Release Notes

Upgrade from any past version of DSpace!

Installing DSpace provides an overview of the DSpace 7 installation process and all prerequisite software. You should review this before attempting an upgrade, in order to ensure you are running the required versions of Java, Node, etc.

Upgrading DSpace provides a guide for upgrading from any old version of DSpace to v7. As in the past, your data migrates automatically, no matter which older version you are running. However, as the old XMLUI and JSPUI user interfaces are no longer supported, you must switch to using the new User Interface.

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7.2.1 Release Notes (Backend Only)

All DSpace 7.0, 7.1 or 7.2 sites should ensure the backend is upgraded to 7.2.1 (or later) or manually patched

DSpace 7.0, 7.1 and 7.2 all used a bundled version of the Apache Spring Libraries which are vulnerable to RCE (remote command execution). The CVE-2022-22965 vulnerability is described in more detail at https://spring.io/blog/2022/03/31/spring-framework-rce-early-announcement

If you cannot upgrade immediately, other workarounds / alternative fixes are documented in the patch PR at https://github.com/DSpace/DSpace/pull/8231

DSpace 7.2.1 only contains an update to the Apache Spring Libraries to ensure DSpace is not vulnerable to CVE-2022-22965. As such, it was only a Backend / REST API release. The DSpace 7.2 Frontend (UI) can be used with the DSpace 7.2.1 Backend.

To ensure your 7.x site is completely secure, perform the following:

1. Upgrade your DSpace backend (REST API) to version 7.2.1 immediately. This backend is compatible with the DSpace Frontend version 7.2 (only)
   a. If you are unable to perform this upgrade, you may patch your 7.0 or 7.1 site by applying the changes in PR #8231. Instructions can be found in that PR.
2. Optionally, upgrade your Apache Tomcat to version 9.0.62 (which also has extra guards against this vulnerability).
3. Make sure to restart Tomcat after updates have been applied.

At this time, DSpace 6.x and below appear unaffected by CVE-2022-22965, as they all used Java/JDK 8 (or below) which is documented as not impacted. The vulnerability is only possible when using Java/JDK 9 or above.

7.2 Release Notes
DSpace 7.2 is available now!

To try out DSpace 7.2 immediately, see Try out DSpace 7. This includes instructions for a quick-install via Docker, as well as information on our sandbox/demo site for DSpace 7.

To upgrade to DSpace 7.2 from 7.x or any prior version, see Upgrading DSpace.

To install DSpace 7.2 for the first time, see Installing DSpace.

- Download DSpace 7.2 Backend: https://github.com/DSpace/DSpace/releases/tag/dspace-7.2
- Download DSpace 7.2 User Interface: https://github.com/DSpace/dspace-angular/releases/tag/dspace-7.2

DSpace 7.2 provides new features & bug fixes to the 7.x platform.

New and improved features include:

- **Runtime Configuration for the User Interface** (Donated by Harvard University, developed by William Welling): In DSpace 7.0 and 7.1, changes to your User Interface Configuration required rebuilding the entire UI which could take 10+ minutes. As of 7.2, all User Interface configurations are loaded at runtime. So, to change configurations just requires a quick restart of the User Interface (which usually takes only a few seconds). The configuration format also changed from Typescript to YAML to support this feature. A `yarn env:yaml` migration script is provided to migrate the old format to the new one. See User Interface Configuration for more details.

- **Add Item Embargoes / Restrictions in the Submission User Interface**: A new, optional "itemAccessConditions" step exists in the Submission configuration. Enabling it adds a section which allows you to select access restrictions, embargoes or leases. It also allows you to select whether the Item is discoverable via search/browse. See Submission User Interface and Embargo documentation for details.

- **Feedback Form**: A feedback form is now linked in the footer of every page, as long as a "feedback.recipient" is specified in your local.cfg. This feature allows users to contact the configured "feedback.recipient" from any page in the site.

- **OpenID Connect (OIDC) Authentication Plugin** (Ported from the DSpace-CRIS project by Hardy Pottinger of California Digital Library, with support from 4Science): DSpace now supports single sign on using OpenID Connect (OIDC), which allows it to support authentication through providers such as Google, Microsoft, Amazon, etc. For more information on setting this up, see the Authentication Plugins page.

- **IIIF Enhancements** (Donated by Michael Spalti of Willamette University): Includes support for adding IIIF metadata using Importing and Exporting Items via Simple Archive Format, editing IIIF bitstream metadata from the User Interface (when editing an existing Bitstream), and a new "dspace iiif-canvas-dimensions" CLI tool for auto-populating IIIF canvas dimensions in bulk.

- **Running "filter-media" from Processes User Interface**. Administrators can now run the "filter-media" script from the Admin UI ("Processes" menu), in order to immediately update thumbnails, full text indexing, etc. See Mediafilters for Transforming DSpace Content for more details about this script.

- **Improved support for custom "Browse By" configurations**. User Interface "Browse by" options are now retrieved dynamically from the REST API, based on the backend's configured browse by indexes (see "webui.browse.index." options documented in the Configuration Reference)

- **Backend has added support for JDK 17**. The DSpace backend now supports either JDK 11 or JDK 17.

- **Frontend has been upgraded to Angular 11**.

- **Solr now uses a connection pool by default** (Donated by Mark H. Wood of IUPUI). See Configuration Reference for details of new "solr.client." ** configs in dspace.cfg.

Major bug fixes include:

- **User interface would load indefinitely if the REST API was unavailable**. Now, an error page is displayed to let you know the REST API is unresponsive.

- **User Interface deployment required the "node_modules" folder to exist, making it more difficult to containerize (e.g. Docker)**. Now, the UI can be deployed via only the "dist" folder. See https://github.com/DSpace/DSpace-angular/issues/1410 (Donated by Harvard University, developed by William Welling)

- **Searches with invalid syntax or special characters would load indefinitely**. Now an error is displayed if the syntax is invalid in some way.

- **On Item page, very long metadata fields or file names would break the page layout**

- **When an Item had an invalid or empty "dspace.entity.type" metadata field, it was unable to be deleted**.

- **On Submission page, if you drag & drop a file to start a submission, the Collection selection window sometimes did not load properly**.

- **On Submission page, sometimes the "Deposit" button would not enable even when all required fields are filled out. "Deposit" button is now always enabled, but it will block submission if required fields are missing**.

- **On Submission page, fixed several bugs with editing / setting embargoes or access restrictions on uploaded files**.

- **Statistics were always accessible publicly, even if restricted to Administrators. Statistics now are only accessible to Admins when usage-statistics.authorization.admin.usage is set to true in local.cfg**

- **Administrators were not able to reset passwords of other users**.

- **On Processes page, scripts could not be run without parameters. Additionally, fixed display of dates so they always appear as UTC time**

- **When both Shibboleth and DSpace password authentication were enabled, users were able to change their password in DSpace in order to bypass Shibboleth.**

- **On backend, improved indexing performance. (Donated by 4Science)**

- **On backend, improved file download performance to avoid connection leaks when S3 is used as backend storage.**

- **Numerous other minor bug fixes or accessibility improvements. See the 7.2 milestone for frontend and backend for a list of all changes applied in 7.2.**

New/Updated Language support:

- **Scottish Gaelic (Gàidhlig)** user interface support added (Donated by Donald I Macdonald and Stòrlann Nàiseanta na Gàidhlig)

- **German (Deutsch)** user interface support had a syntax error which caused it not to work properly

7.2 Acknowledgments

A total of 28 unique individuals contributed to 7.2, with major institutional contributions coming from 4Science and Atmire.
Frontend / User Interface Acknowledgments

The following 15 individuals have contributed directly to the new DSpace (Angular) User Interface in this release (ordered by number of GitHub commits): Giuseppe Digilio (atarix83), William Welling (wwelling), Tim Donohue (tdonohue), Davide Negretti (davidenegretti-4science), Michael Spalti (mspalti), Rezart Vata (rezartatis), Bruno Roemers (bruno-atmire), Lotte Hofstede (LotteHofstede), Art Lowel (artlowel), Yury Bondarenko (ytbnd), Corrado Lombardi (corrad82-4s), Kristof De Langhe (Atmire-Kristof), Hardy Pottinger (hardyoyo), Donald I Macdonald (donaldjm), Santiago Tettamanti (santit96)

The above contributor lists were determined based on contributions to the “dspace-angular” project in GitHub between 7.1 (after Oct 28, 2021) and 7.2: https://github.com/DSpace/dspace-angular/graphs/contributors?from=2021-10-28&to=2022-02-03&type=c

Backend / REST API Acknowledgments

The following 23 individuals have contributed directly to the DSpace backend (REST API, Java API, OAI-PMH, etc) in this release (ordered by number of GitHub commits): Tim Donohue (tdonohue), Michele Boychuk (Micheleboychuk), Michael Spalti (mspalti), Hardy Pottinger (hardyoyo), Yana De Pauw (YanaDePauw), Joost Fock (joost-atmire), Kevin Van de Velde (KevinVdV), Corrado Lombardi (corrad82-4s), Jose Vicente Ribelles Aguilar (vribelli), Davide Negretti (davidenegretti-4science), Luca Giammini (LucaGiammini), Yury Bondarenko (ytbnd), Ben Bosman (benbosman), Marie Verdonck (MarieVerdonck), Bruno Roemers (bruno-atmire), Mark Wood (mwoodiupui), Hrafn Malmquist (J4bbi), Paulo Graça (paulo-graca), Andrea Bollini (abollini), Giuseppe Digilio (atarix83), William Welling (wwelling), Kristof De Langhe (Atmire-Kristof), Samuel Cambien (samuelcambien)

The above contributor list was determined based on contributions to the “DSpace” project in GitHub between 7.1 (after Oct 28, 2021) and 7.2: https://github.com/DSpace/DSpace/graphs/contributors?from=2021-10-28&to=2022-02-03&type=c

7.1 Release Notes

7.1.1 Release Notes (Backend Only)

All DSpace 7.0 or 7.1 sites should ensure the backend is upgraded to 7.1.1 (or above) or manually patched

DSpace 7.0 and 7.1 both used a bundled version of the Apache Log4j Library vulnerable to RCE (remote command execution). The CVE-2021-44228 vulnerability is described in more detail at https://cve.mitre.org/cgi-bin/cvename.cgi?name=CVE-2021-44228 and https://logging.apache.org/log4j/2.x/security.html#Fixed_in_Log4j_2.15.0

DSpace 7.1.1 only contains an update to the Apache Log4j Library to ensure DSpace is not vulnerable to CVE-2021-44228. As such, it was only a Backend / REST API release. The DSpace 7.1 Frontend (UI) can be used with the DSpace 7.1.1 Backend.

To ensure your 7.x site is completely secure, perform ALL the following:

1. Upgrade your DSpace backend (REST API) to version 7.1.1 immediately. This backend is compatible with the DSpace Frontend version 7.1.
   a. If you are unable to perform this upgrade, you may patch your 7.0 or 7.1 site by applying the changes in PR #8065. Specifically, update your ./pom.xml to have <log4j.version>2.15.0</log4j.version>. Then rebuild & redeploy your backend. Make sure to restart Tomcat.
2. Upgrade to Apache Solr v8.11.1 (or above), to ensure your Solr is patched for CVE-2021-44228
   a. If you are unable to perform this upgrade, you may patch your current Solr by ensuring that `-Dlog4j2.formatMsgNoLookups=true` is specified in your `SOLR_OPTS` environment variable. For more information, see https://solr.apache.org/security.html#apache-solr-affected-by-apache-log4j-cve-2021-44228
3. If you use the Handle.Net Registry Support in DSpace 7.x, make sure to restart your Handle Server. This will ensure it is using the new version of log4j as well.

At this time, DSpace 6.x and below appear unaffected by CVE-2021-44228, as they all used log4j v1 exclusively with a default configuration that is not impacted.

Additional log4j patch available for 7.x

Immediately after version 7.1.1 was released, the log4j community announced a secondary, less severe vulnerability (CVE-2021-45046) which was patched in a log4j v 2.16.0 release.

This fix is NOT included in 7.1.1. But, you can immediately apply this secondary patch by applying the changes in https://github.com/DSpace/DSpace/pull/8070. This is again a one line change. Simply update your ./pom.xml to have <log4j.version>2.16.0</log4j.version>. Then rebuild & redeploy your backend.

7.1 Release Notes

We highly recommend ALL DSpace 7.0 users upgrade to 7.1

DSpace 7.1 contains a security fix to the backend (REST API) for all sites running 7.0. See CVE-2021-41189 for details.
DSpace 7.1 provides new features, security & bug fixes to the 7.x platform.

New and improved features include:

- **Request a Copy** (Backend donated by Mark H. Wood of IUPUI): Similar to v6.x, users can now ask the original author or submitter (or a help desk employee) for an emailed copy of access restricted files. This provides users with a way to privately get copies of restricted files, should the request be approved. A request can be submitted by simply clicking on an access restricted bitstream in the stream. Approval or rejection of the request occurs by clicking the link sent in the request email.
- **Item Versioning**: Similar to v6.x, administrators or submitters can now create new versions of Items. A new Item version can be created by logging in & clicking the “Create new version” button (next to the “Edit this item” button) on an Item’s page. The new version is then created via the normal Item submission form (prepopulated with all existing information). Once created, all versions of an Item are visible on the Item page in the "Version History" section.
  - **Entities are not yet supported for Versioning.**
  - **Item Versioning is enabled by default, but can be disabled via configuration.**
- **Configure Collections to harvest content via OAI-PMH (OAI Harvesting)**: Similar to v6.x (XMLUI), on the "Edit Collection" page’s "Content Source" tab, there is an option to specify "This collection harvests its content from an external source". When enabled for a Collection, you can configure an external OAI-PMH instance (including another DSpace site) to harvest from. Once configured in the UI, harvesting is completed based on the configured schedule in your backend's local.cfg or oai.cfg.
- **IIIF Support** (Donated by Michael Spalti of Williamette University, with support & enhancements donated by 4Science): DSpace now supports the International Image Interoperability Framework (IIIF.io), including an embedded IIIF viewer (Mirador) in the UI. IIIF support is disabled by default, but can be easily enabled via configuration. Enabling IIIF also requires installing a IIIF image server (e.g. Cantaloupe). For more details, please see the linked documentation.
- **Ability to “extend” other User Interface themes**: In your environment.prod.ts, you can now specify that one theme "extends" another. This allows you to inherit all settings from the extended them by default. See the "Extending other Themes" section of the User Interface Customization documentation.
- **Configure one Entity Type per Collection** (Ported by 4Science from their DSpace-CRIS project): When Configurable Entities are enabled, in the "Edit Collection" page you can select an Entity Type (e.g., Person, Project, Journal, etc) that Collection will accept. Once configured, this Collection will only accept new Submissions of that Entity Type, and will be one of the recommended Collections to Submitters whenever they start a new Submission of that Entity Type. See "Configure Collections for each Entity type" section of the Configurable Entities documentation.
- **Support for importing Entities & Relationships via the Simple Archive Format** (Donated by Tysonlt): This is achieved via a new, optional "relationships" file in the Simple Archive Format directory. See the documentation for more details.
- **Support for importing Project Entities with funding information via the OpenAIRE API** (Donated by Paulo Graça): When importing a new "Research Project" Entity, a new "Funding OpenAIRE API" option is available, allowing you to import a Project from the OpenAIRE API complete with all it's funding information (Funder, Funder Identifier, Funding Stream and Funding ID). This is implemented via a new external source via Live Import from external sources.
- **Command-line script to help test the connection between your UI and your REST API**: Several people who installed 7.0 early ran into issues configuring the UI and REST API properly. A new "yn config:check:rest" script has been added to the frontend codebase to help validate the connection with your REST API. It should also provide more descriptive errors (should they occur) which will help us to debug future issues others may encounter. See the "Frontend Installation" instructions (step 4) in Installing DSpace for more details.

Security fixes include:

- [HIGH] **CVE-2021-41189**: In 7.0, a Community or Collection Admin could escalate their permissions to become a full Administrator. A quick fix is a ISO provided for sites running 7.0. (Reported by Andrea Bollini of 4Science)

Major bug fixes include:

- **Major performance improvements to UI and REST API**
  - In 7.0, several UI pages (Homepage, MyDSpace, Search, etc) would respond slowly if a large number of Communities & Collections existed in the system. Performance has been drastically improved in 7.1.
  - In Submission form, the “administrator” Bitstream access condition was fixed. Previously, depending on Collection’s "DEFAULT_READ" settings, the "administrator" permission limitation may not have worked properly. See https://github.com/DSpace/DSpace/pull/8013
  - In Login form, some special characters in passwords were not accepted. This was the result of an encoding error which is now fixed. See https://github.com/DSpace/dspace-angular/issues/1367
  - In “Edit Item” on "Bitstreams" tab, the upload button was not working properly. This has been fixed. See https://github.com/DSpace/dspace-angular/issues/1286
  - In "Edit Item" on "Relationships" tab, it was difficult to manage Entities with many relationships. This has been improved. See https://github.com/DSpace/dspace-angular/issues/1148
  - Google Analytics reporting has been moved to an asynchronous/batch script to improve performance. See https://github.com/DSpace/DSpace/pull/2248
  - Numerous other minor bug fixes or accessibility improvements. See the 7.1 milestone for frontend and backend for a list of all changes applied in 7.1.

New/Updated Language support:
• German (Deutsch) user interface support was updated (Donated by The Library Code)
• Spanish (Español) user interface support added (Donated by Gustavo S. Ferreyro)

7.1 Acknowledgments

A total of 27 unique individuals contributed to 7.1, with major institutional contributions coming from 4Science and Atmire.

Frontend / User Interface Acknowledgments

The following 18 individuals have contributed directly to the new DSpace (Angular) User Interface in this release (ordered by number of GitHub commits): Davide Negretti (davidenegretti-4science), Giuseppe Digilio (atari83), Yury Bondarenko (ybond), Tim Donohue (tdonohue), Michael Spalti (mspalti), Rezart Vata (rezartatis), Kristof De Langhe (Atmire-Kristof), Yana De Pauw (YanaDePauw), Lotte Hofstede (LotteHofstede), Alessandro Martelli (alemarti), Bill Branam (bbranam), Art Lowel (artlowel), Corrado Lombardi (corradd84), Marie Verdonck (MarieVerdonck), Bruno Roemers (bruno-atmire), Yannick Paulsen (YPaulsen-TLC), Pascal-Nicolas Becker (pbecker), Gustavo S Ferreyro (gferreyro).

The above contributor lists were determined based on contributions to the “dspace-angular” project in GitHub between 7.0 (after July 29, 2021) and 7.1: https://github.com/DSpace/dspace-angular/graphs/contributors?from=2021-07-29&to=2021-10-27&type=c

Backend / REST API Acknowledgments

The following 16 individuals have contributed directly to the DSpace backend (REST API, Java API, OAI-PMH, etc) in this release (ordered by number of GitHub commits): Michele Boychuk (Micheleboychuk), Michael Spalti (mspalti), Mark Wood (mwoodlupul), Paulo Graça (paulo-graca), Tim Donohue (tdonohue), Andrea Bollini (abollini), Yury Bondarenko (ybond), Corrado Lombardi (corradd84), Yana De Pauw (YanaDePauw), Nicholas Woodward (nwoodward), Alan Orth (alanorth), Davide Negretti (davidenegretti-4science), Marie Verdonck (MarieVerdonck), Andrew Wood (AndrewZWood), Ben Bosman (bromboso).

The above contributor list was determined based on contributions to the "DSpace" project in GitHub between 7.0 (after July 29, 2021) and 7.1: https://github.com/DSpace/DSpace/graphs/contributors?from=2021-07-29&to=2021-10-27&type=c

7.0 Release Notes

DSpace 7.0 is the largest release in the history of DSpace software. While retaining the “out-of-the-box” aspects DSpace is known for, it represents a major evolution of the platform including:

• A completely new User Interface (demo site). This is the new Javascript-based frontend, built on Angular.io (with support for SEO provided by Angular Universal). This new interface is also customizable via HTML and CSS (Sass) and Bootstrap. For early theme building tips see User Interface Customization

• A completely new, fully featured REST API (demo site), provided via a single "server" webapp backend. This new backend is not only a REST API, but also still supports OAI-PMH, SWORD (v1 or v2) and RDF. Anything you can do from the User Interface is now also possible in our REST API. See REST API documentation for more details.

• A newly designed search box. Search from the header of any page (click the magnifying glass). The search results page now features automatic search highlight, expandable & searchable filters, and optional thumbnail-based results (click on the “grid” view).

• A new MyDSpace area to manage your submissions & reviews. MyDSpace includes a new drag & drop area to start a new submission, and easily search your workflow tasks or in progress submissions to find what you were working on. (Login, click on your user profile icon, click "MyDSpace"). Find workflow tasks to claim by selecting “All tasks” in the “Show” dropdown.

• A new configurable submission user interface, featuring a one-page, drag & drop submission form. This form is completely configurable and can be prepopulated by dragging & dropping a metadata file (e.g. ArXiv, CSV/TSV, Endnote, PubMed, or RIS, etc) or by importing via external APIs (e.g ORCID, PubMed, Sherpa Journals or Sherpa Publishers, etc) (video). Local controlled vocabularies are also still supported (video). See Submission User Interface for more details.

• Optional, new Configurable Entities feature. DSpace now supports “entities”, which are DSpace items of a specific ‘type’ which may have relationships to other entities. These entity types and relationships are configurable, with two examples coming out-of-the-box: a set of Journal hierarchy entities (Journal, Volume, Issue, Publication) and a set of Research entities (Publication, Project, Person, OrgUnit). For more information see Configurable Entities.

• Dynamic user interface translations (Click the globe, and select a language). Interested in adding more translations? See DSpace 7 Translation - Internationalization (i18n) - Localization (i10n).

• A new Admin sidebar. Login as an Administrator, and an administrative sidebar appears. Features available include:
  • Quickly create or edit objects from anywhere in the system. Either browse to the object first, or search for it using the Admin sidebar.
  • Processes UI (video) allows Administrators to run backend scripts/processes while monitoring their progress & completion. (Login as an Admin, select “Processes” in sidebar)
  • Administrative Search (video) combines retrieval of withdrawn items and private items, together with a series of quick action buttons.
  • Administer Active Workflows (video) allows Administrators to see every submission that is currently in the workflow approval process.
  • Bitstream Editing (video) has a drag-and-drop interface for re-ordering bitstreams and makes adding and editing bitstreams more intuitive.
  • Metadata Editing (video) introduces suggest-as-you-type for field name selection of new metadata.
  • Login As (Impersonate another account allows Administrators to debug issues that a specific user is seeing, or do some work on behalf of that user. (Login as an Admin, Click “Access Control” in sidebar, Click "People"). Search for the user account & edit it. Click the “Impersonate” button. You will be authenticated as that user until you click “Stop Impersonating” button in the upper right.)

• Improved GDPR alignment (video)
  • User Agreement required for all authenticated users to read and agree to. (Login for first time, and sample user agreement will display. After agreeing to it, it will not appear again.)
• Cookie Preferences are now available for all users (anonymous or authenticated). A cookie preference popup appears when first accessing the site. Users are given information on what cookies added by DSpace, including a Privacy Statement which can be used to describe how their data is used.
• User Accounts can be deleted even if they've submitted content in the past.
• Support for OpenAIREv4 Guidelines for Literature Repositories in OAI-PMH (See the new “opener4” context in OAI-PMH).
• Search Engine Optimization: Tested and approved by the Google Scholar team, DSpace still includes all the SEO features you require: a robots.txt, Sitemaps and Google Scholar “citation” tags.
• Video/Image Content Streaming (Kindly donated by Zoltán Kanász-Nagy and Dániel Péter Sipos of Qulto): When enabled, DSpace can now stream videos & view images full screen, using an embedded viewer. (See the "mediaViewer" settings in the environment.common.ts to enable.)
• Basic Usage Statistics (video) are available for the entire site (See “Statistics” menu at top of homepage), or specific Communities, Collections or Items (Click on that same “Statistics” menu after browsing to a specific object
• Additional features are listed in the Beta release notes below. Also, give it a try on our demo site & see what you discover!

DSpace 7 does not yet include all the features of DSpace 6.x

DSpace 7.0 represents a major evolution of the platform into a new, modern web architecture. This means there are tons of new and redesigned features in 7.0. However, in order to get this release in your hands sooner, DSpace Steering decided to delay some 6.x features for later 7.x releases. So, if you don’t see a 6.x feature yet in 7.0, it’ll likely be coming soon in a later 7.x release. For a prioritized list of upcoming features see “What features are coming in a later 7.x release?” on our DSpace Release 7.0 Status page.

Additional major changes to be aware of in the 7.x platform (not an exhaustive list):

• XMLUI and JSPUI are no longer supported or distributed with DSpace. All users should immediately migrate to and utilize the new Angular User Interface. There is no migration path from either the XMLUI or JSPUI to the new User interface. However, the new user interface can be themed via HTML and CSS (SCSS).
• The old REST API (“rest” webapp from DSpace v4.x-6.x) is deprecated and will be removed in v8.x. The new REST API (provided in the “server” webapp) replaces all functionality available in the older REST API. If you have tools that rely on the old REST API, you can still (optionally) build & deploy it alongside the “server” webapp via the “-Pdspace-rest” Maven flag. See REST API v6 (deprecated)
• The Submission Form configuration has changed. The “item-submission.xml” file has changed its structure, and the “input-forms.xml” has been replaced by a “submission-forms.xml”. See Submission User Interface
• ElasticSearch Usage Statistics have been removed. Please use SOLR Statistics or DSpace Google Analytics Statistics.
• The traditional, 3-step Workflow system has been removed in favor of the Configurable Workflow System. For most users, you should see no effect or difference. The default setup for this Configurable Workflow System is identical to the traditional, 3-step workflow (“Approve/Reject”, “Approve/Reject/Edit Metadata”, “Edit Metadata”)
• The old BTE import framework in favor of Live Import Framework (features of BTE have been ported to Live Import)
• Apache Solr is no longer embedded within the DSpace installer. Solr now MUST be installed as a separate dependency alongside the DSpace backend. See Installing DSpace.
• A large number of old/obsolete configurations were removed. “7.0 Configurations Removed” section below.
• See Upgrading DSpace for more hints on the upgrade from any old version of DSpace to 7.x

Additional Resources

• Video presentations / Workshops from OR2021 (June 2021) showing off many of the new features & configurations of DSpace 7: DSpace 7 at OR2021

7.0 Configurations Removed

With the removal of the JSPUI and XMLUI, a large number of server-side (backend) configurations were made obsolete and were therefore removed between the 6.x and 7.0 release. Those Configurations removed included:

• Within the [dspace]/config/ directory, these are the configuration files which were deleted:
  • dc2mods.cfg
  • input-forms.xml / dtd (REPLACED BY submission-forms.xml, see Submission User Interface)
  • log4j.properties (REPLACED BY log4j2.xml)
  • log4j-console.properties (REPLACED BY log4j-console.xml)
  • log4j-solr.properties (no replacement as Solr now must be installed separately)
  • news-side.html
  • news-top.html
  • news-xmlui.xml
  • workflow.xml (REPLACED BY ./spring/api/workflow.xml)
  • xmlui.xconf / dtd
  • emails/bte_* (BTE import framework was removed in favor of Live Import from external sources)
  • modules/controlpanel.cfg
  • modules/elastic-search-statistics.cfg (Elastic Search support was removed in favor of Solr)
  • modules/fetchccdata.cfg
  • modules/publication-lookup.cfg
  • spring/api/bte.xml (BTE import framework was removed in favor of Live Import from external sources)
  • spring/oai/* (OAI is now part of the backend “server webapp” and needs no separate configurations)
• Within the dspace.cfg main configuration file, the following settings were removed:
  • log.init.config (replaced by log4j2.xml)
  • webui.submit.blocktheses
  • webui.upload.html15
  • webui.submission.restrictstep.enableAdvancedForm
  • webui.submission.restrictstep.groups
  • webui.submit.enable-cc
7.0 Acknowledgments

DSpace 7.0 was the largest release in the history of DSpace, with 1,026,797 lines of code changed and 79 unique individuals contributing to either the frontend or backend.

Major Contributing Institutions

The following institutions have been major code contributors to the DSpace 7 release (in general)

- Atmire - also hosts/maintains DSpace 7 UI demo at https://demo7.dspace.org
- 4Science - also hosts/maintains DSpace 7 REST demo at https://api7.dspace.org/server/
- FCT / RCAAP

Financial Contributors

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- Cornell University
- Pascal Becker
- Dalhousie University
- Duke University
- ETH Zurich, ETH Library
- Fraunhofer Gesellschaft
- Imperial College London
- Indiana University–Purdue University, Indianapolis
- LYRASIS
- National Library of Finland
- Beate Rajski
- Staats- und Universitätsbibliothek Hamburg – Carl von Ossietzky
- Technische Universität Berlin
- Technische Universität Hamburg (TUHH)
- The DSpace-Konsortium Deutschland
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- The Ohio State University
- Texas Digital Library
- University of Arizona
- University of Edinburgh
- University of Kansas
- University of Minnesota
- University of Missouri
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The following 55 individuals have contributed directly to the new DSpace (Angular) User Interface in this release (ordered by number of GitHub commits): Giuseppe Digilio (atari83), Kristof De Langhe (Atmire-Kristof), Lotte Hofstede (LotteHofstede), Art Lowel (artlowel), Marie Verdonck (MarieVerdonck), Julius Gruber (Flusspferd122), Yury Bondarenko (ybdn), William Welling (welling and welling William), Yana De Pauw (YanaDePauw), Tim Donohue (tdonohue), Alessandro Martelli (alemarte), Michael Spalti (mspalti), Jonas Van Goolen (jonas-atmire), Laura Henze (henze), Dániel Péter Sipos (disposdev), Samuel Cambien (samuelcambien), Bruno Roemers (bruno-atmire), Matteo Perelli (sourcecump), Bram Luyten (bram-atmire), Ben Bosman (benbosman), Terry Brady (terrywbrady), Raf Ponsaerts (raf-atmire), Danilo Di Nuzzo (dinnuzzo), Andrea Chiapparelli (andreachiapparelli), Antoine Snyers (antoine-atmire), Corrado Lombardi (corrad82-4s), Courtney Pattison (courtneypattison), Álex Magaz Graça (rivalid8), Chris Wilper (cwilper), Christ an Scheible (christian-scheible), Andrew Wood (AndrewZWood), Reeta Kuuskoski (reetaatmire), Vitor Silvério Rodrigues (vitorsilverio), Alexander Sulthian (AlexanderS), multij. José Carvalho (josecarvalho), Claudia Jürgen (cjuegen), fem hazardizz, Ivan Masar (helix84), Paulo Graça (paulo-graca), Philip Vissenaekens (PhilipVips), Nagy Akos (akoscomp), Kevin Van de Velde (KevinVvd), Sascha Szott (saschaszott), Mohamed Mohideen Abdul Rasheed (mohideen), David Cavrenne (davidatmire), Hardy Pottinger (hardyoyo), Luca Giamminonni (LucaGiamminonni), Mateus Mercer (MatMercer), Denijs Balodis (Denijsb), Nicolás Becker (nbecker), Mikus Zārins (MixonZ), marciiofz, Andrea Bollini (abollini), Martin Walk (MW3000).

Out of the above list, the following individuals contributed a translation of the new interface (ordered alphabetically by language): Ivan Masar (Czech), Marina Müllwik (Dutch), Reeta Kuuskoski (Finnish), David Cavrenne (French), Claudia Jürgen and Sasha Szott (German), Nagy Akos and Transylvanian Museum Society (Hungarian), Mikus Zārins (Latvian), Vitor Silvério Rodrigues and marciiofz (Brazilian Portuguese), José Carvalho (Portuguese) and Maria Fernanda Ruiz (Spanish).

The above contributor lists were determined based on historical contributions to the “dspace-angular” project in GitHub until 7.0: https://github.com/DSpace/dspace-angular/graphs/contributors?from=2016-11-27&to=2021-07-29&type=c

Backend / REST API Acknowledgments

The following 55 individuals have contributed directly to the DSpace backend (REST API, Java API, OAI-PMH, etc) in this release (ordered by number of GitHub commits): Raf Ponsaerts (raf-atmire), Tim Donohue (tdonohue), Andrea Bollini (abollini), Michele Boychuk (Micheleboychuk), Mark Wood (mwoodiupui), Marie Verdonck (MarieVerdonck), Ben Bosman (benbosman), Luigi Andrea Pascarelli (lap82), Terry Brady (terrywbrady), Tom Desair (tomdesair), Yana De Pauw (YanaDePauw), Chris Wilper (cwilper), Peter Nijis (peter-atmire), Kevin Van de Velde (KevinVvd), Bruno Roemers (bruno-atmire), Giuseppe Digilio (atari83), Pasquale Cavallo (pasqualecavi), Jelle Pelgrims (jpelgrims-atmire), Andrew Wood (AndrewZWood), Samuel Cambien (samuelcambien), Antoine Snyers (antoine-atmire), Kim Shepherd (kshepherd), Yury Bondarenko (ybdn), Michael Spalti (mspalti), Alessandro Martelli (alemarte), Oliver Gouldschmidt (olligold), Jonas Van Goolen (jonas-atmire), Kristof De Langhe (Atmire-Kristof), Alexander Sulthian (AlexanderS), Patrick Trotter (PTrotter), Pablo Prieto (ppmdo), Hardy Pottinger (hardyoyo), Pascal-Nicolas Becker (pnbecker), William Tantzen (tantz001), Paulo Graça (paulo-graca), Luca Giamminonni (LucaGiamminonni), Ivan Masar (helix84), Hrah Malqmquist (J4bbi), Ian Little (little-cni), Anis Moubarki (anis-moubarki), Claudia Jürgen (cjuegen), Alan Orth (alanorth), Xuejiangtao, Danilo Di Nuzzo (dinnuzzo), James Creel (jcreel), Marsa Haoua (marsaoua), Philip Vissenaekens (PhilipVips), Milka Nurminen (minurmin), Bram Luyten (bram-atmire), Christian Scheible (christian-scheible), Nicholas Woodward (nwoodward), József Marton (jmarton), Mohamed Mohideen Abdul Rasheed (mohideen), David Cavrenne (davidatmire), Hardy Pottinger (hardyoyo), Luca Giamminonni (LucaGiamminonni), Mateus Mercer (MatMercer), Denijs Balodis (Denijsb), Nicolás Becker (nbecker), Mikus Zārins (MixonZ), marciiofz, Andrea Bollini (abollini), Martin Walk (MW3000).

The above contributor list was determined based on contributions to the “DSpace” project in GitHub between 6.0 (after Oct 24, 2016) and 7.0: https://github.com/DSpace/DSpace/graphs/contributors?from=2016-11-27&to=2021-07-29&type=c Therefore this list may include individuals who contributed to later 6.x releases, but only if their bug fix was also applied to 7.0.

Additional Thanks

Additional thanks to our DSpace Leadership Group and DSpace Steering Group for their ongoing DSpace support and advice. Thanks also to LYRASIS for your leadership, collaboration & support in helping to speed up the development process of DSpace 7.

Thanks also to the various developer & community Working Groups who have worked diligently to help make DSpace 7 a reality. These include:

- **DSpace 7 Working Group** - This is the team behind the code
- **DSpace 7 Entities Working Group** - This team designed & implemented Configurable Entities
- **DSpace 7 Marketing Working Group** - This team did all our DSpace 7marketing, press releases & announcements.
- **DSpace Community Advisory Team** (DCAT) - This team helped organize/lead the DSpace 7.0 Testathon (to bang on the system to find any last bugs), and they also provided us with advice on features, etc.

We apologize to any contributor accidentally left off this list. DSpace has such a large, active development community that we sometimes lose track of all our contributors. Acknowledgments to those left off will be made in future releases.

7.0 Beta 1-5 Release Notes

DSpace 7.0 was developed via a series of Beta releases from 2020-21. The release notes for each Beta are retained here for reference.

7.0 Beta 5 Release Notes

Released April 2021

Included in Beta 5

- Support for custom theme(s) in UI & accessibility cleanup of base theme. See early information at DSpace UI Design principles and guidelines and the "themes" section of the environment.common.ts
- Updated the "base" theme (default Bootstrap look & feel) for consistency and better accessibility. (Additional accessibility analysis will be performed during Testathon)
- Added a simple "dspace" theme (this is the new default theme, and primarily shows an example of customizing color scheme & homepage)
- Added a "custom" theme folder with all necessary files. These files can be directly modified to create a completely custom theme.
- Major performance improvements to UI by making better use of caching & smart reloading
- Video/Image Content Streaming (Kindly donated by Zoltán Kandasz-Nagy and Dániel Péter Sipos of Qulto): When enabled, DSpace can now stream videos & view images full screen, using an embedded viewer.
- See the new "mediaViewer" settings in the environment.common.ts to enable. Sample screenshots of the feature can also be found at https://github.com/DSpace/dspace-angular/issues/885
- New Administrative Features
  - Add ability to modify Community/Collection resource policies (i.e. permissions). Edit a Community or Collection and look at the "Authorizations" tab.
  - Add ability to edit/delete user Groups.
  - Add private/withdrawn item badges for Administrators to quickly see which Items are private or withdrawn. These are viewable throughout the browse/search when logged in as an Administrative user.
- Configurable Entities Improvements
  - Entities now report their Entity type in the URL path (e.g. Person entities use URL path /entities/person/[uuid] and Publication entities use the URL path /entities/publication/[uuid])
  - Each Entity type now has a custom Submission form.
  - These can be most easily seen in the Demo site. Submitting to the "People" collection uses the "Person" Entity Form. Submitting to the "Articles" collection uses the "Publication" Entity Form. The full list of Entity-specific Collection submission mappings can be found in the example in item-submission.xml (this example is enabled on our Demo Site)
  - General performance improvements for Entities. Introduction of "tilted" relationships for Configurable Entities that may have hundreds or thousands of relationships.
- Improvements to Upgrade process
  - A new Submission form migration script to help DSpace 5/6 institutions migrate their old Submission configuration files to the new /updated format for v7.
- Security fixes
  - Added CSRF (Cross-Site Request Forgery) protection to REST API. UI (and any other clients) now must be trusted to login to the REST API.
  - Improved permissions checks/validation in UI for Administrator, Community/Collection Administrator and Submitter roles.
  - Fixed several other security issues auto-reported by LGTM
- Many bug fixes
  - Fixed issue where mapped items were not appearing
  - Fixed issue where Handles were not redirecting
  - Fixed issues with Sherpa and ORCID integrations
  - Fixed several small issues with OpenAIRE v4 support in OAIPMH
  - Fixed many bugs in MyDSpace and Submission UI
  - Fixed several bugs in CSV import/export process.
  - Fixes to search/browse pagination & breadcrumb trail
  - Improved performance of Browse by Community/Collection hierarchy
  - LDAP Authentication support is working again
- Many dependency upgrades
  - Upgrade UI to Angular v10
  - Upgrade UI to Node v12 or v14 support
  - Upgrade Backend to Solr v8 support
  - Upgrade to ORCID v3 support
  - Upgrade to SHERPA v2 support
- Removal of obsolete features
  - Removal of the old BTE framework in favor of Live Import Framework (features of BTE have been ported to Live Import)
  - Removal of Traditional/Basic workflow in favor of Configurable Workflow (default workflow is still the same as in DSpace 6)

Changelog

- All User Interface changes: https://github.com/DSpace/dspace-angular/issues?q=is%3Aclosed+milestone%3A7.0beta5
- All Backend changes: https://github.com/DSpace/dspace-angular/issues?q=is%3Aclosed+milestone%3A7.0beta5

7.0 Beta 4 Release Notes

Released October 2020

Included in Beta 4

- Live Import framework (video) support has been added to the Submission Form (and REST API /api/integration/externalsources endpoint)
  - Search an external site for works to import (From your MyDSpace page, click the "Import metadata from external source" button in upper right). Currently supports Library of Congress Names, ORCID, PubMed, Sherpa Journals or Sherpa Publishers.
  - Drag and drop a bibliographic file into Submission form or MyDSpace page to prepopulate metadata. Supported formats include ArXiv, CSV (or TSV), Endnote, PubMed, or RIS.
- Controlled Vocabulary support (video) in Submission Form. Depending on the field configuration, this can include autocomplete of known terms (see default "Subject Keywords" field), dropdown support (see default "Type" field) and hierarchical tree views
  - Includes support for Controlled Vocab, Authority Control and "Value-Pairs" (from submission configs)
- Curation Tasks are now supported via the Admin UI and the Processes UI. (Login as an Admin, select "Curation Tasks")
- Import / Export metadata from/to CSV (i.e. Batch Metadata Editing) is now available from the Admin UI. (Login as an Admin, select "Export" > "Metadata", select "Import" > "Metadata")
- Basic Usage Statistics (video) are available for the entire site (See "Statistics" menu at top of homepage), or specific Communities, Collections or Items (Click on that same "Statistics" menu after browsing to a specific object).
  - Support for exchanging usage data to IRUS was added. See new "irus-statistics.cfg" and DS-626
• Improved GDPR Alignment (video)
  • User Agreement required for all authenticated users to read and agree to. (Login for first time, and sample user agreement will display. After agreeing to it, it will not appear again.)
  • Cookie Preferences are now available for all users (anonymous or authenticated). A cookie preference popup appears when first accessing the site. Users are given information on what cookies added by DSpace, including a Privacy Statement which can be used to describe how their data is used.
  • User Accounts can be deleted even if they've submitted content in the past.
    • When a user is deleted, their past submissions are kept but the submitter field is set to empty (null).
    • Users cannot be deleted if they are the only member of a workflow approval group. Admins must either delete that group first, or assign another member to the group. This ensures Workflows are kept even if a user account needs to be deleted.
  • Language preferences are now kept for all users (anonymous or logged in). By default, DSpace will try to use your browser's preferred language (if found in Accept-Language header and a translation in that language exists). Users can override it by either saving a preferred language in their user profile, or by manually selecting a different language from the globe icon (upper right).
  • IP-based authorization lets you restrict (or provide access to) objects based on the user's IP address. This uses the same "authentication-ip. cfg" configuration as DSpace 6, allowing you to map IP ranges to specific DSpace Groups. Users within that IP range are added to the mapped DSpace Group for the remainder of their session.
  • Search Engine Optimization: Addition of robots.txt, Sitemaps and Google Scholar "citation" tags. These optimizations are being tested by the Google Scholar team and may be improved further in the upcoming beta 5 release.
  • For improved SEO, Sitemaps are now enabled by default and automatically update once per day.
  • Security Fixes and Dependency upgrades
    • Enhancements to new /api/authz/features endpoint in REST API to provide additional feature-specific permission checks
    • Flyway database engine was upgraded to version 6.5.5
    • Indexing enhancements (some objects were being indexed twice, see PR#2960)
    • Fixes to Shibboleth login
    • Additional bug fixes to both UI and REST API

Changelog

• All User Interface changes: https://github.com/DSpace/dspace-angular/issues?q=is%3Aclosed+milestone%3A7.0.beta4
• All Backend changes: https://github.com/DSpace/DSpace/issues?q=is%3Aclosed+milestone%3A7.0.beta4

7.0 Beta 3 Release Notes

Released July 2020

Included in Beta 3

• Processes Admin UI (video) allows Administrators to run backend scripts/processes while monitoring their progress & completion. (Login as an Admin, select "Processes" in sidebar)
  • Currently supported processes include "index-discovery" (reindex site), "metadata-export" (batch metadata editing CSV export), and "metadata-import" (batch metadata editing CSV import).
• Manage Account Profile allows logged in users to update their name, language or password. (Login, click on the account icon, and select "Profile")
• New User Registration (video) and password reset on the Login Screen
• Login As (Impersonate) another account allows Administrators to debug issues that a specific user is seeing, or do some work on behalf of that user. (Login as an Admin, Click "Access Control" in sidebar, Click "People". Search for the user account & edit it. Click the "Impersonate EPerson" button. You will be authenticated as that user until you click "Stop Impersonating EPerson" in the upper right.)
  • Requires "webui.user.assertlogin=true" to be set in your local.cfg on backend. Also be aware that you can only "impersonate" a user who is not a member of the Administrator group.
• Manage Authorization Policies of an Item allows Administrators to directly change/update the access policies of an Item, its Bundles or Bitstreams. (Login as an Admin, Click "Edit" "Item" in sidebar, and search for the Item. Click the "Authorization..." button on its "Status" tab.
• Manage Item Templates of a Collection allows Administrators to create/manage template metadata that all new Items will start with when submitted to that Collection. (Login as an Admin, Click "Edit" "Collection" in sidebar and search for the Collection. Click the "Add" button under "Template Item" to get started.)
  • NOTE: unfortunately there's a known bug that while you can create these templates, the submission process is not yet using them. See https://github.com/DSpace/dspace-angular/issues/748
• Administer Active Workflows (video) allows Administrators to see every submission that is currently in the workflow approval process. From there, they have the option to delete Items (if they are no longer needed), or send them back to the workflow pool (to allow another user to review them). (Login as an Admin, Click "Administer Workflow" in sidebar)
• CC License step allows your users to select a Creative Commons License as part of their submission. Once enabled in the "Item-submission. xml" (on the backend) it appears as part of the submission form.
• Angular CLI compatibility was added to the User Interface. This allows developers to easily update the User Interface using standard Angular commandline tools. More information (including tutorials) is available at https://cli.angular.io/
• English, Latvian, Dutch, German, French, Portuguese, Spanish and Finnish language catalogs
• Numerous bugs were fixed based on early user testing. (Thanks to all who've tested Beta 1 or Beta 2 and reported your feedback!) Some bugs fixed include:
  • Login/Logout session fixes (including compatibility with Firefox and Safari browsers)
  • Improved Community/Collection tree browsing performance
  • Fixes to editing Communities, Collections and Items. This includes improved drag & drop reordering of bitstreams in an Item.
  • Improved performance of Collection dropdown in submission.
  • Ability to download restricted bitstreams (previously these would error out)
  • Authorization & security improvements in both REST API and UI
• Updated all REST API dependencies (Spring, Spring Boot, HAL Browser) and enhanced our automated testing via additional Integration Tests.
  • All features previous mentioned in 7.0 Beta 2 Release Notes and 7.0 Beta 1 Release Notes below

Learn More: New videos are available highlighting features of the MyDSpace area:

• Manage Submissions in MyDSpace (video)
• Manage Tasks in MyDSpace (video)

Changelog

• All User Interface changes: https://github.com/DSpace/dspace-angular/issues?q=is%3Aclosed+milestone%3A7.0beta3
• All Backend changes: https://github.com/DSpace/dspace/issues?q=is%3Aclosed+milestone%3A7.0beta3

7.0 Beta 2 Release Notes

Released April 2020

Included in Beta 2

• Administrative Search (video) combines retrieval of withdrawn items and private items, together with a series of quick action buttons.
• EPeople, Groups and Roles can now be viewed, created and updated.
  • Manage Groups (Login as an Admin  Access Control  Groups)
  • Manage EPeople (Login as an Admin  Access Control  EPeople)
  • Manage Community/Collection Roles (Login as an Admin  Edit Community/Collection  Assign Roles). Note: this feature is Admin-only in beta 2, but will be extended to Community/Collection Admins in beta 3.
• Bitstream Editing (video) has a drag-and-drop interface for re-ordering bitstreams and makes adding and editing bitstreams more intuitive.
• Metadata Editing (video) introduces suggest-as-you-type for field name selection of new metadata.
• Update Profile / Change Password (Login  Select user menu in upper right  Profile)
• Shibboleth Authentication
• Viewing Item Version History (requires upgrading from a 6.x site that includes Item Versioning)
• Collection and Community (video) creation and edit pages.
• English, Latvian, Dutch, German, French, Portuguese and Spanish language catalogs
• Security and authorization improvements, including REST API support hiding specific metadata fields (metadata.hide property) and upgrades of different software packages on which DSpace 7 depends.
• All features previous mentioned in 7.0 Beta 1 Release Notes below

A full list of all changes / bug fixes in 7.x is available in the Changes in 7.x section.

7.0 Beta 1 Release Notes

Released March 2020

New features to look for

• A completely new User Interface (demo site). This is the new Javascript-based frontend, built on Angular.io (with support for SEO provided by Angular Universal). This new interface is also via HTML and CSS (SCSS). For early theme building training, see the “Getting Started with DSpace 7 Workshop” from the North American User Group meeting: slides or video recording.

• A completely new, fully featured REST API (demo site), provided via a single "server" webapp backend. This new backend is not only a REST API, but also still supports OAI-PMH, SWORD (v1 or v2) and RDF. See the REST API's documentation / contract at https://github.com/DSpace/dspace REST/Contract/blob/master/README.md

• A newly designed search box. Search from the header of any page (click the magnifying glass). The search results page now features automatic search highlight, expandable & searchable filters, and optional thumbnail-based results (click on the “grid” view).

• A new MyDSpace area, including a new, one-page, drag & drop submission form, a new workflow approval process, and searchable past submissions. (Login, click on your user profile icon, click “MyDSpace”). Find workflow tasks to claim by selecting “All tasks” in the “Show” dropdown.

• Dynamic user interface translations (Click the globe, and select a language). Anyone interested in adding more translations? See DSpace 7 Translation - Internationalization (18n) - Localization (10n).

• A new Admin sidebar. Login as an Administrator, and an administrative sidebar appears. Use this to create a new Community/Collection/Item, edit existing ones, and manage registries. (NOTE: A number of Administrative tools are still missing or greyed out. They will be coming in future Beta releases.)

• Optional, new Configurable Entities feature. DSpace now supports “entities”, which are DSpace Items of a specific ‘type’ which may have relationships to other entities. These entity types and relationships are configurable, with two examples coming out-of-the-box: a set of Journal hierarchy entities (Journal, Volume, Issue, Publication) and a set of Research entities (Publication, Project, Person, OrgUnit). For more information see “The Power of Configurable Entities” from OR2019: slides or video recording. Additionally, a test data set featuring both out-of-the-box examples can be used when trying out DSpace 7 via Docker. Early documentation is available at Configurable Entities.

• Support for OpenAIREv4 Guidelines for Literature Repositories in OAI-PMH (See the new “openaire4” context in OAI-PMH).

Additional major changes to be aware of in the 7.x platform (not an exhaustive list):

• XMLUI and JSPUI are no longer supported or distributed with DSpace. All users should immediately migrate to and utilize the new Angular User Interface. There is no migration path from either the XMLUI or JSPUI to the new User interface. However, the new user interface can be themed via HTML and CSS (SCSS).

• The old REST API ("rest" webapp from DSpace v4.x-6.x) is deprecated and will be removed in v8.x. The new REST API (provided in the "server" webapp) replaces all functionality available in the older REST API. If you have tools that rely on the old REST API, you can still (optionally) build & deploy it alongside the "server" webapp via the "-Dpspace-rest" Maven flag.

• The Submission Form configuration has changed. The "item-submission.xml" file has changed its structure, and the "input-forms.xml" has been replaced by a "submission-forms.xml". For early documentation see Configuration changes in the submission process

• ElasticSearch Usage Statistics have been removed. Please use SOLR Statistics or DSpace Google Analytics Statistics.

• The traditional, 3-step Workflow system has been removed in favor of the Configurable Workflow System. For most users, you should see no effect or difference. The default setup for this Configurable Workflow System is identical to the traditional, 3-step workflow ("Approve/Reject", "Approve/Reject/Edit Metadata", "Edit Metadata")

• Apache Solr is no longer embedded within the DSpace installer (and has been upgraded to Solr v7). Solr now MUST be installed as a separate dependency alongside the DSpace backend. See Installing DSpace.
• **Some command-line tools/scripts are enabled in the new REST API** (e.g. index-discovery): See new Scripts endpoint: [https://github.com/DSpace/Rest7Contract/blob/master/scripts-endpoint.md](https://github.com/DSpace/Rest7Contract/blob/master/scripts-endpoint.md)

• **DSpace now has a single, backend "server" webapp to deploy in Tomcat (or similar).** In DSpace 6.x and below, different machine interfaces (OAI-PMH, SWORD v1 or v2, RDF, REST API) were provided via separate deployable webapps. Now, all those interfaces along with the new REST API are in a single, "server" webapp built on Spring Boot. You can now control which interfaces are enabled, and what path they appear on via configuration (e.g. "oai.enabled=true" and "oai.path=oai"). See [https://jira.lyrasis.org/browse/DS-4257](https://jira.lyrasis.org/browse/DS-4257)

• **Configuration has been upgraded to Apache Commons Configuration version 2.** For most users, you should see no effect or difference. No DSpace configuration files were modified during this upgrade and no configurations or settings were renamed or changed. However, if you locally modified or customized the [dspace]/config/config-definition.xml (DSpace's Apache Commons Configuration settings), you will need to ensure those modifications are compatible with Apache Commons Configuration version 2. See the Apache Commons Configuration's configuration definition file reference for more details.

• **Handle Server has been upgraded to version 9.x:** [https://jira.lyrasis.org/browse/DS-4205](https://jira.lyrasis.org/browse/DS-4205)

• **DSpace now has sample Docker images (configurations)** which can be used to try out DSpace quickly. See [Try out DSpace 7 ("Install via Docker" section)](https://jira.lyrasis.org/browse/DS-4205).