) is themeable by a Bootstrap designer

- WCAG 2.1 AA alignment



Backend is now one webapp






- Easier to install/configure
- Less resource intensive



What's in DSpace 7.0?



New Search Concepts

-  Search from header
-  Dynamic filters (collapsible)
-  Search within filters
-  Date Range filters
-  Grid / Thumbnail view



DSpace 7

DSpace is the world leading open source repository platform that enables organisations to:

- easily ingest documents, audio, video, datasets and their corresponding Dublin Core metadata
- open up this content to local and global audiences, thanks to the OAI-PMH interface and Google Scholar optimizations
- issue permanent urls and trustworthy identifiers, including optional integrations with handle.net and DataCite DOI

Join an international community of [leading institutions using DSpace](#).

The test user accounts below have their password set to the name of this software in lowercase.





- Demo Site Administrator = `dspacedemo+admin@gmail.com`
- Demo Community Administrator = `dspacedemo+commadmin@gmail.com`
- Demo Collection Administrator = `dspacedemo+colladmin@gmail.com`
- Demo Submitter = `dspacedemo+submit@gmail.com`

Photo by @inspired

Search the repository ...

Search

New Admin Tools

-  Global, collapsible sidebar
-  Create content from anywhere
-  Processes for many CLI tools
-  Admin Search (private/withdrawn)





DSpace 7

DSpace is the world leading open source repository platform that enables organisations to:

- easily ingest documents, audio, video, datasets and their corresponding Dublin Core metadata
- open up this content to local and global audiences, thanks to the OAI-PMH interface and Google Scholar optimizations
- issue permanent urls and trustworthy identifiers, including optional integrations with handle.net and DataCite DOI

Join an international community of [leading institutions using DSpace](#).

The test user accounts below have their password set to the name of this software in lowercase.

- Demo Site Administrator = `dspacedemo+admin@gmail.com`
- Demo Community Administrator = `dspacedemo+commadmin@gmail.com`
- Demo Collection Administrator = `dspacedemo+colladmin@gmail.com`
- Demo Submitter = `dspacedemo+submit@gmail.com`

Photo by @inspiredimages

Search the repository ...

🔍 Search

Export Collection to CSV (Creating a Process)

The screenshot shows the DSpace 7 home page in a browser. The browser's address bar displays 'localhost:4000/home'. The page features a dark blue background with a jellyfish image. At the top, there is a navigation bar with the DSPACE logo, 'Communities & Collections', 'All of DSpace', and 'Statistics'. A user profile dropdown menu is open, showing the user's name 'Demo Site Administrator', email '(dspacedemo+admin@gmail.com)', and options for 'Profile' and 'MyDSpace'. A 'Log out' button is also visible in the dropdown. The main content area includes the title 'DSpace 7' and a description: 'DSpace is the world leading open source repository platform that en...'. Below this, there is a list of features and a list of test user accounts.

localhost:4000/home

Communities & Collections All of DSpace Statistics

DSpace 7

DSpace is the world leading open source repository platform that en...

- easily ingest documents, audio, video, datasets and their corresponding Dublin Core metadata
- open up this content to local and global audiences, thanks to the OAI-PMH interface and Google Scholar optimizations
- issue permanent urls and trustworthy identifiers, including optional integrations with handle.net and DataCite DOI

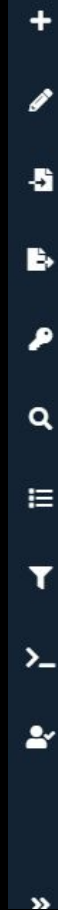
Join an international community of [leading institutions using DSpace](#).

The test user accounts below have their password set to the name of this software in lowercase.

- Demo Site Administrator = dspacedemo+admin@gmail.com
- Demo Community Administrator = dspacedemo+commadmin@gmail.com
- Demo Collection Administrator = dspacedemo+colladmin@gmail.com
- Demo Submitter = dspacedemo+submit@gmail.com

Photo by @inspiredimages

Viewing / Starting a Process



all of DSpace ▾ Statistics

DSpace

DSpace 7

DSpace is the world leading open source repository platform that enables you to:

- easily ingest documents, audio, video, datasets and their corresponding Dublin Core metadata
- open up this content to local and global audiences, thanks to the OAI-PMH interface and Google Scholar optimizations
- issue permanent urls and trustworthy identifiers, including optional integrations with handle.net and DataCite DOI

Join an international community of [leading institutions using DSpace](#).

The test user accounts below have their password set to the name of this software in lowercase.

- Demo Site Administrator = dspacedemo+admin@gmail.com
- Demo Community Administrator = dspacedemo+commadmin@gmail.com
- Demo Collection Administrator = dspacedemo+colladmin@gmail.com
- Demo Submitter = dspacedemo+submit@gmail.com

Photo by @inspiredimages

Search the repository ...

Demo Site Administrator
(dspacedemo+admin@gmail.com)

Profile

MyDSpace

Admin Search for Withdrawn Item

The screenshot shows the DSpace 7 website interface. At the top, there is a navigation bar with the DSPACE logo, links for "Communities & Collections", "All of DSpace", and "Statistics". A search bar and user profile icons are on the right. A dark sidebar on the left contains various navigation icons. The main content area features a large "DSpace 7" title and a background image of water droplets. A dropdown menu is open over the user profile icon, showing the user's name "Demo Site Administrator", email "dspacedemo+admin@gmail.com", and options for "Profile" and "MyDSpace". A "Log out" button is at the bottom of the menu. Below the title, a paragraph describes DSpace as an open source repository platform, followed by a bulleted list of features. Further down, there is a section for test user accounts with their respective email addresses.

Communities & Collections All of DSpace Statistics

DSpace 7

DSpace is the world leading open source repository platform that enables:

- easily ingest documents, audio, video, datasets and their corresponding Dublin Core metadata
- open up this content to local and global audiences, thanks to the OAI-PMH interface and Google Scholar optimizations
- issue permanent urls and trustworthy identifiers, including optional integrations with handle.net and DataCite DOI







Join an international community of [leading institutions using DSpace](#).

The test user accounts below have their password set to the name of this software in lowercase.

- Demo Site Administrator = dspacedemo+admin@gmail.com
- Demo Community Administrator = dspacedemo+commadmin@gmail.com
- Demo Collection Administrator = dspacedemo+colladmin@gmail.com
- Demo Submitter = dspacedemo+submit@gmail.com

Photo by @inspiredimages

New Submission Concepts

-  One-page, scrollable form
-  Pages are now collapsible sections
-  Optionally, multiple fields per row
-  Drag & Drop upload
-  Autofill by uploading BibTex, RIS, PubMed, ArXiv, EndNote, etc.
-  Submissions are searchable / filterable

Drag & Drop New Submission

DSpace ▾ Statistics

DSpace 7

DSpace is the world leading open source repository platform that enables organisations to:

- easily ingest documents, audio, video, datasets and their corresponding Dublin Core metadata
- open up this content to local and global audiences, thanks to the OAI-PMH interface and Google Scholar optimizations
- issue permanent urls and trustworthy identifiers, including optional integrations with handle.net and DataCite DOI

Join an international community of [leading institutions using DSpace.](#)

The test user accounts below have their password set to the name of this software in lowercase.

- Demo Site Administrator = dspacedemo+admin@gmail.com
- Demo Community Administrator = dspacedemo+commadmin@gmail.com
- Demo Collection Administrator = dspacedemo+colladmin@gmail.com
- Demo Submitter = dspacedemo+submit@gmail.com

Photo by @inspiredimages

Search the repository ...

Quick Deposit using PubMed XML



DSPACE

space ▾ Statistics



DSpace 7

DSpace is the world leading open source repository platform that enables you to:

- easily ingest documents, audio, video, datasets and their corresponding Dublin Core metadata
- open up this content to local and global audiences, thanks to the OAI-PMH interface and Google Scholar optimizations
- issue permanent urls and trustworthy identifiers, including optional integrations with handle.net and DataCite DOI

Join an international community of [leading institutions using DSpace](#).

The test user accounts below have their password set to the name of this software in lowercase.

- Demo Site Administrator = dspacedemo+admin@gmail.com
- Demo Community Administrator = dspacedemo+commadmin@gmail.com
- Demo Collection Administrator = dspacedemo+colladmin@gmail.com
- Demo Submitter = dspacedemo+submit@gmail.com

Demo Site Administrator
(dspacedemo+admin@gmail.com)

[Profile](#)

[MyDSpace](#)

[Log out](#)

Photo by [@inspiredimages](#)

Search the repository ...

[Search](#)

DSpace 7

DSpace is the world leading open source repository platform that enables organisations to:

- easily ingest documents, audio, video, datasets and their corresponding Dublin Core metadata
- open up this content to local and global audiences, thanks to the OAI-PMH interface and Google Scholar optimizations
- issue permanent urls and trustworthy identifiers, including optional integrations with handle.net and DataCite DOI

Join an international community of [leading institutions using DSpace](#).

The test user accounts below have their password set to the name of this software in lowercase.

- Demo Site Administrator = dspacedemo+admin@gmail.com
- Demo Community Administrator = dspacedemo+commadmin@gmail.com
- Demo Collection Administrator = dspacedemo+colladmin@gmail.com
- Demo Submitter = dspacedemo+submit@gmail.com

Photo by @inspiredimages

Search the repository ...

🔍 Search

New Workflow Concepts



Configurable Workflow system



Quickly claim/review



Workflow tasks are searchable / filterable



Administer all items in Workflow





Communities

MyDSpace - Workflow



Demo Site Administrator
(dspacedemo+admin@gmail.com)

Profile

MyDSpace

Log out

DSpace 7

DSpace is the world leading open source repository platform that enables:

- easily ingest documents, audio, video, datasets and their corresponding Dublin Core metadata
- open up this content to local and global audiences, thanks to the OAI-PMH interface and Google Scholar optimizations
- issue permanent urls and trustworthy identifiers, including optional integrations with handle.net and DataCite DOI

Join an international community of [leading institutions](#) using DSpace.

The test user accounts below have their password set to the name of this software in lowercase.

- Demo Site Administrator = dspacedemo+admin@gmail.com
- Demo Community Administrator = dspacedemo+commadmin@gmail.com
- Demo Collection Administrator = dspacedemo+colladmin@gmail.com
- Demo Submitter = dspacedemo+submit@gmail.com

Photo by @inspiredimages

Search the repository ...

Search



Communities

Administer Workflows



Demo Site Administrator
(dspacedemo+admin@gmail.com)

Profile

MyDSpace

Log out

DSpace 7

DSpace is the world leading open source repository platform that enables

- easily ingest documents, audio, video, datasets and their corresponding Dublin Core metadata
- open up this content to local and global audiences, thanks to the OAI-PMH interface and Google Scholar optimizations
- issue permanent urls and trustworthy identifiers, including optional integrations with handle.net and DataCite DOI

Join an international community of [leading institutions](#) using DSpace.

The test user accounts below have their password set to the name of this software in lowercase.





- Demo Site Administrator = dspacedemo+admin@gmail.com
- Demo Community Administrator = dspacedemo+commadmin@gmail.com
- Demo Collection Administrator = dspacedemo+colladmin@gmail.com
- Demo Submitter = dspacedemo+submit@gmail.com

Photo by @inspiredimages

Search the repository ...

Search

Enhanced Privacy (GDPR alignment)

-  User Agreement (customizable)
-  User Cookie/Tracking Preferences
-  Privacy Statement (customizable)
-  Delete any account quickly & easily



DSpace 7

DSpace is the world leading open source repository platform that enables organisations to:

- easily ingest documents, audio, video, datasets and their corresponding Dublin Core metadata
- open up this content to local and global audiences, thanks to the OAI-PMH interface and Google Scholar optimizations
- issue permanent urls and trustworthy identifiers, including optional integrations with handle.net and DataCite DOI

Join an international community of [leading institutions using DSpace](#).

The test user accounts below have their password set to the name of this software in lowercase.

- Demo Site Administrator = dspacedemo+admin@gmail.com
- Demo Community Administrator = dspacedemo+commadmin@gmail.com
- Demo Collection Administrator = dspacedemo+colladmin@gmail.com
- Demo Submitter = dspacedemo+submit@gmail.com

We collect and process your personal information for the following purposes: **Authentication, Preferences, Acknowledgement and Statistics.**

To learn more, please read our [privacy policy](#).

[Customize...](#)

[Decline](#)

[That's ok](#)

Search the repository ...

Installing DSpace 7.0



<https://wiki.lyrasis.org/display/DSDOC7x/Installing+DSpace>

Quick Install via Docker DEV

1. [Install Docker](#)
2. Download [UI](#) and/or [Backend](#)
3. `docker-compose [configs] pull`
4. `docker-compose up -d`



<https://wiki.lyrasis.org/display/DSPACE/Try+out+DSpace+7>

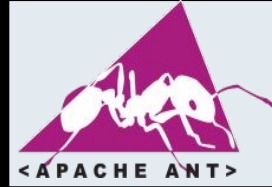


DSPACE

Installing Backend (Java)

Similar to a 6.x install

- Prerequisites:
 - Java, Maven, Ant, Tomcat
 - Database (PostgreSQL or Oracle)
 - Solr **NEW**



Installing Backend (Java)

1. Download Backend ([codebase](#))
2. Configure local.cfg
3. ``mvn package``
4. ``ant fresh_install``
5. Deploy webapp to Tomcat
6. Copy DSpace Solr configs to Solr



Installing Frontend (Angular)

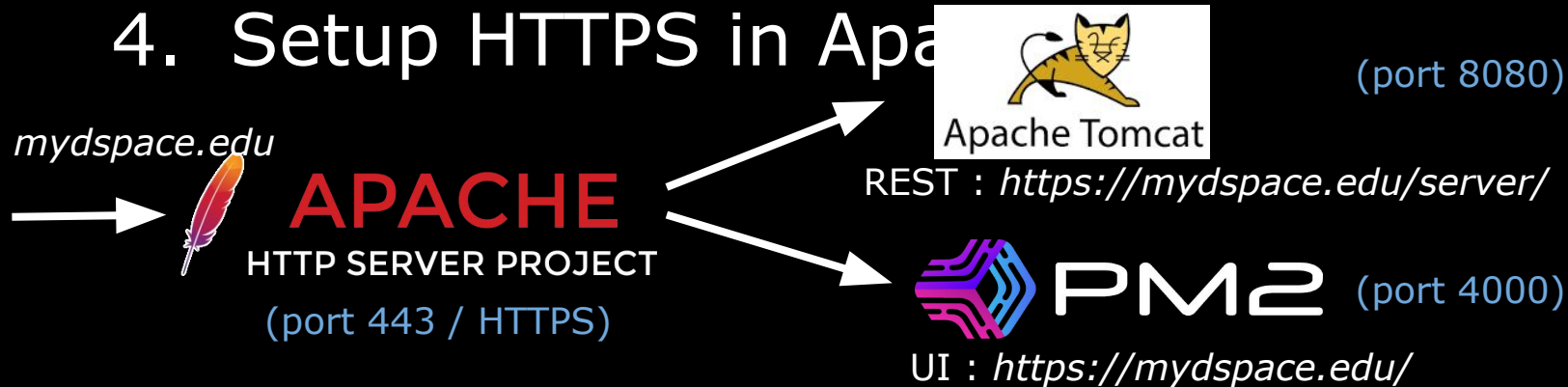
1. Install [Node](#) & [Yarn](#)
2. Download UI ([codebase](#))
3. ``yarn install``
4. Configure `environment.prod.ts`
5. ``yarn run build:prod``
6. ``yarn run serve:ssr`` } ``yarn start``
(quick start)

or  PM2



Production Frontend + Backend (One Approach)

1. Install Apache HTTPD + mod_proxy
2. Proxy */server* to Backend (port 8080 / Tomcat)
3. Proxy */* (root) to Frontend (port 4000 / PM2)
4. Setup HTTPS in Apache



Security is Priority



Backend security protections

- HTTPS required in production
- [CORS](#) & [CSRF](#) protection
- Only trusts `dspace.ui.url` by default

Hint, make sure these settings match!

Backend's local.cfg	Frontend's environment.*.ts	Value
dspace.server.url	"rest" section	Absolute URL of REST API
dspace.ui.url	-	Absolute URL of UI



Upgrading to DSpace 7.0



Can I upgrade from 1.x/3.x/4.x/5.x/6.x to 7.0?

YES

- Your data (metadata + files) upgrades automatically
 - ◆ Run `dspace database migrate`
- Older versions may wish to start with fresh configs (i.e. local.cfg)
 - ◆ Many configs changed in 6.x & 7.0



Upgrading Backend

Similar to past (v5.x/6.x) upgrades

- Upgrade or Reinstall Prerequisites:
 - Java, Maven, Ant, Tomcat
 - Database (PostgreSQL or Oracle)
 - Solr **NEW**



Upgrading Backend

1. Download Backend ([codebase](#))
2. Update/create local.cfg
3. `mvn package`
4. `ant update`
5. `dspace database migrate ignored`
6. Migrate/update submission configs
(input-forms.xml -> submission-forms.xml)
7. Deploy webapp to Tomcat
8. Copy DSpace Solr configs to Solr



Upgrade Frontend



There is no upgrade path from XMLUI or JSPUI to the DSpace 7 UI.



Instead, install the new UI, and customize or brand it how you see fit (via HTML, CSS, Bootstrap)



New Configurations in DSpace 7.0



User Interface Configurations



`/src/environments/environment.*.ts`

[Home](#) • [Compound Journals](#)

Compound Journals

Permanent URI for this community <https://demo7.dspace.org/handle/123456789/27>

Browse

Subcommunities and Collections

By Title

By Issue Date

By Author

By Subject

Collections of this Community

Now showing 1 - 3 of 3

[Journal Issues](#)

[Journal Volumes](#)

[Journals](#)

Language Selector

```
languages: [{  
  code: 'en',  
  label: 'English',  
  active: true,  
}, ... ]
```

DSpace 7 - Beta

DSpace is the world leading open source repository platform

- easily ingest documents, audio, video, datasets and their corresponding metadata
- open up this content to local and global audiences, thanks to the rich metadata
- issue permanent urls and trustworthy identifiers, including open access

Join an international community of **leading institutions** using DSpace

Participate in the **official community Testathon** from **April 19th** through **May 1st** 2017. Testathon software in lowercase.

- Demo Site Administrator = dspacedemo+admin@gmail.com
- Demo Community Administrator = dspacedemo+commadmin@gmail.com
- Demo Collection Administrator = dspacedemo+colladmin@gmail.com
- Demo Submitter = dspacedemo+submit@gmail.com

Browse By Options

```
browseBy: {  
  types: [  
    {  
      id: 'title',  
      type: BrowseByType.Title  
    }, ...  
  ]  
}
```

(**'id'** from /api/discover/browses)

Home • Submission test • Sample Collection

Sample Collection

Permanent URI for this collection <http://localhost:4000/handle/123456789/1118>

A sample collection with no workflow approval process

Browse

Recent Submissions

By Title

By Issue Date

By Author

By Subject

Now showing 1 - 2 of 2

Item

DSpace 7 Preview Release Video

(2018) Donohue, Timothy

Item

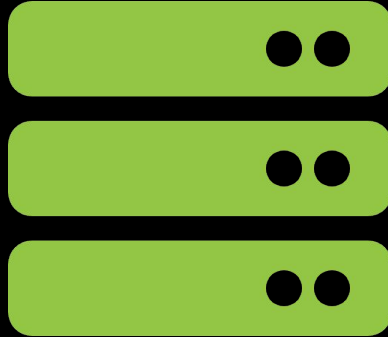
Testing a Image

(2021) Donohue, Timothy

**Basic Embedded Media Player
(videos or images)**

```
mediaViewer: {  
  image: true,  
  video: true  
}
```


Backend Configurations



`[dspace]/config/*`

Important Backend Configs (local.cfg)

<code>dspace.dir</code>	(Backend install folder)
<code>dspace.server.url</code>	(Backend URL)
<code>dspace.ui.url</code>	(UI's URL / <i>default trusted client</i>)
<code>db.*</code>	(Database connection settings)
<code>solr.server</code>	(Solr webapp/URL)
<code>rest.cors.allowed-origins</code>	(Add additional trusted clients)

Hint: Untrusted clients CANNOT login via REST API



Configuring Submission Forms



`'item-submission.xml'` and `'submission-forms.xml'`

Configuring Submission

item-submission.xml

- Similar to 6.x
- Still defines steps of submission

NEW `<step>` now represents sections of form

NEW `<step>` may be mandatory or optional

NEW `<step>` has a type

- `submission-form`, upload, license, etc



item-submission.xml

```
<step-definitions>
  ....
  <step-definition id="traditionalpageone" mandatory="true">
    <heading>submit.progressbar.describe.stepone</heading>
    <processing-class>org.dspace.app.rest.submit.step.DescribeStep</processing-class>
    <type>submission-form</type>
  </step-definition>
  ....
</step-definitions>
<submission-definitions>
  <submission-process name="traditional">
    <step id="collection"/>
    <step id="traditionalpageone"/>
    <step id="traditionalpagetwo"/>
    <step id="upload"/>
    <step id="license"/>
  </submission-process>
</submission-definitions>
```

The screenshot shows a web form for item submission. At the top, there is a 'Collection' dropdown menu currently set to 'Sample Collection' and an 'Add more +' button. Below this are five rows, each representing a step in the submission process. Each row has a label on the left and a status indicator on the right (a green checkmark and a blue downward arrow). The steps are: 'Describe', 'Describe', 'Upload files', and 'Deposit license'. Orange arrows from the XML code on the left point to these elements: the first arrow points to the 'Collection' dropdown, the second to the first 'Describe' row, the third to the second 'Describe' row, the fourth to the 'Upload files' row, and the fifth to the 'Deposit license' row.

Step	Status
Collection	Sample Collection
Describe	✓
Describe	✓
Upload files	✓
Deposit license	✓

submission-forms.xml

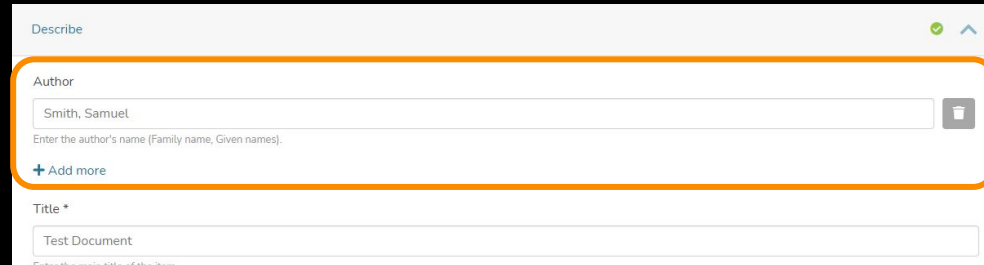
- Replacement for input-forms.xml (v6.x)
- Define metadata fields that appear in each **submission-form** <step>
- **NEW** Define rows of fields (optionally)
- **NEW** Define fields to describe bitstreams



submission-forms.xml

- ★ Customize submission-form named "traditionalpageone"

```
<form-definitions>
  <form name="traditionalpageone">
    <row>
      <field>
        <dc-schema>dc</dc-schema>
        <dc-element>contributor</dc-element>
        <dc-qualifier>author</dc-qualifier>
        <repeatable>true</repeatable>
        <label>Authors</label>
        <input-type>onebox</input-type>
        <hint>Enter the author's name (Family name, Given names).</hint>
        <required></required>
      </field>
    </row>
    ....
  </form>
</form-definitions>
```



The screenshot shows a web interface titled "Describe" with a light blue header. Below the header, there is a form with two main sections. The first section is titled "Author" and contains a text input field with the value "Smith, Samuel". Below the input field is a hint text: "Enter the author's name (Family name, Given names)". To the right of the input field is a trash icon. Below the input field is a "+ Add more" button. The second section is titled "Title" and contains a text input field with the value "Test Document".



submission-forms.xml

★ Multiple fields per row **NEW**

```
<row>
  <field>
    <dc-schema>dc</dc-schema>
    <dc-element>date</dc-element>
    <dc-qualifier>issued</dc-qualifier>
    ...
    <input-type>date</input-type>
  </field>
  <field>
    <dc-schema>dc</dc-schema>
    <dc-element>publisher</dc-element>
    ...
    <input-type>onebox</input-type>
  </field>
</row>
```

The screenshot shows a form with two fields in a row. The first field is titled "Date of Issue *" and contains a date picker with "2021", "month", and "day" buttons. The second field is titled "Publisher" and contains a text input box with "Publisher" as the placeholder text. Below the input box is a label: "Enter the name of the publisher of the previously issued instance of this item." The entire form is enclosed in a rounded rectangle with an orange border. Below the form, there is a small text label: "Please give the date of previous publication or public distribution."



submission-forms.xml

★ Customize metadata fields requested for Bitstreams! **NEW**

```
<form name="bitstream-metadata">
```

```
  <row>
```

```
    <field>
```

```
      <dc-schema>dc</dc-schema>
```

```
      <dc-element>title</dc-element>
```

```
      <dc-qualifier></dc-qualifier>
```

```
      <repeatable>>false</repeatable>
```

```
      <label>Title</label>
```

```
      <input-type>onebox</input-type>
```

```
      <hint>Enter the name of the file.</hint>
```

```
      <required>You must enter the name of the file.</required>
```

```
    </field>
```

```
  </row>
```

```
  ...
```

```
</form>
```

test_pdf.pdf (30.57 KB)

Title *

Enter the name of the file.

Description

Description

Hint: Click Edit on an uploaded file to enter this metadata



Configuring Workflow Approval System



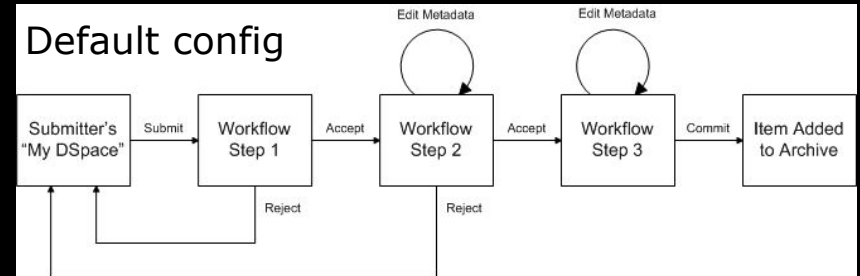
Configuring Workflow

- DSpace 7 uses [Configurable Workflow](#)
 - Available since v1.8.x (in XMLUI)
- Default is same 3-step process as “traditional” workflow
 - Review -> Edit/Review -> Edit only
- Workflow steps/roles configurable as Spring Beans in a **workflow.xml** NEW
- Workflow configurable per collection



workflow.xml

```
<beans>
  ....
  <bean name="defaultWorkflow" class="org.dspace.xmlworkflow.state.Workflow">
    <property name="firstStep" ref="reviewStep"/>
    <property name="steps">
      <util:list>
        <ref bean="reviewstep"/>
        <ref bean="editstep"/>
        <ref bean="finaleditstep"/>
      </util:list>
    </property>
  </bean>
  <bean name="reviewstep" class="org.dspace.xmlworkflow.state.Step">
    ...
  </bean>
  ...
</beans>
```



<https://wiki.lyrasis.org/display/DSDOC7x/Configurable+Workflow>



More info at OR2021

- ★ DSpace 7 - Enhanced Submission & Workflow
 - Thurs, 9:00am UTC
 - Andrea Bollini, Giuseppe Digilio, Claudio Cortese (4Science)
 - *Recording will be available*






Configurable Entities



<https://wiki.lyrasis.org/display/DSDOC7x/Configurable+Entities>

Configurable Entities

- In DSpace, an Entity is...
 -  An Item
 -  With a specific defined “type”
 -  With relationship(s) to other Entities
- Entities are *optional*.
- Basic Items are default.



Default Entities in DSpace 7



Entities related to Journal hierarchy

- Journal
- Volume
- Issue
- Publication* (Article)



Entities related to Author Profiles / Research

- Publication*
- Person
- Project
- OrgUnit



DSpace 7

DSpace is the world leading open source repository platform that enables organisations to:

- easily ingest documents, audio, video, datasets and their corresponding Dublin Core metadata
- open up this content to local and global audiences, thanks to the OAI-PMH interface and Google Scholar optimizations
- issue permanent urls and trustworthy identifiers, including optional integrations with handle.net and DataCite DOI

Join an international community of [leading institutions using DSpace](#).

The test user accounts below have their password set to the name of this software in lowercase.

- Demo Site Administrator = dspacedemo+admin@gmail.com
- Demo Community Administrator = dspacedemo+commadmin@gmail.com
- Demo Collection Administrator = dspacedemo+colladmin@gmail.com
- Demo Submitter = dspacedemo+submit@gmail.com

Photo by @insanefimages

Search the repository ...

Q Search

DSpace 7

DSpace is the world leading open source repository platform that enables organisations to:

- easily ingest documents, audio, video, datasets and their corresponding Dublin Core metadata
- open up this content to local and global audiences, thanks to the OAI-PMH interface and Google Scholar optimizations
- issue permanent urls and trustworthy identifiers, including optional integrations with handle.net and DataCite DOI

Join an international community of [leading institutions using DSpace](#).

The test user accounts below have their password set to the name of this software in lowercase.

- Demo Site Administrator = dspacedemo+admin@gmail.com
- Demo Community Administrator = dspacedemo+commadmin@gmail.com
- Demo Collection Administrator = dspacedemo+colladmin@gmail.com
- Demo Submitter = dspacedemo+submit@gmail.com

Photo by @linearimages

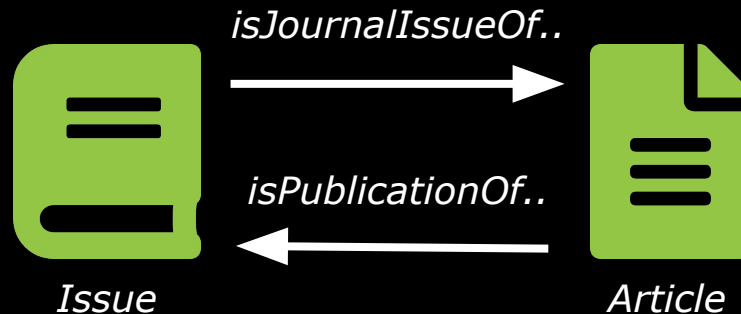
Search the repository ...

🔍 Search

Entities are Configurable!

- ★ Configure the model in **relationship-types.xml**

```
<relationships>
  <type>
    <leftType>JournalIssue</leftType>
    <rightType>Publication</rightType>
    <leftwardType>isPublicationOfJournalIssue</leftwardType>
    <rightwardType>isJournalIssueOfPublication</rightwardType>
    <leftCardinality>
      <min>0</min>
    </leftCardinality>
    <rightCardinality>
      <min>0</min>
      <max>1</max>
    </rightCardinality>
  </type>
</relationships>
```

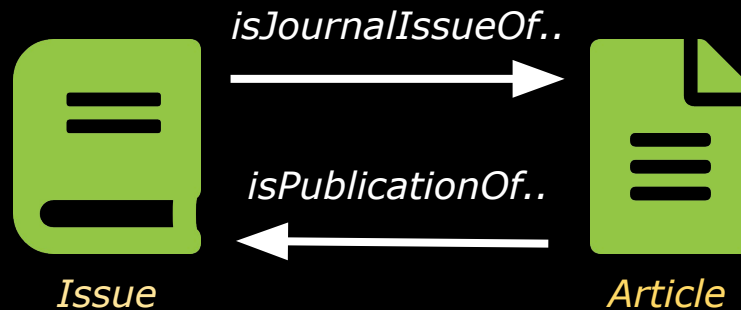


Entities are Configurable!

- ★ Define 2 entity type names (to create or link entities)

Hint: Generic "Publication" type allows this Entity to be reused for more than just "Articles"

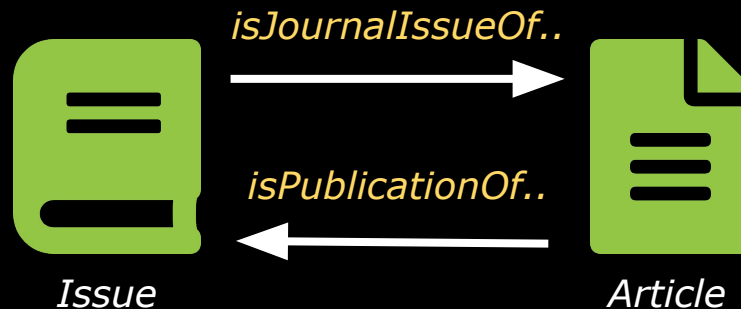
```
<relationships>
  <type>
    <leftType>JournalIssue</leftType>
    <rightType>Publication</rightType>
    <leftwardType>isPublicationOfJournalIssue</leftwardType>
    <rightwardType>isJournalIssueOfPublication</rightwardType>
    <leftCardinality>
      <min>0</min>
    </leftCardinality>
    <rightCardinality>
      <min>0</min>
      <max>1</max>
    </rightCardinality>
  </type>
</relationships>
```



Entities are Configurable!

- ★ Define unambiguous name for relation (in both directions)

```
<relationships>
  <type>
    <leftType>JournalIssue</leftType>
    <rightType>Publication</rightType>
    <leftwardType>isPublicationOfJournalIssue</leftwardType>
    <rightwardType>isJournalIssueOfPublication</rightwardType>
    <leftCardinality>
      <min>0</min>
    </leftCardinality>
    <rightCardinality>
      <min>0</min>
      <max>1</max>
    </rightCardinality>
  </type>
</relationships>
```



Entities are Configurable!

- ★ Optionally: define the cardinality for the relationship

```
<relationships>
  <type>
    <leftType>JournalIssue</leftType>
    <rightType>Publication</rightType>
    <leftwardType>isPublicationOfJournalIssue</leftwardType>
    <rightwardType>isJournalIssueOfPublication</rightwardType>
    <leftCardinality>
      <min>0</min>
    </leftCardinality>
    <rightCardinality>
      <min>0</min>
      <max>1</max>
    </rightCardinality>
  </type>
</relationships>
```

Publication can belong to only one Journal issue



Entities are Configurable!

- ✓ Configure the Entity model(s) in **relationship-types.xml**
- ✓ Import **relationship-types.xml** into DSpace (using CLI tool) to initialize the Entities and Relationships in database.
 - If an Entity (of same type/name) exists, it will be updated with any new relationships
 - If an Entity (of same type/name) *doesn't* exist, it will be created along with its relationships



Remember, Entities are Items!

Just like Items, Entities...

- may use custom metadata
 - e.g. 'person' schema (out of the box)
- may use custom submission forms
 - e.g. 'Person' submission-process in item-submission.xml (out of the box)
- may define a custom UI display
 - UI supports separate templates per entity type, e.g. /src/app/entity-groups/*



Entities support Virtual Metadata

- ★ No duplicated storage of metadata
- ★ “Populate” an entity with metadata from related entities
- ★ Works wherever metadata is used (OAI, REST, etc)
- ★ Example:
 - **isAuthorOfPublication** relationship can be displayed on a Publication as **dc.contributor.author**
 - Value populated via related **Person**’s metadata



virtual-metadata.xml

```
<!-- Define the mapper for each relationship name -->
<bean class="org.dspace.content.virtual.VirtualMetadataPopulator">
  <property name="map">
    <map>
      <entry key="isAuthorOfPublication" value-ref="isAuthorOfPublicationMap"/>
    </map>
  </property>
</bean>

<!-- Define which metadata field the value is mapped into -->
<util:map id="isAuthorOfPublicationMap">
  <entry key="dc.contributor.author" value-ref="publicationAuthor_author"/>
</util:map>
```



virtual-metadata.xml

```
<!-- Value is concatenation of three Person metadata fields. Comma-separate multiple values -->
<bean class="org.dspace.content.virtual.Concatenate" id="publicationAuthor_author">
  <property name="fields">
    <util:list>
      <value>person.familyName</value>
      <value>person.givenName</value>
      <value>organization.legalName</value>
    </util:list>
  </property>
  <property name="separator">
    <value>,</value>
  </property>
</bean>
```

Publication:
Dengue Human Infection Models Supporting Drug Development

No
Thumbnail

Authors

Plain text author
Plain text author 2
Eens, Marcel
Vercauteren, Marcel
Simmons, Cameron

} Regular metadata

virtual metadata {
(from related Persons)

Date

2014-06-15

More Entities at OR2021

- ★ DSpace 7 - Configurable Entities
 - Thurs, 9:00am UTC
 - Lieven Droogmans, Ben Bosman (Atmire)
 - *Recording will be available*



What's next for 7.x?



<https://wiki.lyrasis.org/display/DSPACE/DSpace+Release+7.0+Status>



Staged 7.x Release Plan

- Add missing 6.x features over several, smaller 7.x releases ([prioritized features](#))
 - *Goal: encourage all to upgrade*
- New features, bug fixes, code refactors may also be included in 7.x releases
 - Based on early adopter feedback

Schedule To Be Announced after 7.0



Give v7 a try yourself!

DSpace 7 UI demo

<https://demo7.dspace.org/>

(uses the REST API demo as backend)

DSpace 7 REST API demo:

<https://api7.dspace.org/server/>

Run locally via Docker:

<https://wiki.lyrasis.org/display/DSPACE/Try+out+DSpace+7>

Virtual Coffee Break Time!

DSpace 7 Q&A Public Google Doc

<https://tinyurl.com/or2021-dspace7-qa>

Take a break, grab a snack, refill your drink

We'll see you in 10-15mins!

BACK AT 14:35 UTC





Why a new REST API?

Why a new REST API?

Covers only a subset of DSpace functionality

No search

No submit / workflows

Limited admin operations

Limited write / delete

(4.x was read only)

4.x - 6.x



Not based on current REST best practices or standards

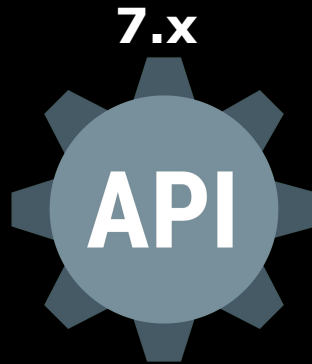
Handcrafted in Jersey,
while most DSpace code uses
Spring technologies



Why a new REST API?

All features **MUST**
be in REST API
(for Angular UI)

Bonus: better third-party
app integration!



Defined **REST Contract**.
HATEOAS, HAL format

Built using Spring technologies
(Spring Boot, MVC, HATEOAS)



REST Maturity level

Our goal!

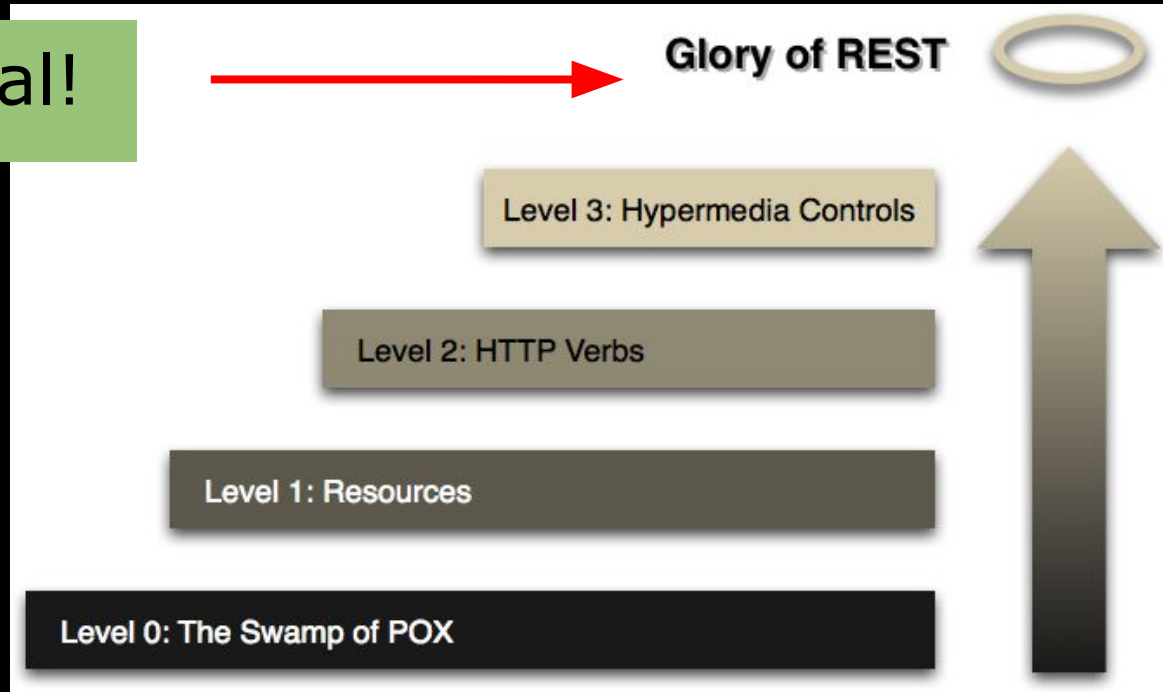


Image from: <https://martinfowler.com/articles/richardsonMaturityModel.html>



Which standards?

HATEOAS = Hypertext As The Engine Of Application State
In each response, include "links" to available next requests.
Results in better decoupling, as API is self-describing.

HAL Format = Hypertext Application Language (JSON or XML)
A standard format for making REST APIs browseable
(think HTML for machines). Open source HAL Browser available.

RESULT: A standards-based, browseable, self-describing REST API

REST Terminology

Stateless (no session)

Specifications

- JSON web tokens ([JWT](#))
- Cross-Origin Resource Sharing ([CORS](#)) Headers
- Cross-Site Request Forgery Prevention ([CSRF Token](#))

HTTP Resources

- URIs reference individual resources or collections (of resources)
- `/items/{uuid}` and `/items`

HTTP methods

GET (*read*), HEAD (*read headers only*)
POST (*create*)
PUT (*replace*), PATCH (*partial update*)
DELETE (*remove*)
OPTIONS (*verify access, e.g. via CORS*)

HTTP return codes

2xx (Success)
3xx (Redirect)
4xx (Client error)
5xx (Server error)

Formats: **JSON**

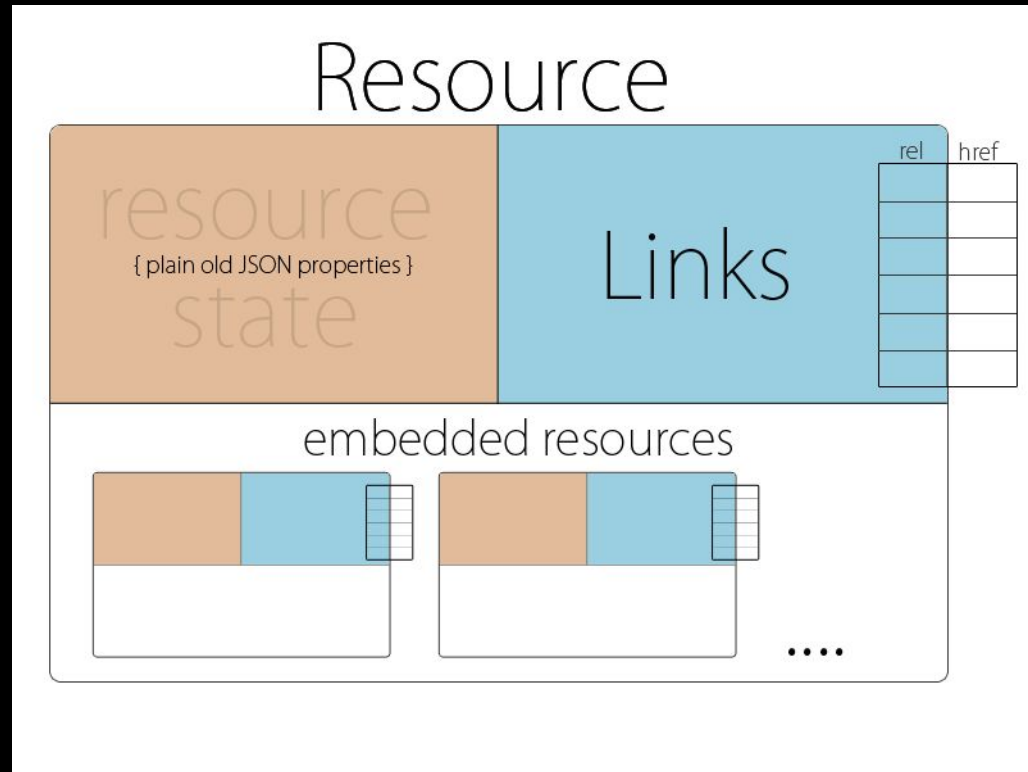


Hypermedia as the Engine of Application State - HATEAOS

HAL Format

Links are expressed in a standard/well-known way in the json response (it is also suitable for xml but DSpace7 will focus only on JSON)

- enable the interactive navigation
- abstract routing (URL can change without break the client)
- support documentation



Interacting with the REST API

- via the command line...

```
curl "https://api7.dspace.org/server/api"
```

- via the integrated HAL Browser

<https://api7.dspace.org/server>

- using Postman

[github:DSpace-Labs/DSpace7RestTutorial](https://github.com/DSpace-Labs/DSpace7RestTutorial)
[postman-config](#) (updated just before OR)



Explorer

/server/api

Custom Request Headers

Properties

```
{
  "dspaceUI": "https://demo7.dspace.org",
  "dspaceName": "DSpace7 Demo provided by 4Science",
  "dspaceServer": "https://api7.dspace.org/server",
  "dspaceVersion": "DSpace 7.0-beta6-SNAPSHOT",
  "type": "root"
}
```

Links

rel	title	name / index	docs	GET	NON-GET
authn					
authorizations					
bitstreamformats					
bitstreams					
browses					
bundles					
claimedtasks					
claimedtasks-search					
collections					
communities					

Inspector

Response Headers

```
200 200

access-control-expose-headers: Authorization, expires, Location, Content-Disposition, WWW-Authenticate, Set-Cookie, X-Requested-With, DSPACE-XSRF-TOKEN
cache-control: no-cache, no-store, max-age=0, must-revalidate
connection: Keep-Alive
content-language: en
content-type: application/hal+json;charset=UTF-8
date: Fri, 04 Jun 2021 15:59:31 GMT
expires: 0
keep-alive: timeout=5, max=100
pragma: no-cache
server: Apache/2.4.29 (Ubuntu)
strict-transport-security: max-age=31536000 ; includeSubDomains, max-age=31536000
transfer-encoding: chunked
vary: Origin,Access-Control-Request-Method,Access-Control-Request-Headers
x-content-type-options: nosniff
x-frame-options: SAMEORIGIN, DENY
x-xss-protection: 1; mode=block
```

Response Body

```
{
  "dspaceUI": "https://demo7.dspace.org",
  "dspaceName": "DSpace7 Demo provided by 4Science",
  "dspaceServer": "https://api7.dspace.org/server",
  "dspaceVersion": "DSpace 7.0-beta6-SNAPSHOT",
  "type": "root",
  "_links": {
    "authn": {
      "href": "https://api7.dspace.org/server/api/authn"
    },
    "authorizations": {
      "href": "https://api7.dspace.org/server/api/authz/authorizations"
    },
    "bitstreamformats": {
      "href": "https://api7.dspace.org/server/api/core/bitstreamformats"
    },
    "bitstreams": {
```

Request + Headers

← → ↻ api7.dspace.org/server/#/server/api

[The HAL Browser](#) [Go To Entry Point](#) [About The HAL Browser](#) [Login](#)

Explorer

Custom Request Headers

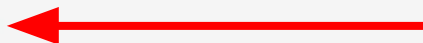


Response Headers

Inspector

Response Headers

200 200



HTTP Status code

```
access-control-expose-headers: Authorization, expires, Location, Content-Disposition, WWW-Authenticate, Set-Cookie, X-Requested-With, DSPACE-XSRF-TOKEN
cache-control: no-cache, no-store, max-age=0, must-revalidate
connection: Keep-Alive
content-language: en
content-type: application/hal+json;charset=UTF-8
date: Fri, 04 Jun 2021 15:59:31 GMT
expires: 0
keep-alive: timeout=5, max=100
pragma: no-cache
server: Apache/2.4.29 (Ubuntu)
strict-transport-security: max-age=31536000 ; includeSubDomains, max-age=31536000
transfer-encoding: chunked
vary: Origin,Access-Control-Request-Method,Access-Control-Request-Headers
x-content-type-options: nosniff
x-frame-options: SAMEORIGIN, DENY
x-xss-protection: 1; mode=block
```



Response Body

Properties

```
{
  "dspaceUI": "https://demo7.dspace.org",
  "dspaceName": "DSpace7 Demo provided by 4Science",
  "dspaceServer": "https://api7.dspace.org/server",
  "dspaceVersion": "DSpace 7.0-beta6-SNAPSHOT",
  "type": "root"
}
```

Links

rel	title	name / index	docs	GET	NON-GET
authn				→	!
authorizations				→	!
bitstreamformats				→	!
bitstreams				→	!
browses				→	!
bundles				→	!
claimedtasks				→	!
claimedtasks-search				→	!
collections				→	!
communities				→	!

RAW JSON Response

The HAL Browser will parse the key elements:

_links




















_embedded

Everything else



Links: All endpoints are available from the Entry Point

Links

rel	title	name / index	docs	GET	NON-GET
authn					
authorities					
bitstreamformats					
bitstreams					
browses					
claimedtasks					
collections					
communities					
discover					
dso					



Pagination

<https://github.com/DSpace/RestContract#pagination>

Resource Collections are always paginated

→ pagination information are returned in a consistent way across all the endpoints

→ pagination parameters are expected in the same form in all the endpoints

→ common JAVA API to deal with page jump and offset



Communities Endpoint Response

The HAL Browser Go To Entry Point About The HAL Browser Login

Explorer

←

Custom Request Headers

Properties

```
{
  "page": {
    "size": 20,
    "totalElements": 48,
    "totalPages": 3,
    "number": 0
  }
}
```

←










Communities
endpoint

Pagination
properties



Links - A generic approach to paginated results

Links

rel	title	name / index	docs	GET	NON-GET
first					
self					
next					
last					
search					



Projection

<https://github.com/DSpace/RestContract#pagination>

- Allow the client to decide which details are included in the response
- Save HTTP round-trip
- Respect the security

Specified via the ***projection*** param

default: no embedds

full: include everything up to a default depth (2)

level: allow the client to set the depth via the *embedLevelDepth* parameter



Embedded Community Properties

Embedded Resources

[communities\[0\]](#)

[communities\[1\]](#)

[communities\[2\]](#)

Properties

```
{
  "id": "56a74672-fbb5-4911-9f16-b340a67ab587",
  "uuid": "56a74672-fbb5-4911-9f16-b340a67ab587",
  "name": "Botany department",
  "handle": "10673/645",
  "metadata": {
    "dc.description": [
      {
        "value": "Botany...a study of plants",
        "language": null,
        "authority": null,
        "confidence": -1,
        "place": 0
      }
    ],
    "dc.description.abstract": [
      {
        "value": "Botanical garden",
        "language": null,
        "authority": null,
        "confidence": -1,
        "place": 0
      }
    ]
  }
}
```



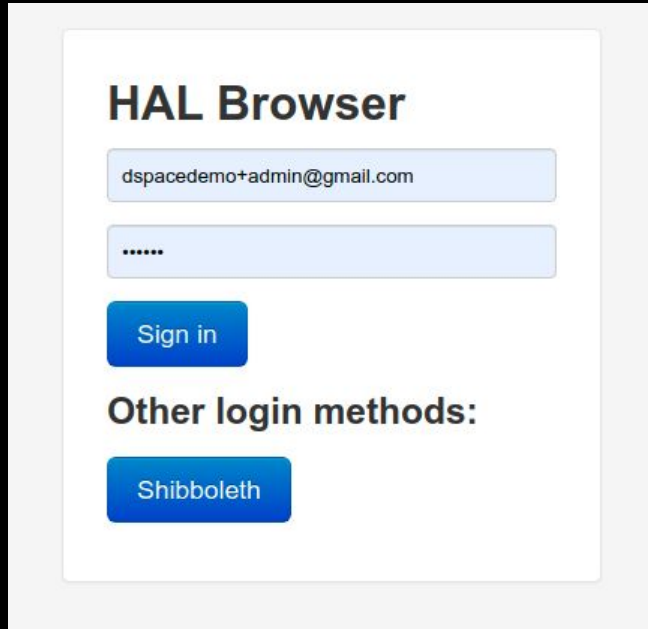
Embedded Community Links

Links

rel	title	name / index	docs	GET	NON-GET
collections					
logo					
subcommunities					
self					



REST Authentication



The screenshot shows a login form titled "HAL Browser". It contains two input fields: the first contains the email address "dspaceadmin+admin@gmail.com" and the second contains masked characters ".....". Below the fields is a blue "Sign in" button. Underneath, the text "Other login methods:" is followed by a blue button labeled "Shibboleth".

- The existing DSpace authentication methods are supported
- The REST API returns an authentication token
- This token is passed to subsequent REST requests as a header



JWT Token

A JWT Token contains user data “signed” by the Server so that they cannot be modified

<https://jwt.io/>



ALGORITHM HS256

Encoded PASTE A TOKEN HERE

```
eyJhbGciOiJIUzI1NiJ9.eyJlaWQiOiIzZmU2NDdiNi04YTUyLTRlY2ItYThjMS03ZWJhYmIwOTliZGEiLCJzcyI6W10sImV4cCI6MTU1OTkxMzgxM30uajUM3LmrmijAs5thAH-k48ICZ5wmY6UCiLbo2-K4g8NA
```

Decoded EDIT THE PAYLOAD AND SECRET

HEADER: ALGORITHM & TOKEN TYPE

```
{  
  "alg": "HS256"  
}
```

PAYLOAD: DATA

```
{  
  "eid": "335647b6-8a52-4ecb-a8c1-7ebabb199bda",  
  "sg": [],  
  "exp": 1559913813  
}
```

VERIFY SIGNATURE

```
HMACSHA256(  
  base64UrlEncode(header) + "." +  
  base64UrlEncode(payload),  
  your-256-bit-secret  
)  secret base64 encoded
```

eid → EPerson uuid

sg → Special group

exp → Expiration time



CSRF / XSRF

Authentication information in DSpace are sent over Header **but** for some Authentication provider such as Shibboleth a temporary cookie is also required, this open to XSRF attack

DSpace implements the Double Submit Cookie protection technique (as we are stateless)

<https://owasp.org/www-community/attacks/csrf>



How to deal with PATCH

[JSON Patch specification RFC6902](#)

Express change to a JSON Object in JSON Array of Operations executed in an atomic transaction

Each successful Patch operation will return a HTTP 200 CODE with the new state of the patched resource as body similar to what is returned for a GET request.



How to deal with PATCH

ADD / REMOVE / REPLACE / MOVE

```
[  
  { "op": "test", "path": "/a/b/c", "value": "foo" },  
  { "op": "remove", "path": "/a/b/c" },  
  { "op": "add", "path": "/a/b/c", "value": [ "foo", "bar" ] },  
  { "op": "replace", "path": "/a/b/c", "value": 42 },  
  { "op": "move", "from": "/a/b/c", "path": "/a/b/d" },  
  { "op": "copy", "from": "/a/b/d", "path": "/a/b/e" }  
]
```

TEST & COPY (no plan to support them)



```
{
  id: 1,
  type: "workspaceitem",
  sections:
  {
    "traditionalpageone": {
      "dc.title": [
        {
          "value": "Sample Submission Item",
          "language": "en_US",
          "authority": null,
          "confidence": -1,
          "place": 0
        }
      ],
      "dc.contributor.author": [
        {
          "value": "Bollini, Andrea",
          "language": null,
          "authority": "rp00001",
          "confidence": 600,
          "place": 0
        }
      ]
    }
  },
  ...
},
```



```
{
  id: 1,
  type: "workspaceitem",
  sections:
  {
    "traditionalpageone": {
      "dc.title": [
        {
          "value": "Sample Submission Item",
          "language": "en_US",
          "authority": null,
          "confidence": -1,
          "place": 0
        }
      ],
      "dc.contributor.author": [
        {
          "value": "Bollini, Andrea",
          "language": null,
          "authority": "rp00001",
          "confidence": 600,
          "place": 0
        },
        {
          "value": "Another, Author",
          "language": null,
          "authority": null,
          "confidence": -1,
          "place": 1
        }
      ]
    }
  }
}
```

PATCH (More examples: <https://goo.gl/G84oRQ>)

```
{
  "op": "add",
  "path": "/sections/traditionalpageone/dc.contributor.author/-",
  "value": {"value": "Another, Author"}
}
```

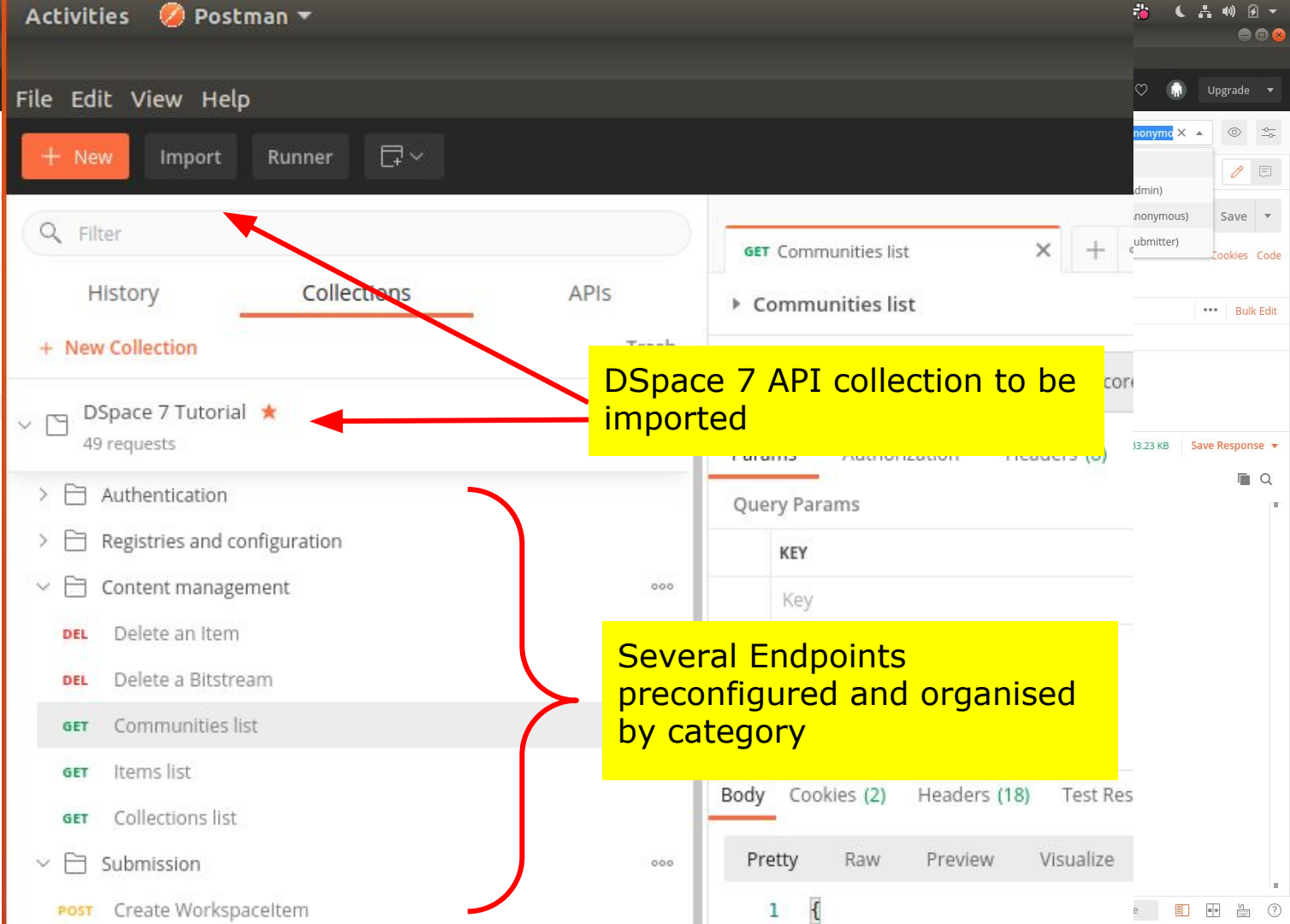
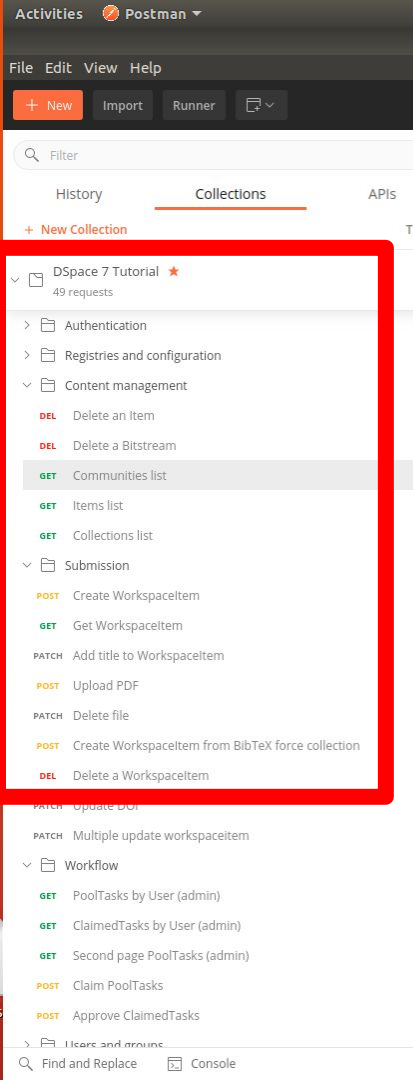
Postman - A development client for REST API's

<https://www.getpostman.com/downloads/>

DSpace Postman Configuration:

<https://github.com/DSpace-Labs/DSpace7RestTutorial/tree/master/postman-config>





Filter History Collections APIs

+ New Collection

DSpace 7 Tutorial 49 requests

GET Communities list

Communities list

GET {{dspaceurl}}/api/core/communities

Params Authorization Headers (8) Body Pre-request Script Tests Settings

DSpace 7 Demo (Anonymous) No Environment DSpace 7 Demo (Admin) DSpace 7 Demo (Anonymous) DSpace 7 Demo (Submitter) Save Cookies Code

GET Communities list

Communities list

GET {{dspaceurl}}/api/core/communities

Params Authorization Headers (8) Body Pre-request Script Tests Settings

HTTP Method, Endpoint

Parameters, authentication, headers, body...

Query Params

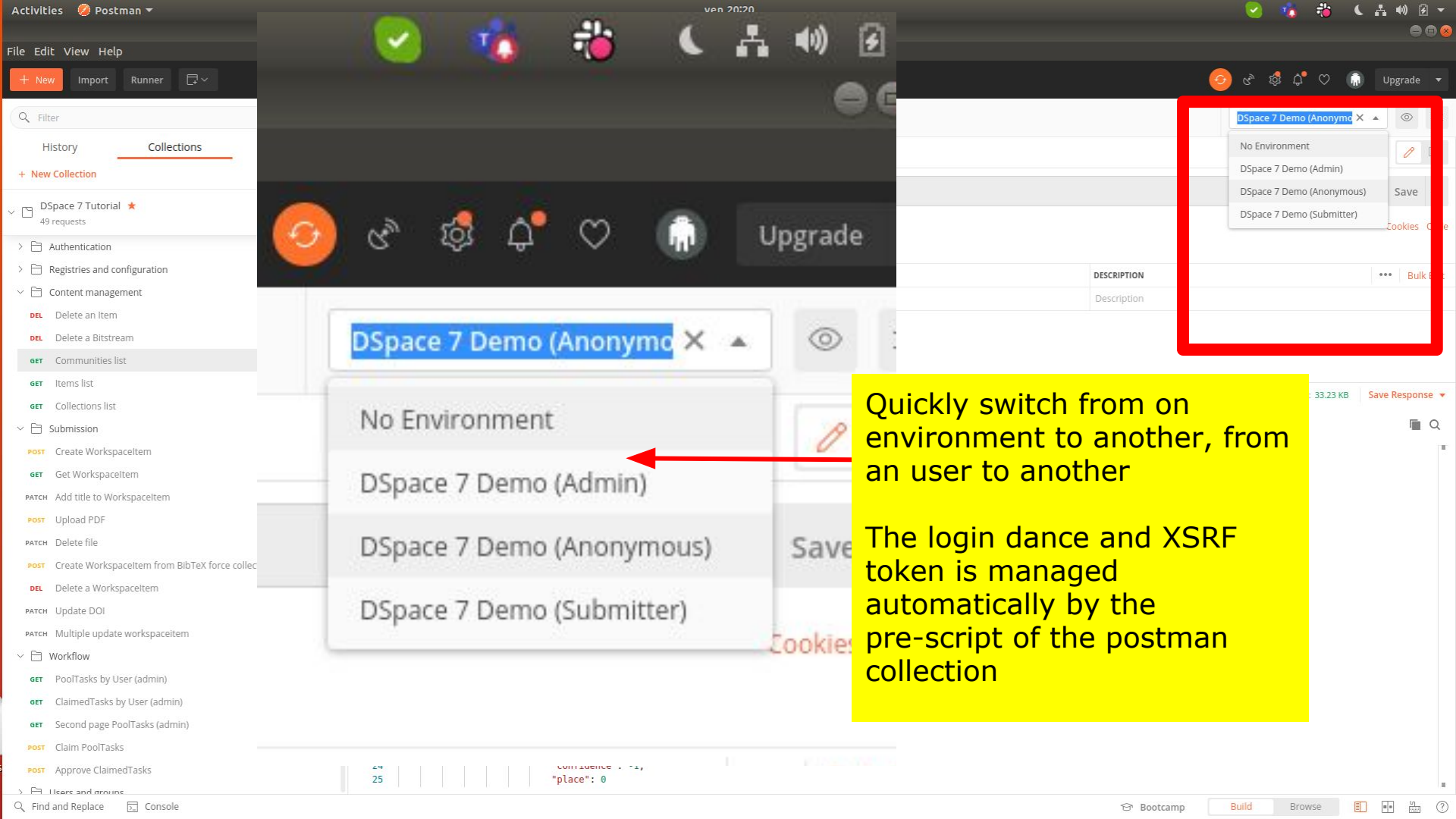
KEY	VALUE
Key	Value

```
44 language: null,  
23 "authority": null,  
24 "confidence": -1,  
25 "place": 0
```

POST Claim PoolTasks
POST Approve ClaimedTasks

Find and Replace Console

Bootcamp Build Browse



Quickly switch from on environment to another, from an user to another

The login dance and XSRF token is managed automatically by the pre-script of the postman collection

The REST contract

- <https://github.com/DSPACE/RestContract>
 - Aims to be the source of truth for all the implemented endpoints
 - Use GitHub pull requests to suggest changes



REST API next goals: inline documentation & ALPS

/dSPACE7-rest/api Go!

Custom Request Headers

Properties

Links

rel	title	name / index	docs	GET	NON-GET
c:bitstreamformats					
c:bitstreams					
dbrowses					
c:collections					
c:communities					
p:persons					
pgroups					
c:items					
c:metadatasfields					
c:metadataschemas					
c:sites					

Item list REST endpoint

The item endpoint lists all the items within the repository with pagination.

Response structure

Path	Type	Description
_embedded	Object	The items that are in the repository, displayed with pagination
_links	Object	The links that are displayed on this page, mostly with regards to pagination if applicable
page	Object	A page object that contains information about the amount of items shown and in total

Links

Relation	Description
first	Link to the first page of items
self	Link to this page
next	Link to the next page
last	Link to the last page

Create/Update

Person

First name

Last name

Action:

POST

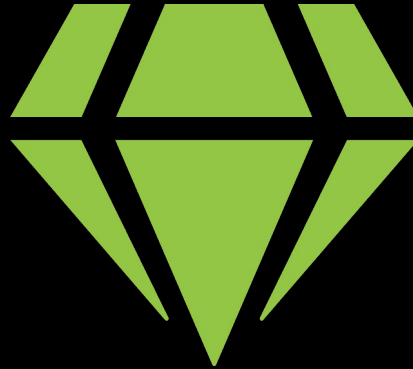
http://localhost:8080/persons

Make Request

PR#1915



How to Brand the DSpace 7 UI





**What is Angular?
How does it work?**

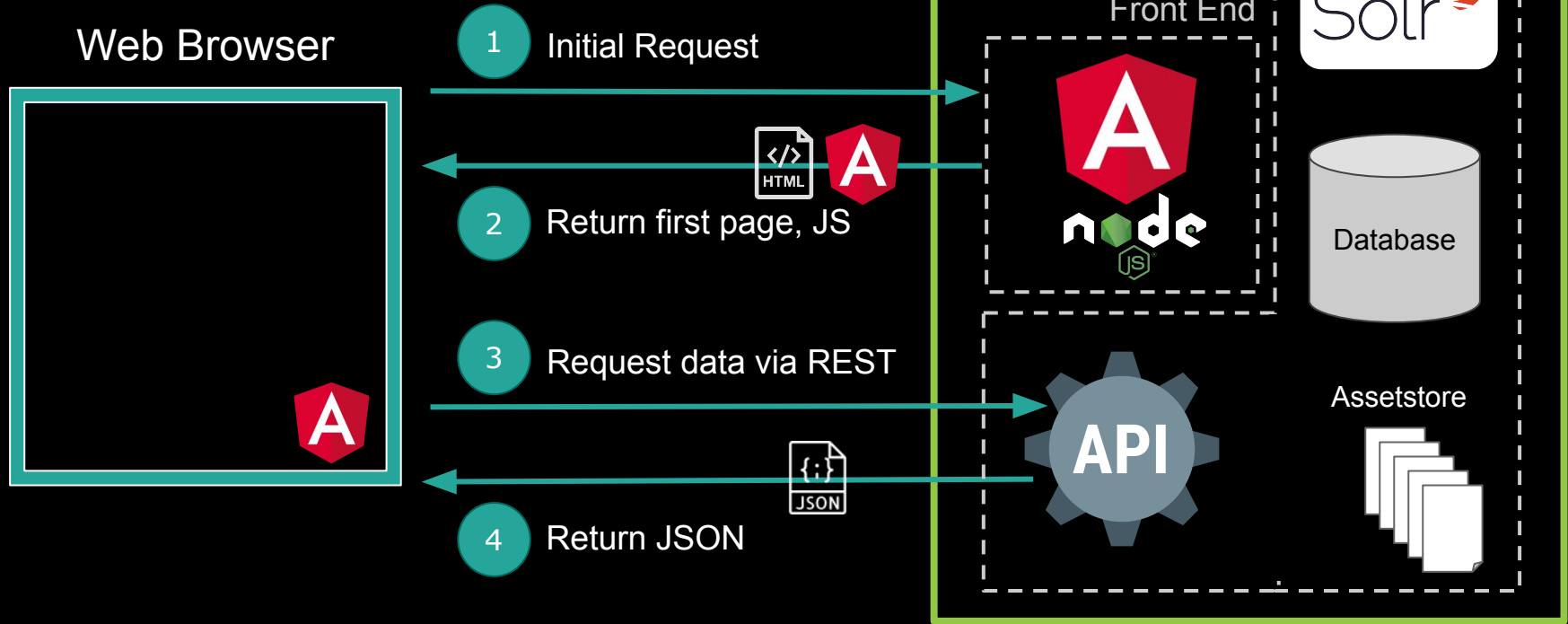
What is Angular?

- Framework for building dynamic applications in the browser
- Data comes from the server (REST API)
- HTML is generated via Javascript (Typescript)

<https://angular.io>



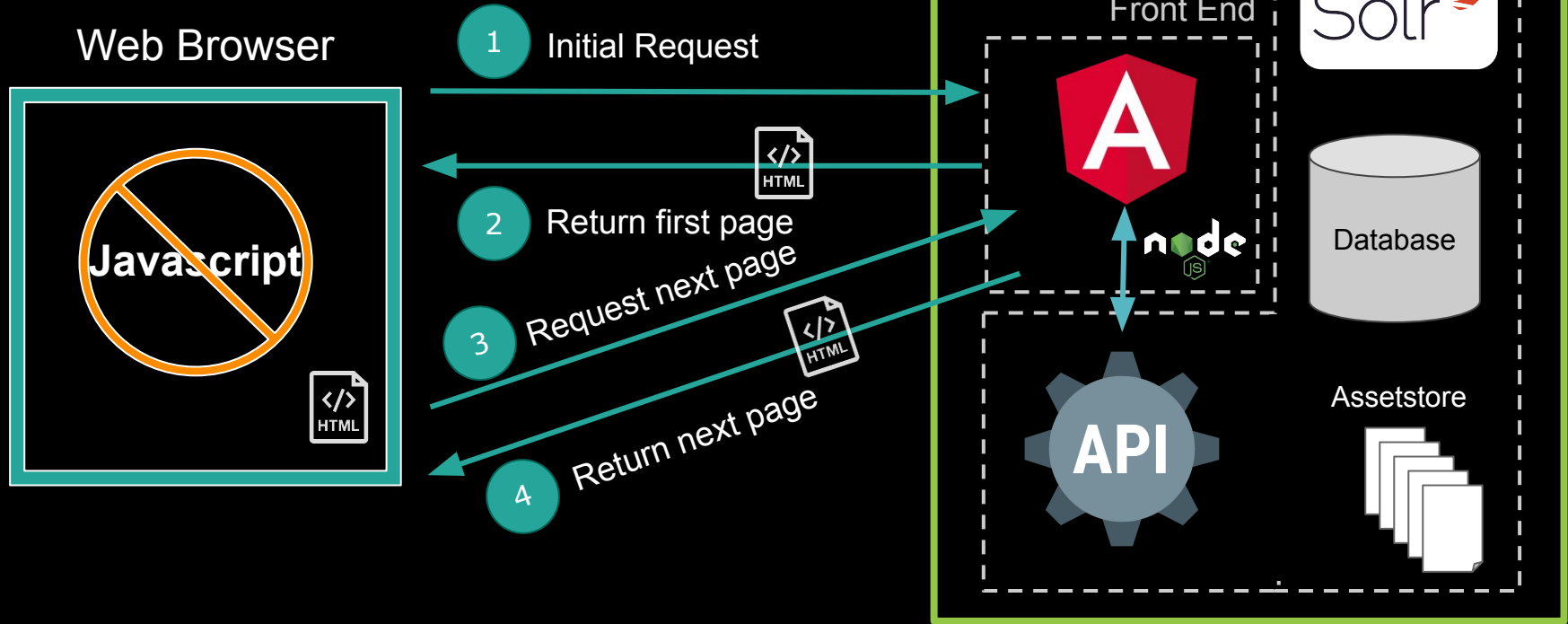
DSPACE + Angular Architecture



HTML logo: <https://freeiconshop.com/icon/html-icon-outline/>

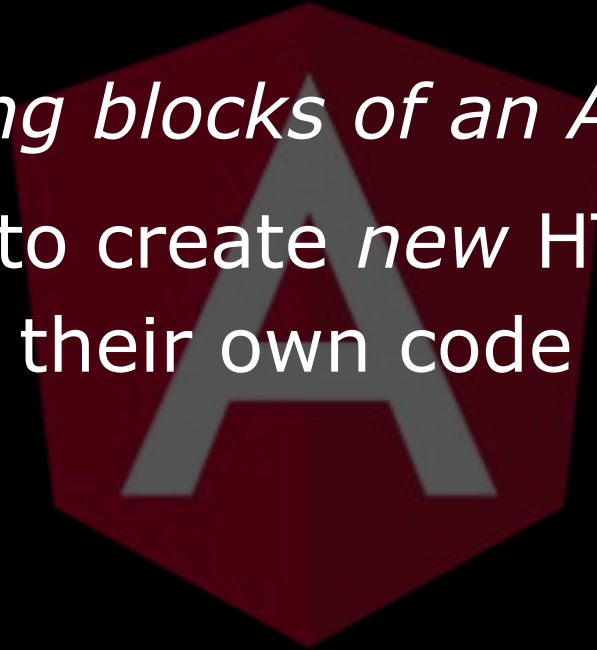
JSON logo: http://www.flaticon.com/free-icon/json-file_136443

DSPACE + Angular Architecture




Angular: Components



- *The building blocks of an Angular app*
- Allow you to create *new* HTML tags that come with their own code and styling



Everything's a Component

- `<ds-app>`
- `<ds-header>`
- `<ds-breadcrumbs>`
- `<ds-item-page>`
- `<ds-thumbnail>`
- `<ds-item-page-field>`

 Communities & Collections All of DSpace ▾ Statistics

  Log In ▾

Home • Publications • Articles

- Modeling the impact on virus transmission of Wolbachia-mediated blocking of dengue virus infection of *Aedes aegypti*

Modeling the impact on virus transmission of Wolbachia-mediated blocking of dengue virus infection of *Aedes aegypti*

Donor	log10 titer	Abdomen		Salivary glands	
		wMelPop	WT	wMelPop	WT
DENV1	5.5	1216	1216	1216	1216
	6.2	1216	1216	1216	1216
	6.5	2029	1216	602	1216
	6.8	4272	2432	608	2432
	7.1	8022	18738	113	1216
	7.4	14177	36881	615	2432
	7.7	26155	84841	608	3216
	8.0	48110	169682	608	3216
	8.3	92120	339364	608	3216
	8.6	176240	678728	608	3216
DENV2	6.1	712	1675	712	1675
	6.4	1424	3350	1424	3350
	6.7	2848	6700	2848	6700
	7.0	5696	13400	5696	13400
	7.3	11392	26800	11392	26800
	7.6	22784	53600	11392	26800
	7.9	45568	107200	11392	26800
	8.2	91136	214400	11392	26800
	8.5	182272	428800	11392	26800
	8.8	364544	857600	11392	26800
DENV3	6.6	1018	1018	1018	1018
	7.1	1018	1018	1018	1018
	7.6	1018	1018	1018	1018
	8.1	1018	1018	1018	1018
	8.6	1018	1018	1018	1018
	9.1	1018	1018	1018	1018
	9.6	1018	1018	1018	1018
	10.1	1018	1018	1018	1018
	10.6	1018	1018	1018	1018
	11.1	1018	1018	1018	1018
DENV4	6.5	3021	324	3021	324
	6.5	3021	324	3021	324

Authors


Simmons, Cameron

Abstract

Dengue is the most common arboviral infection of humans and is a public health burden in more than 100 countries. *Aedes aegypti* mosquitoes stably infected with strains of the intracellular bacterium *Wolbachia* are resistant to dengue virus (DENV) infection and are being tested in field trials. To mimic field conditions, we experimentally assessed the vector competence of *A. aegypti* carrying the *Wolbachia* strains wMel and wMelPop after challenge with viremic blood from dengue patients. We found that wMelPop conferred strong resistance to DENV infection of mosquito abdomen tissue and largely prevented disseminated infection. wMel conferred less resistance to infection of mosquito abdomen tissue, but it did reduce the prevalence of mosquitoes with infectious saliva. *A.*

Date

2015-03-18



Angular: Components

- Each component has
 - a `ts` file that contains the logic.
e.g. `header.component.ts`
 - an `html` file that contains the markup.
e.g. `header.component.html`
 - an `scss` file that contains the style.
e.g. `header.component.scss`



Angular: Components

```
@Component({  
  selector: 'ds-header',  
  styleUrls: ['./header.component.scss'],  
  templateUrl: './header.component.html'  
})  
export class HeaderComponent {}
```



Sass

- The DSpace UI is built using **Bootstrap**, a framework with utilities and components for building websites
- Bootstrap makes use of **Sass**: a CSS preprocessor
- Sass adds the ability to nest css rules, and to have variables and functions



Sass variables

- Bootstrap uses these variables to configure everything about its components: colors, fonts, spacing, etc.
- Downside: Sass variables are resolved at build time. You can't change their value on the fly



CSS variables

- Native CSS now has support for variables too
- They *can* be changed on the fly
- We use them to support themes that can be swapped dynamically
- All of Bootstrap's sass variables are mapped to native css ones



Variable mapping

Sass

=>

CSS

\$primary

=>

var(--bs-primary);

\$success

=>

var(--bs-success);

\$spacer

=>

var(--bs-spacer);

\$link-color

=>

var(--bs-link-color);



CSS variables

- Both still work everywhere
- But Sass variables won't update when you switch themes at runtime
- If you only need a single theme for the entire repository, you can stick to Sass



Custom theme folder

- The folder `src/themes/custom` is a template theme to start from
- It contains boilerplate code for all themeable components



Custom theme folder

- It doesn't change the look of anything yet
- It refers back to the HTML and SCSS of the base component
- Everything is plain bootstrap with a few tweaks for accessibility



Custom theme folder

```
@Component({  
  selector: 'ds-home-page',  
  // styleUrls: ['./home-page.component.scss'],  
  styleUrls: ['/app/+home-page/home-page.component.scss'],  
  // templateUrl: './home-page.component.html'  
  templateUrl: '/app/+home-page/home-page.component.html'  
})  
  
export class HomePageComponent extends BaseComponent {}
```



DSPACE theme folder

- The folder `src/themes/dspace` contains an example theme
- It started from the custom folder
- Changes some colors, fonts, the news and the header
- If you prefer it, you can start from it, instead of the custom folder.



Create a new theme

- Copy the folder `src/themes/custom` to `src/themes/or-workshop`
- In `angular.json` add the theme to the `styles` list
- In `environment.common.ts` add the theme to the `themes` list
- Restart the server



Logo

- copy the logo to the `assets/images` folder in your theme folder
- open `app/header/header.component.ts` in your theme folder
- swap the `templateUrl` properties



Logo

```
@Component({  
  selector: 'ds-header',  
  // styleUrls: ['header.component.scss'],  
  styleUrls: ['../../../../app/header/header.component.scss'],  
  templateUrl: 'header.component.html',  
  // templateUrl: '../../../../app/header/header.component.html',  
})
```

```
export class HeaderComponent extends BaseComponent
```

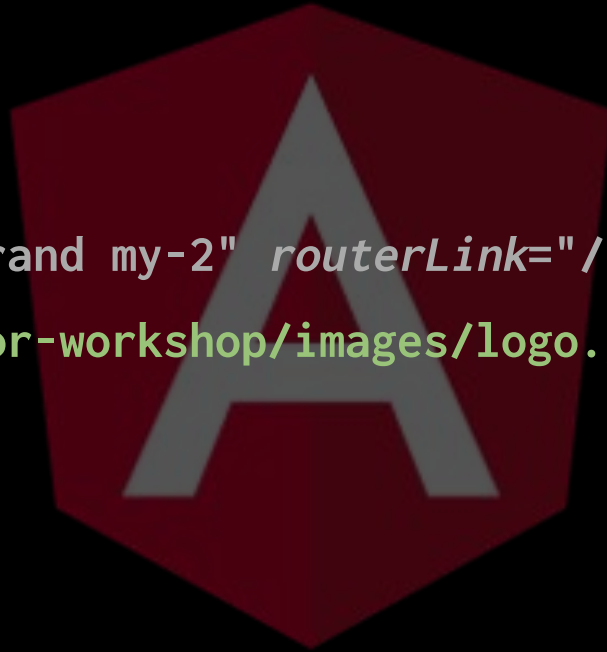


Logo

- Open the base `app/header/header.component.html` file
- Copy the contents to your theme's version
- Replace the logo url with your own
- Theme assets are deployed in `assets/${theme-name}`



Logo



```
<a class="navbar-brand my-2" routerLink="/home">  
    
</a>
```



Colors

- Override Bootstrap variables in the file `styles/_theme_sass_variable_overrides.scss` in your theme folder
- It contains a few frequently used variables as comments
- Look for other variables you can change in `node_modules/bootstrap/scss/_variables.scss`



Colors

- Let's change these:

`$blue: #14213D;`

`$cyan: #1B95E0;`

`$yellow: #FCA311;`

`primary: $yellow,`



Font

- Import a new font
- Modify `$font-family-sans-serif` to use it.

```
@import
```

```
url('https://fonts.googleapis.com/css?family=Source+Sans+Pro');
```

```
$font-family-sans-serif: 'Source Sans Pro', -apple-system, ...
```



Footer

- Open `app/footer/footer.component.ts` in your theme folder
- swap the `templateUrl` and `styleUrls` properties
- Open the base `app/footer/footer.component.html` file
- Copy the contents to your theme's version



Footer

- Open `footer.component.scss` in your theme folder
- Set the `color` to `$light` and the `background` to `$dark`



Footer

```
footer {  
  color: $light;  
  background: $dark;  
}
```



Footer

- In the html file, add margins to the footer-info links using Bootstrap classes:

```
<a class="text-white mr-2" routerLink="info/privacy">
```

- `mr-2` is short for `margin-right 2`
- See the Bootstrap docs for more of these:
<https://getbootstrap.com/docs>



Footer

- Enable the top footer in `footer.component.ts`

```
export class FooterComponent extends BaseComponent {  
  showTopFooter = true;  
}
```



Footer

- In the scss file, give both footers different colors

```
.top-footer {  
  background: $dark;  
}  
  
.bottom-footer {  
  background: $black;  
}
```



Home page news

- Open `home-news.component.ts` in `app/+home-page/home-news` inside your theme folder
- swap the `templateUrl` and `styleUrls` properties
- Add a div with class banner to the template:

```
<div class="banner"></div>
```



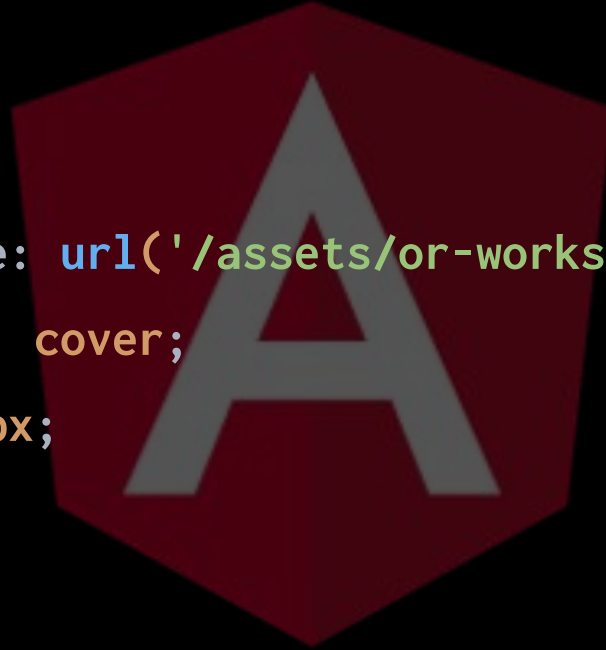
Home page news

- copy the banner to the `assets/images` folder in your theme folder
- In `home-news.component.scss`, add the image and style it



Home page news

```
.banner {  
  background-image: url('/assets/or-workshop/images/banner.jpg');  
  background-size: cover;  
  min-height: 350px;  
}
```



Home page news

- Compensate for the padding of `<main>` and add margin below

```
margin-top: calc(-1 * var(--ds-content-spacing));  
margin-bottom: var(--ds-content-spacing);
```



Home page news

- Add some text inside the banner div

```
<div class="container">  
  <div class="overlay text-light">  
    <h1>The Open Repository</h1>  
    <p>Lorem ipsum dolor ... hendrerit lectus.</p>  
  </div>  
</div>
```



Home page news

- Move the text to the bottom using bootstrap utility classes

```
<div class="banner d-flex">
```

```
  <div class="container mt-auto mb-4">
```



Home page news

- Give the overlay a background and rounded corners

```
.overlay {  
  background: rgba(0,0,0,0.5);  
  border-radius: $border-radius;  
}
```



Home page news

- Give it some padding and get rid of the default `<p>` tag margin

```
<div class="overlay text-light p-3">
```

```
  <h1>The Open Repository</h1>
```

```
  <p class="m-0">Lorem ipsum ... hendrerit lectus.</p>
```

```
</div>
```



Get the code

- Start:

<https://tinyurl.com/or2021-dspace7-ui-start>

- End:

<https://tinyurl.com/or2021-dspace7-ui-end>



Wrap-Up



How can I contribute?

Join [DSpace 7 Working Group](#) (all welcome)

- Next meeting: Thurs, June 17 at 14UTC
- Help review / test Pull Requests!

Join [DSpace Community Advisory Team \(DCAT\)](#)

- Repository manager interest group

Join [DSpace Marketing Interest Group](#)

- Marketing both DSpace 7 and DSpace



DSpace 7.0 Core Contributors / Funders



Cornell University



DALHOUSIE
UNIVERSITY

DUKE UNIVERSITY
LIBRARIES

ETH zürich

Fraunhofer
Gesellschaft



Imperial College
London



THE OHIO STATE
UNIVERSITY

1640
THE NATIONAL
LIBRARY
OF FINLAND



TUHH
Technische Universität Hamburg



HELMUT SCHMIDT
UNIVERSITÄT
Universität der Bundeswehr Hamburg



The Library
Code GmbH



UNIVERSITY OF MINNESOTA

Texas Digital Library



THE UNIVERSITY
of EDINBURGH

KU LIBRARIES
The University of Kansas

THE UNIVERSITY
OF ARIZONA

Zürcher Hochschule
für Angewandte Wissenschaften

zhaw



University of Missouri



UNIVERSITY OF
TORONTO



THE WORLD BANK

More DSpace 7 at OR2021

- DSpace 7.0 : Coming to a DSpace near you
(Tues 8th, 16:00 UTC)
- DSpace 7.0 : Enhanced Submission & Workflow
(Thurs 10th, 9:00 UTC)
- DSpace 7.0 : Configurable Entities
(Thurs 10th, 9:00 UTC)



Questions?

Workshop Slides

<https://tinyurl.com/or2021-dspace7-workshop>

DSpace 7 Q&A Public Google Doc

<https://tinyurl.com/or2021-dspace7-qa>

Also find DSpace 7 team at OR2021
“Networking Sessions” in Wonder.me



DSPACE