Product RoadMap

The first open-source release of DSpace-CRIS was based on DSpace 1.8.2. Current releases of DSpace-CRIS are based on current DSpace 7 snapshot, DSpace 5.11 and DSpace 6.4 versions.

Current release

The latest release is **DSpace-CRIS 7 2022.02.00** dated **August, 30th 2022**

This version, released on the 30th Sept 2022, provides alignment with DSpace 7.3 tag, and includes improvements in item layout configuration, statistics endpoints and import scripts optimizations

For previous DSpace versions the latest available tags are **5.11** and **6.4** both released on the August, 30th 2022 just after the release of the corresponding DSpace 6.4 and/or 5.11. Please note that all the DSpace-CRIS versions based on DSpace versions older than 7.0 are End of Life (EOL) according to the corresponding DSpace announcement: Support for DSpace 5 and 6 is ending in 2023

Below there is a detailed release plan covering all the known features contributed by 4Science and other community members who support the enhancement of this open-source extension of DSpace (see: DSpace-CRIS Working Group).

A visit to the community page maintained by DSpace-CRIS users is also recommended: [https://wiki.duraspace.org/display/DSPACECRIS/New+Features](https://wiki.duraspace.org/display/DSPACECRIS/New+Features).

New functionalities are preferably developed for DSpace-CRIS 7 but support for all versions accepted by the DSpace Community is provided. Institutions interested in enhancements for DSpace-CRIS 6.x and DSpace-CRIS 5.x are still welcome to contribute but a plan to implement or support the same use case with version 7 should be provided.

Versioning & support model

Starting from DSpace-CRIS 7 the project has adopted its own versioning model to assure accurate tagging and tracking of the changes across the different releases. Version numbers will use the following schema year.major.minor. The major number will reset to 01 each year, minor numbers start from 00, for example 2021.01.00, 2021.01.01, 2022.01.00, etc.

- *Minor versions* are expected to be easier to upgrade to, REST API is guaranteed to be backward compatible;
- *Major versions* are used to highlight important functional or breaking changes. The changelog will highlight the new features, the configuration and REST API changes and the version of the plain DSpace that is used as basis;
- *Year versions* are assumed to be major. Minor versions related to the previous year can still occur for security fix.

The latest version is actively maintained by 4Science and community members as volunteer work. Support for past versions will be based on availability of resources and funding from the community. Security fixes will be brought to the current version and the previous major if the current version is a new one (i.e. minor = 00). For example if version 2021.02.00 is the current one, security fixes will be released for both 2021 major 01 and 02, i.e. version 2021.01.01 and 2021.02.01 will be released. Once version 2021.02.01 will be out, security fixes will come as 2021.02.02.

DSpace-CRIS and DSpace releases are independent, the plain DSpace version used as basis for a DSpace-CRIS version will be noted in the changelog. But, whenever appropriate, it will be possible to release an official DSpace-CRIS version based on a DSpace unreleased version (as it was the case for the first DSpace-CRIS 7.0 release). In such situations, the DSpace-CRIS development team will have reviewed the known issues in DSpace and provided custom remediation, workarounds or alternative functionalities to support the relevant use cases. Some limitations can also be acceptable and just noted in the release notes as they may impact edge scenarios or a limited users’ base.

**TABLE OF CONTENTS**

- Releases
  - Current development
  - Next releases
    - 2022
      - DSpace-CRIS 7 2022.02.00 September, 30th
      - DSpace-CRIS 7 2022.01.02 August, 30th
      - DSpace-CRIS 6.4.0 August, 30th
      - DSpace-CRIS 5.11.0 August, 30th
      - DSpace-CRIS 7 2022.01.01 April, 6th
      - DSpace-CRIS 7 2022.01.00 March, 2nd
    - 2021
      - DSpace-CRIS 7 2021.03.00 December, 30th
        - Key Enhancements
        - Architecture
        - Data presentation
        - Data security
        - Other
      - DSpace-CRIS 7 2021.02.02 December, 14th
      - DSpace-CRIS 7 2021.02.01 November, 11th
        - Key Enhancements
        - Architecture
• Data migration
• Data presentation
• Data quality & accuracy
• Data security
• Other
  • DSpace-CRIS 7 2021.02.00 October, 27th
    • Key Enhancements
    • Architecture
    • Data presentation
    • Interoperability
    • Data security
  • DSpace-CRIS 7 2021.01.01 August, 11th
    • Key Enhancements
    • Architecture
    • Data collection
    • Data presentation
    • Data quality & accuracy
    • Interoperability
    • Data security
  • DSpace-CRIS 7 2021.01.00 June, 2nd
    • Architecture
    • Authentication
    • Data collection
    • Data presentation
    • Profile management
    • Data quality & accuracy
    • Data security
    • Interoperability

• 2020
  • Updates to the ORCID Integration
  • Submission
  • Other
• 2018/2019
• 2017
• 2016
  • 5.6 (released on November 16th, 2016 - click here to browse the code on github) / include the release of DSpace-CKAN integration module
  • 5.5 (released on March 27th, 2016 - click here to browse the code on github)
• 2015
  • 5.3 (released on August 15th, 2015 - click here to browse the code on github)
  • 5.2.1 (released on July 24th, 2015 - click here to browse the code on github)
  • 5.2 (released on May 25th, 2015 - click here to browse the code on github)
  • 4.3 (released on Apr 15th, 2015 - click here to browse the code on github)
  • 4.2 (released on Mar 11th, 2015 - click here to browse the code on github)
• 2014
  • 4.1.2 (released on Jul 12th, 2014 - click here to browse the code on github)
  • 4.1.1 (released on Jun 28th, 2014 - click here to browse the code on github)
  • 4.1.0 (released on Jun 13rd, 2014 - click here to browse the code on github)
• 2013
  • 1.8.3-beta (released on Sep 8th, 2013 - click here to browse the code on github)
  • 3.2.0-beta (first draft on Jul 31, 2013 - released on Aug 3rd, 2013 - click here to browse the code on github)
  • 1.8.2.1-beta (released on July 24th, 2013 - click here to browse the code on github)
  • 1.8.2.0-beta (released on June 24th, 2013 - click here to browse the code on github)
  • 1.8.2.0-alpha (unreleased, available on github since February 4th, 2013)
• 2012
  • 1.8.2.0-alpha (released on November 26th, 2012)

Releases

The first production-ready DSpace-CRIS 7.0 was released on 2nd June 2021. The version supports the key use cases and the most demanded features of DSpace-CRIS according to the priorities defined by the community of users (DSpace-CRIS User Group). The first version of DSpace-CRIS 7.0 addressed priorities 1 and 2 with contributions from supporting institutions (resource effort and/or funding) and volunteer work by 4Science (more than 3,000 hours in 2020 and 2021 on top of what 4Science provided for the plain DSpace 7). The original development plan is available here, where tasks in lower priorities can still be found with estimation.

Current development

As 7.0 version is based on DSpace 7 that is still under development (see: DSpace Release 7.0 Status), changes are being periodically merged from the upstream. With regard to version 7, the two roadmaps will be still separated due to the significant amount of extra functionalities of DSpace-CRIS that is not possible to give back to plain DSpace yet (possibly proposed for DSpace 8).

DSpace-CRIS 7 is developed in the branches named dspace-cris-7 in the REST API, Angular and Rest contract repositories maintained by 4Science. The development of DSpace-CRIS closely follows the deploy of the official DSpace 7 and new developments from the mainstream are generally merged in DSpace-CRIS within 1-2 weeks. The code is now very stable and there are projects already running on this codebase that are expected to go in production in the coming months.
DSpace-CRIS 7 moves the CRIS objects to the DSpace items with the extended concept of Configurable Entities, maintaining the Authority Framework as an efficient, flexible, performant way to manage relations among objects, successfully used in hundreds of real installations around the world since more than 10 years.

DSpace-CRIS 7 has many additional features and tailored procedure that enhance the UX and are not available in DSpace 7, some key points are:

- Processes tailored to the entity types
- Many additional data providers
- Support for structured metadata, ternary relationships and nested metadata
- Configurable layout for entities in tabs and boxes
- ORCID v3 complete integration (pull and push of profile information, publications, projects)
- Management of personal profiles
- Granular permissions at metadata level
- Enhanced statistics visualization, reports, export capabilities including CVs in PDF, citation lists according to the CSL, and much more.

Please check the release notes of each DSpace-CRIS version and the technical documentation for more details.

A presentation of the newly released DSpace-CRIS was given at Open Repositories:


Next releases

DSpace-CRIS 2022.03.00 expected by end November 2022

- sync with DSpace 7.4
- bug fixing and minor improvements (to be specified)
- other improvements to be defined according to the running projects and contributions
- Support for the viewer framework: to allow developer to plug viewer specialized in rendering of specific file types

2022

DSpace-CRIS 7 2022.02.00 September, 30th

This version, released on the 05th Oct 2022, provides alignment with DSpace 7.3 tag. See DSpace 7.3 release notes

Key Enhancements

- ORCID Authentication and synchronization. Alignment and adaptions with porting to and updates done for DSpace 7.3. See ORCID Integration
- DSpace Researcher Profile. Alignment and adaptions with porting to and updates done for DSpace 7.3. See Researcher Profiles
- Import content directly from 9 new external services including CrossRef, Scopus, Web of Science, PubMed Europe, CiNii, NASA Astrophysics Data System (ADS), VuFind.org, SciELO.org, and the European Patent Office (EPO). Alignment and adaptions with porting to and updates done for DSpace 7.3. See Importing Items via basic bibliographic formats (Endnote, BibTex, RIS, CSV, etc) and online services (arXiv, PubMed, CrossRef, CiNii, etc)

Major improved areas/bug fixes

Several bug fixes and improvements have been introduced in the area of:

- item layout and configurations
- fixed entity type set during item creation
- fixed attachment rendering pagination
- optimized statistics loading and scopus import script

Based on DSpace tag 7.3 (backend) and 7.3 (front-end)

DSpace-CRIS 7 2022.01.02 August, 30th

This version, released on the 30th Aug 2022, is based on DSpace 7.2.1 tag. This version provide new features, improvements and fixes for several bugs.

Key Enhancements

- Machine Token: it is now possible to generate a long lived JWT token that is independent from the session login, so that it can be used in external system to query the DSpace API without giving away your credentials. The new feature is accessible from the profile (user account) page. The machine token can be revoked by the user.
- Multi-language support: visualization of metadata values according to the UI language with fallback to the default language and available values in other languages. Multi-language support is also available in the search and browse for metadata coming from vocabularies and value pairs (dropdown)
- Manage bitstreams via the XLS BulkImport: support to edit bitstream metadata, attach, delete new files pointing to local folder configured in the server or remote location (via public ftp, sftp, http, https)
- New fresh rendering for attachments that allow a more clean visualization of the bitstream metadata

Major improved areas/bug fixes

Several bug fixes and improvements have been introduced in the area of
• submission: type-bind, controlled-vocabularies, lookup, support for different upload panel in different collections
• edit submission mode: change bitstream policies, configure a single mode for the access and upload step to make the UI simpler
• statistics: improvement to the navigation among the pages
and much more, please refers to the commit history for details.

Based on DSpace tag 7.2.1 (backend) and 7.2 - .1 not released for angular (front-end)

DSpace-CRIS 6.4.0 August, 30th
This is probably the last release of DSpace-CRIS based on DSpace 6. It is aligned with the official DSpace 6.4 tag

DSpace-CRIS 5.11.0 August, 30th
This is probably the last release of DSpace-CRIS based on DSpace 5. It is aligned with the official DSpace 5.11 tag

DSpace-CRIS 7 2022.01.01 April, 6th
This version, released on the 6th Apr 2022, is aligned with DSpace 7.2.1 tag, which includes a security update for CVE-2022-22965 (Spring4Shell critical vulnerability). This version includes updates in metrics presentation and graphical facets. Several bugs have been resolved.

Key Enhancements
• Security update to mitigate CVE-2022-22965 (Spring4Shell critical vulnerability).
• Improved metrics visualization
• Added new features (legend, x and y switch) to graphical facets

Architecture
• Aligned with DSpace 7.2.1 tag

Data presentation
• Metrics default visualization improved
• Number of items in TopComponents can be customized
• Added possibility to have legends for graphs x and y axis
• Added possibility to have a graph with x and y axis switched
• Context menu is not displayed when no menu entries are available for the current user

Data security
• CVE-2022-22965 (Spring4Shell critical vulnerability) mitigation

Other
• Added type field to administrator bitstream edit page
• Fixed several bugs.

Based on DSpace commits f863866 (backend) and e4f483c (front-end)

DSpace-CRIS 7 2022.01.00 March, 2nd
This version, released on the 2nd Mar 2022, is aligned with DSpace 7.2 tag. New functionalities have been provided like new renderings, the possibility of setting a custom-url for an Item, new statistics sections. Several minor, not blocking, bugs have been resolved

Key Enhancements
• Added new renderings to matrix layout
• One or more custom-url(s) can be set for DSpace-CRIS 7 entities
• Site, Login, Workflow statistics sections
• COAR resource type vocabularies updated to v. 3.0

Architecture
• Aligned with DSpace 7.2 tag

Data presentation
• Frequent actions available in Item’s page as buttons
• CRIS components top-sections and counter-section can be themed
• New email rendering subtype (link.email)
• Vertical layout as default
• Scopus and researcherid added as subtypes for ‘identifier’ rendering
• Most downloaded items in statistics
• Added unique I18n keys to CRIS layout tabs and boxes names
• IIIF viewer rendering in matrix layout

Data security
• Improved validation to layout configuration tool file when uploaded

Other
• Custom url can be defined for DSpace-CRIS entities
• Bulk Export in 2 steps: 1. selection of Entity 2. Selection of format
• Site, Workflow and Login statistics
• Improved Pentaho migration scripts to migrate bitstream metadata values and statistics
• Pentaho job to migrate statistics from previous DSpace-CRIS 5 to DSpace-CRIS 7
• ORCID link
• Item versioning option available in Item’s context menu
• Fixed recipient(s) can be used to test functionalities sending emails
• Scopus view modes parameter, to be used by this integration, configurable
• COAR Resource Type vocabulary updated to v. 3.0

2021

DSpace-CRIS 7 2021.03.00 December, 30th

This version, released on the 30th Dec 2021, provides a new way of rendering an Item detail page, possibility of adding custom html fragments in home page, share functionality. Search and browsing performances have been improved, and further checks have been added to improve security and prevent the saving of Items in an invalid state when edited. Details of this release are reported below.

Key Enhancements
• New Item Detail page based on the concept of matrix layout (see notes and presentations from the WG meetings in December and November)
• Enforced metadata profile in no-administrative edit screens (prevent to save change to item with invalid or missing mandatory metadata)
• Edit of html fragments in the home page
• Share on social networks via addthis
• Several minor bugs fixed

Architecture
• Aligned with DSpace 7 community last improvement, with a preview of several features of 7.2 tag
• performance improvements in browsing and search listing

Data presentation
• new Item Detail page, with matrix layout
• Hide the bitstream list in the item page when no bitstreams are available
• Provided a standard and semi automatic way to define i18n keys for item layout pages
• Filters and facets can be built using display value for metadata set using lists or controlled vocabularies
• Extended valuepair rendering to metadata defined via a controlled vocabulary
• Layout configuration performed via DSpace-CRIS 7 process or CLI command

Data security
• Items cannot be saved in an invalid state
• Item security evaluation when exporting in csv or xls.

Other
• Invitation to join groups

Release based on DSpace commits dbede2b (backend) and 7abdceb (front-end)

DSpace-CRIS 7 2021.02.02 December, 14th

The key changes in this version, released on the 14th Dec 2021, relate to alignment with DSpace 7.1.1

This is an updated version of the dspace-cris-2021.02.01, aligned with DSpace 7.1.1 release, which includes a security update for CVE-2021-44228 (log4j v2 critical vulnerability). It is fully compatible with the DSpace-CRIS 7 Frontend dspace-cris-2021.02.01 release.
We highly recommend ALL users of DSpace-CRIS 2021.01.x or 2021.02.x upgrade to cris-2021.02.02 to resolve CVE-2021-44228.

To fully protect your DSpace-CRIS 2021.x site from CVE-2021-44228, three steps are required:

1. Upgrade your DSpace-CRIS backend to 2021.02.02 OR manually install #8065, rebuild and redeploy your DSpace-CRIS backend. Make sure to restart your Tomcat after the update.
2. Upgrade to Apache Solr v8.11.1 (or above), OR ensure that `-Dlog4j2.formatMsgNoLookups=true` is specified in your SOLR_OPTS environment variable. For more information, see Solr™ Security News.
3. If you use the Handle.Net Registry Support in DSpace-CRIS 2021.x, make sure to restart your Handle Server (after performing step 1), so that it uses the new (secure) version of log4j as well.

For the technical documentation please refers to the dspace-cris 2021.02.01 release notes

**DSpace-CRIS 7 2021.02.01 November, 11th**

The key changes in this release relate to alignment with DSpace 7.1 tag. Some additional nice features have been also introduced, see below for details

**Key Enhancements**

- Alignment with DSpace 7.1 tag
- Performance improvements

**Architecture**

- Aligned with DSpace 7.1 tag, several bugs have been resolved

**Data migration**

- Added redirection from the legacy CRIS 5 details page to the new CRIS 7 details page

**Data presentation**

- MyDSpace is now updated when a task is claimed
- Allowed to use of graphical facets in home page and explore sections
- Added PlumX widget for publication and person metrics
- Hide relations box if the content is empty
- Provided a valuepair rendering type for the item detail

**Data quality & accuracy**

- Added the possibility to replace metadata value when item reference is resolved

**Data security**

- Metrics boxes does not appear if the current user has no rights to see them
- Allowed to turnoff completely the end user agreement
- Prevented patch and put of item metadata if user is not allowed

**Other**

- Fixed the partially breaking of the reset password feature when usage terms are not yet accepted
- Admin is now able to reset other user’s password

**DSpace-CRIS 7 2021.02.00 October, 27th**

This version is aligned with DSpace 7.0 tag. It improves the stability of the platform and provide a better support for users migrating from DSpace-CRIS 5. Some additional nice features have been also introduced, see below for details

**Key Enhancements**

- Subscription feature: functionality that allows you to receive updates on specific dspace objects
- Introduced lucky search
- Migration from DSpace-CRIS 5 improved (migrate ORCID tokens, metadata values language and boolean values)
- Allow anonymous user to export items and search results

**Architecture**

- Aligned with DSpace 7.0 tag, several bugs have been resolved

**Data presentation**

- Added tag rendering
- Entity name translation in MyDSpace dropdown
• Sorted user’s processes by id
• Improved statistics map rendering with country name localized
• Fixed manage of newline flag for box conftool configuration

Interoperability
• Introduced an OpenID authentication provider

Data security
• Defined item_admin, submitter, submitter_group and group security levels for edit/correction modes
• Extended item export to evaluate security context while extracting metadata

DSpace-CRIS 7 2021.01.01 August, 11th

This is a minor release, no breaking changes have been introduced. This version is aligned with DSpace 7.0 tag, which carries several fixes of bugs present in previous SNAPSHOT version.

Key Enhancements
• Metadata security: it is possible to define at different levels (general, entity, metadata) if a metadata value, configured to be displayed in layout configuration, is accessible by all users, including anonymous, or should be visible to only users of given groups or only to administrators and DSpace-CRIS 7 item's owner.
• Scripts to migrate DSpace-CRIS items from version 5 and 6 installations to new DSpace-CRIS 7 installations are provided. This feature is still in preview.
• Added support for Orcid Funded-By during orcid synchronization (see [https://info.orcid.org/funded-by-relationship-type/](https://info.orcid.org/funded-by-relationship-type/) and [https://twitter.com/HelenGNewnham/status/1402183540637376512?s=19](https://twitter.com/HelenGNewnham/status/1402183540637376512?s=19))

Data collection
• Added possibility of setting submission form's panels opened / closed when submission form is rendered
• Inline metadata groups are sortable

Architecture
• Aligned with DSpace 7.0 tag, several bugs have been resolved

Data presentation
• Added possibility of having icons in box headers
• Orcid identifier links to profile on ORCID registry
• Updated profile picture export
• OAI: Fixed list records in cerif format
• Statistic accessible via contextual menu
• Improved navigation out of statistics page
• Profile management
• When a researcher profile is created, data are enriched with target collection's template item (if present)

Data quality & accuracy
• Updated deduplication checks: item type and target community and collection are evaluated while detecting duplicates.

Interoperability
• Added support for Orcid Funded-By during synchronization
• Improved handling of special characters during ORCID synchronization
• More crosswalk export formats available for Patent entity
• Virtual field to print a date in different formats during crosswalk dissemination
• Virtual field to explore and print part of the controlled vocabulary hierarchy during crosswalk dissemination

Data security
• If user belongs to a special group during process scheduling, this group is taken into account while running the process.
• Nested metadata groups are displayed only if security defined for their parent metadata allows their display
• Added security rule “CUSTOM DATA & ADMINISTRATOR” to make data available to Administrators or depending on some custom user defined rules.

based on DSpace version 7.0 tag Rest commit 3d9df39 and Angular commit 9fc7b57

Documentation at https://github.com/4Science/DSpace/releases/download/dspace-cris-2021.01.01/dspace-cris7-2021_01_01-technical-documentation.pdf

DSpace-CRIS 7 2021.01.00 June, 2nd
This version fully supports all key use cases for a modern repository and RIMS / CRIS system. It is designed for new users, as migration from previous versions still requires some custom data extraction and transformation.

With DSpace-CRIS 7, 4Science is delighted to announce a number of key enhancements which improve the flexibility, integration, data quality and accuracy of DSpace-CRIS:

- Full ORCID v3 integration (push/pull information)
- Integration with dozen external data sources, including commercial ones, to retrieve bibliographic and bibliometric data
- Support for decentralised management, self-service researcher profile management and approval workflows
- Aligned to the latest OpenAIRE Guidelines for Literature Repositories, Data Archives and CRIS Managers
- Data quality tools ensure that your information is always complete and accurate

These enhancements with DSpace-CRIS 7 build on the new DSpace 7 architecture, featuring a new Angular UI and a fully-featured REST API.

**Architecture**

- Aligned with DSpace 7
- full REST API with a documented contract
- modern Angular SPA UI

**Authentication**

- DSpace-CRIS can be integrated with several Identity Provider ranging from Shibboleth, LDAP, OpenID Connect, ORCID to a local username/password (encrypted) database

**Data collection**

- Submission process for all the entities in the OpenAIRE CRIS information space (Publications, Patents, Products, People, OrgUnits, Projects, Fundings, Equipments, Journals)
- Import from external sources available for most entity types: Fundings from OpenAIRE, Patents from the European Patent Office, OrgUnits from Sherpa/RoMEO (publisher), People from ORCID, Publications from ORCID, PubMed, CrossRef, Scopus, Web of Science, OpenAIRE, arXiv, NASA/ADS, Cniil, Scielo, VuFind, PubMed Europe), Journals from Sherpa/RoMEO
- Automatic enrichment of manual submission looking up to the external providers by identifiers
- Bulk operations (creation, update, delete) via xls on all the entities with easy cross-linking (any identifier can be used to link any kind of entities, i.e., publications to a person via an ORCID, staffno, etc) and future reference (link to an entity that is not yet in the system via an identifier that will be resolved later). Bulk operations are validated against your data model, submission configuration and security (mandatory and available fields, relations, etc.)
- Publication Metadata extraction from Scholarly PDF via machine vision (based on the Grobid project)
- Receive automatic alert from compatible providers (OpenAIRE, ORCID) about missing publications or wrong/incomplete data on existing records
- Automatically import new publications for your researcher from Scopus and Web of Science
- Grab bibliometrics data for your publications and authors from Scopus and Web of Science
- Manage complex structured data as nested metadata and ternary relations

**Data presentation**

- define sections and entry points to explore your repository composing configurable widget such as sorted list of objects (Most viewed, Most cited, Recent additions, etc.), infographics for key indicators (number of publications, researchers, etc.), search facets, browse indexes, advanced search form and branding messages
- easily organise your data without code change in tabs and boxes
- include references to linked entities in any entity page (i.e. the list of publications of a researcher, the list of funding received by a project, etc.)
- present search results and linked entities in a graphical way with pie, line, bar charts
- export your researchers information in professional looking PDF/RDF CV
- export details about your other entities (Funding, Projects, Organisations, etc.) in PDF/RDF fact sheets
- export publications data in citation formats (APA, Chicago, MLA, etc.) via CSL
- show the bibliometrics collected for your publications and authors
- include alternative metrics information for your publication from AltMetric and/or Dimension
- ORCID and authenticated ORCID are properly displayed in researcher profiles and linked records (publications, projects, etc.)
- granular visibility at metadata level based on contextual rules (financial data of a funding visible only to the investigators involved in the project, personal contact data only to HR people, etc.)
- rich and extensible usage reports are available for all the entities including direct data (visualization and download) and aggregated data about the linked objects (visualization of researcher's publications, etc.). Data can be visualized in tabular and graphical form with maps and exportable charts (pie, line, bar). Reports can be produced for a specific time frame or since the system setup

**Profile management**

- Researchers can manage directly selected information in their profiles and linked records
- List of linked objects in the profile can be amended, hiding unwanted objects (old research) and forcing a preferred visualization order (selected publications, projects, etc.)
- ORCID Synchronisation: the researcher can connect/disconnect her local profile with ORCID to received suggestion about missing publication and push update to the ORCID registry
- ORCID preferences: it is possible to configure which details are synchronised (biographic information, affiliation, qualification, education, publications, funding) setting a manual or automatic (over the night) push

**Data quality & accuracy**

- Identify potential duplicate during the submission and approval workflow
- get flags for unrelated entities or uncertain matches (i.e. not identified authors in a publication, investigator in a project, etc.). Option to automatically create new records for specific entity types or manual curate the authorities
- configurable lookup authorities both internals than externals, such as the personal staff, the ORCID registries, the recorded fundings, the OpenAIRE project database and more
- default to international approved data model (CERIF / OpenAIRE) and controlled vocabularies (COAR)
- retains identifier for external entities for future use and automatic match (i.e. ORCID of external authors)
- enforced validation in bulk operation to guarantee that the record structure always match your definition (i.e. the proper metadata are used according to the entity definition)
- Receive automatic alert from compatible providers (OpenAIRE, ORCID) about missing publications or wrong/incomplete data on existing records
- Automatically ingest publications for your researchers from Scopus and Web of Science
- Configurable workflows by collection and entity types to involve librarians, research officer, legal, ethical and financial department in data input and verification
- Correction workflow to be used by less privileged user to request correction on existing record that need to be moderated
- Easily to monitor and organise tasks queue for approvals, changes in correction requests are highlighted

Data security

- enforced granular security at the metadata level across the whole platform: REST API, export and import tool, visualization
- support for partial editing so that researcher can edit some (configurable) information in their profile and their related records without touching master data coming from external systems or under the Institution responsibility
- easily access to an audit log of all the operations performed on a record
- REST API are protected using JWT, SSL, CSRF Token

Interoperability

- Connectors to retrieve records (Publication, Person, Funding, OrgUnit, Journal) from 17 external data sources
- Connectors to retrieve bibliometrics data for your publications and authors from Scopus and Web of Science
- Full integration (push/pull) with ORCID via v3 API and support for WebHook (Premium API)
- Aligned to the latest OpenAIRE Guidelines for Literature Repositories (v4, v3), Data Archives (v4 unreleased) and CRIS Managers (v1.1.1)
- Full REST API
- export options in XML, CERIF XML, XLS for all the entities

Documentation at https://github.com/4Science/DSpace/releases/download/dspace-cris-2021.01.00/dspace-cris7-2021_01_00-technical-documentation.pdf

2020

We are ready to tag a new official DSpace-CRIS 5 and 6 releases after the cut of the official DSpace 6.4 and 5.11 versions, up to now we are still working on snapshot releases. The following features have been introduced:

Updates to the ORCID Integration

- switch to the ORCID v3 API
- possibility to link the local researcher profile to ORCID getting authenticated ORCID without being forced to enable the ORCID login for the whole platform
- ability to force push / remove objects from the queue
- improved logging and feedback to the user when there are sync issues
- deal with discrepancies between ORCID and DSpace-CRIS in the datamodel when links are used in place of text and viceversa
- better performance with parallel requests to get details during a lookup

Submission

- support for a fast local mode in the authority lookup so to avoid unnecessary calls to external services when looking for internal references (local profiles, projects, etc)
- more details retrieved from WOS API (Keywords PLUS, ArticleNumber)
- better handling of network resources and throttling with Pubmed and WOS
- flag potential duplicates early in the start submission lookup step (by identifiers)
- Unpaywall integration to grab and/or link to open access fulltext where available

Other

- Processor to visualize (top) objects on a map
- Configurable component to visualize hierarchical relations (orgunits, suborgunits, etc.)
- Improved multi-language support for CRIS metadata, now a fallback language is supported and labels can be set in messages.properties also for the edit screens
- Adherence to the new GeoLite 2 distribution policy
- Removed use of the jxl (outdated) library to deal with excel files
- Added CRIS objects to the sitemaps
- Script to export CRIS objects
- Script to unsubscribe an eperson from all notifications

2018/2019
DSpace-CRIS 5.10 (not official released but our recommended version: please use the snapshot - 5.9 skipped)

*** These features are already available on the 5.x.x maintenance branch ***

- Alignment to the latest official minor releases of DSpace
- Functional alignment between versions 5.x --> 6.x
- International Standards:
  - ResourceSync enabled out-of-box
  - Compliance with the OpenAIRE guidelines supporting the Datacite Schema 4.1 for Data Archives to better disseminate the datasets
  - Compliance with the OpenAIRE guidelines for CRIS Manager v1.1.1
- CRIS Objects management:
  - Delegation of the Administrative UI for the edit and deletion of CRIS entities. To delegate the creation of new CRIS entities it is needed to setup a special collection and a ItemFiller mapping that will convert items to CRIS object upon submission see How to collect data about CRIS entities
  - Concept of CRIS Owner to allow delegation on edit (PI of a project, Journal Director, etc.)
  - Support for granular edit permissions on DSpace-CRIS objects
  - Improved procedure to update data model configuration
  - Light support for multilingual attributes in DSpace-CRIS entities
  - Support UI sorting of nested CRIS objects (i.e. sorting of affiliation by date, by role, etc.)
  - Script to identify and merge duplicated CRIS Objects (Researcher profiles, etc.) - merge of duplicate publications is also already available in UI since version 3
  - Add linked objects from the CRIS detail page (publications to a project, projects to a researcher profile, etc.)
- Submission-related features:
  - Integration with Grobid providing automatic extraction of metadata from PDF file (using computer vision not limited to properties in the PDF file)
  - Import of multiple records at once in the StartSubmissionLookup
  - Import and feed publications from ADS (Astrophysics Data System)
  - Project Lookup and import from OpenAIRE via REST API
  - Journal Lookup and import from ZDB database (journal database maintained by Staatsbibliothek zu Berlin, Preußischer Kulturbesitz and Deutsche Nationalbibliothek)
  - Ability to import data from linked entities in the item during the submission to provide suitable default (i.e. nested affiliation of authors as appear in the publication profiled with the current affiliation)
  - fix: Scopus, Pubmed & Crossref can be used as a search provider (title, authors, year) other than lookup by identifier
- Researcher profile management features:
  - Improved publication claiming: researchers are able to claim their role in existing publications (manually or via list of potential matches and bulk claiming)
  - Several improvements & fix to the full (push/pull) ORCID integration, including:
    - switch to v2.1 (from 2.0)
    - Automatic import of new publications from ORCID (webhooks)
    - a new script to pull biographic update from the ORCID registry
- End user features
  - Login in page
  - Support for the Dimensions badge
  - Improved Altmetric badge (supporting also the ISBN identifier)
  - Statistics improvements (including the unknown category in region, country, city)
- New statistics about the workflow process

* these developments have been funded by OpenAIRE, as result of a public CFP in February 2018, see the announcement here

We thank Technische Universität Hamburg, University of Bamberg, University College of Dublin, University of Coimbra and Avicenna-Research for their support.

DSpace-CRIS 6.3 (not official released, please use the snapshot)

- Alignment to the latest official minor releases of DSpace (still in progress)
- Functional alignment between versions 5.x --> 6.x (still in progress)

2017

5.8 (released on September 15th, 2017) - see the full announcement here: https://www.4science.it/en/2017/09/14/dspace-cris-5-8-and-orcid-v2-api-support-release-announcement/

- Switch to the ORCID API v2, see https://members.orcid.org/api/news/xsd-20-update
- bug fixes from DSpace 5.8

5.7 (released on August 8th, 2017) - see the full announcement here: https://www.4science.it/2017/08/09/dspace-cris-5-7-release-announcement/

- Hierarchy metadata support for DSpace items (new addition from the RC): It is now possible to configure one or more metadata as child of another one. If the parent metadata is repeatable, adding an additional value for the parent metadata will allow to input values also for the linked child metadata. Currently only text-based (onebox) metadata can be used as child metadata but support for the other input types will be added in subsequent minor releases.
• Signposting support: DSpace-CRIS is more machine friendly than never. It supports now the following signposting patterns: Author, Identifier, Publication Boundary

• The CORE Recommender Engine integration: Display documents that are semantically similar. Powered by CORE https://core.ac.uk/. You can take a look at our example here: https://dspace-cris.4science.it/handle/123456789/102

• Authority Lookup based on Getty Vocabularies: For more information about Getty Vocabularies please check https://www.getty.edu/research/tools/vocabularies/index.html; DSpace-CRIS implementation involves both the “Getty Thesaurus of Geographic Names Online” (https://www.getty.edu/research/tools/vocabularies/igs/index.html) and “The Union List of Artist Names” (ULAN - https://www.getty.edu/research/tools/vocabularies/ulan/index.html)

• Authority Lookup based on Viaf service: The VIAF® (Virtual International Authority File) combines multiple name authority files into a single OCLC-hosted name authority service. More info at https://viaf.org/

• Import ORCID publications via Submission Data Loader: During the submission process, users can choose an ORCID and check which publications to import.

• Cookies Policy Popup: This feature allows easy compliance with the EU legislation on cookies.

• Other minor improvements: It is now possible to clean Solr statistics entries via WebUI; to upgrade Hibernate and Spring to the minor versions; we have improved the automatic calculation of derived metrics and the creation of CRIS objects as part of the submission process.

• Other minor fixes: the out-of-box DSpace OAI Harvesting in DSpace-CRIS; the DSpace-CRIS SOAP web-services; the DSpace-CRIS Network when users try to show many graphs.

6 RC / 5.7 RC (released on June 27th, 2017) - see the full announcement here: http://duraspace.org/articles/3236

• The CORE Recommender Engine integration: Display documents that are semantically similar. Powered by CORE https://core.ac.uk/. You can take a look at our example here: https://dspace-cris.4science.it/handle/123456789/102

• Authority Lookup based on Getty Vocabularies: For more information about Getty Vocabularies please check https://www.getty.edu/research/tools/vocabularies/index.html; DSpace-CRIS implementation involves both the “Getty Thesaurus of Geographic Names Online” (https://www.getty.edu/research/tools/vocabularies/igs/index.html) and “The Union List of Artist Names” (ULAN - https://www.getty.edu/research/tools/vocabularies/ulan/index.html)

• Authority Lookup based on Viaf service: The VIAF® (Virtual International Authority File) combines multiple name authority files into a single OCLC-hosted name authority service. More info at https://viaf.org/

• Signposting: dspace-cris now provides out-of-box support for the Author, Identifier, Publication Boundary patterns, http://signposting.org/

• Import ORCID publications via Submission Data Loader: During the submission process, users can choose an ORCID and check which publication to import.

• Cookies Policy Popup: this feature allows easy compliance with the EU legislation on cookies.

• Other minor improvements: it's now possible to clean Solr statistics entries via WebUI; to upgrade Hibernate and Spring to the minor version; we have improved the automatic calculation of derived metrics and the creation of CRIS objects as part of the submission process.

• Other minor fixes: the out-of-box DSpace OAI Harvesting in DSpace-CRIS; the DSpace-CRIS SOAP web-services; the DSpace-CRIS Network when users try to show many graphs.

2016

5.6 (released on November 16th, 2016 - click here to browse the code on github) / include the release of DSpace-CKAN integration module

The release includes the security fixes already available in DSpace JSPUI 5.6, making it easier to upgrade from a recent DSpace version to DSpace-CRIS (no more need to run sql scripts manually) and brings a lot of new and exciting features:

• UI Extendibility: the webapp can now use the servlet 3.0 specification, enabling the creation and plug-in of external modules with their specific web UI components and pages. An extension point has been introduced to plugin viewers dedicated to particular bitstreams.

• Edit metadata for any DSpace Object via the UI: it is now possible to edit/add/remove metadata for Communities, Collections, Bundles and Bitstreams, to simplify the management of further functionalities based on custom metadata.

• Edit archived items with UI submission: administrators can now edit archived or withdrawn items using the same UI available for submissions, exploiting functionalities such as dropdown, autocomplete, ORCID lookup, validation, etc.

• Deduplication tools (detect & merge): this administrative tool allows to check the database for potential duplicates and to merge the confirmed matches. During the submission, an alert is shown when a potential duplicate is detected. More information and screenshots available here https://wiki.duraspace.org/display/DSPACECRIS/deduplication+alert

• Improved ORCID synchronization: DSpace-CRIS now stores the internal identifier assigned by ORCID to the publications in order to prevent record duplications when a local DSpace-CRIS update is pushed to ORCID ("put" code). In addition to that, DSpace-CRIS is now able to push to the ORCID profiles educational and professional information of the researcher.

• Improved submission forms: among the new functionalities we can list the regex validation support, a framework for complex validation support, new input type “number” for submission and new input type “year” for submission.

• Improved security model for CRIS entities: every single CRIS object, object tab and object box can now be configured to be visible to specific users or user groups. An example of this would be when parts of a specific project description (such as costs) can be linked to the project participants, or the department director, or the research/contract office, etc.

• Automatic calculation of derived metrics: examples are average, maximum, minimum, variance of publication citation counts shown as metrics at the level of researcher, organization, project, and so on.

• Advanced import framework: border tables have been introduced to easily create ETL procedures to load and synchronize data, currently limited to publication, in the DSpace-CRIS installation.
• On-demand DOI registration: an administrative UI allows to register DOIs via DataCite or CrossRef for items matching configured criteria (theses, dataset, etc.). For each group it is possible to define the template used to generate the DOI and the metadata to deposit. The precalculated DOI can be revised by the administrator to add complete personalization.

• Template service: the template item now supports the use of substitution variables bound to dynamic code plugged in as spring bean. The functionality allows the generation of default values dynamically generated in submission such as the timestamp, the details of the submitter, and so on.

• Creation of CRIS objects as part of the submission process: it allows users to create new CRIS objects (persons, projects, organizations, events, etc.) on demand as needed during the submission of a DSpace item. It can be even used to provide a workflow around the collection of data, including metrics, about CRIS entities.

As first implementation of the UI Extendibility we provide native support in DSpace-CRIS of the DSpace-CKAN Integration module (https://github.com/4Science/dspace-ckan). DSpace-CKAN allows an in-depth integration between DSpace and CKAN. Tabular data (CSV, XLS, etc.) are deposited in a CKAN instance through a curation task. The preview of the dataset content is enabled proxing in DSpace the CKAN Datastore API so to enforce the access condition defined in DSpace (Open Access, embargo, etc.). The dataset preview allows filtering, pagination and sorting, all the operation are performed on server side to save bandwidth overload. An example is visible here: https://dspace-cris.4science.it/handle/123456789/31

5.5 (released on March 27th, 2016 - click here to browse the code on github)

• Global Statistics: to provide a global view over the repository usage, visualization, download and deposit trends
  http://demo-dspace-cris.cineca.it/cris/stats/site.html?handle=123456789/0&type=item

• Facets for dynamic components: publications list, projects list and any other dynamic component included in the researcher profiles or in other CRIS entity details page (project, organization, etc.) can now provide faceting capabilities
  http://demo-dspace-cris.cineca.it/cris/rp/rp00006

• Bibliographic export for publications: researcher's publication list can be exported in several format by the profile owner and search results can be exported by the repository administrators

• Incremental Authority from previous value: to suggest terms from values already added into the system to keep metadata clean and to avoid misspelling. Common use cases include keywords, publishers, etc.

• Direct access to the researcher profile using external identifiers: make it easy to link external systems to your DSpace-CRIS installation without the need to know the internal identifier. For instance you can address your researcher profiles using their ORCID
  http://demo-dspace-cris.cineca.it/cris/rp/details.htm?lt=orcid&lv=0000-0002-9421-192X

5.4 (released on February 15th, 2016 - click here to browse the code on github)

• There is now a general infrastructure to support metrics about any DSpace/DSpace-CRIS objects, such as traditional bibliometrics for publications, authors, journals, alternative and local metrics.

• DSpace-CRIS is now integrated out-of-box with Scopus, Web Of Science, and PubMed Central to collect, show and process citation data. The AltMetrics badge can be shown beside the other metrics.

• For any defined metric DSpace-CRIS allows for calculating objects’ local ranking and percentile in order to provide the “most cited” component to different web pages (the home page or any other specific Department/Office pages).

• Internal statistics have been elaborated as usage metrics to make them available for “Most viewed”, “Most downloaded” components and to calculate local percentile.

• Metrics data can now be exposed in “listing” to make browsing and searching easier, and they can also be used as sorting criteria. This is done by extending the SOLR capability to load additional information from an external source. This feature enables future improvements such as support for “user rated content” to DSpace.

• Another important new development is the ability to load and update CRIS’ objects into the system using XLS file, a similar approach to what is actually supported by DSpace for standard items. The feature allows a user to set any kind of field, including the relations between different objects (such as org.unit and researchers, projects and researchers, etc.), and custom fields.

• The data model configuration has been simplified, indeed it is now possible to easily export and import the configuration also using XLS files.

• There is now a better integration between DSpace-CRIS and ORCID. When a researcher creates her profile in the local DSpace-CRIS, the system automatically collects all the biographic information (such as biography, additional names, external URLs, additional identifiers) from ORCID, both when the researcher directly accesses the system, as well as when a new publication is added to the system that the researcher is co-authoring.

• Incrementally, the new version has improved the layout and navigation experience: the navigation menu invites the user to explore the repository contents by “Entity”, offering the appropriate tools for each specific type of content such as dedicated browse indexes, advanced search options and components to highlight recent or featured content.

2015

5.3 (released on August 15th, 2015 - click here to browse the code on github)

• Classification widget for CRIS entities (support for hierarchy taxonomy)

5.2.1 (released on July 24th, 2015 - click here to browse the code on github)

• ORCID integration: ability to push biographic data, publications and projects to the ORCID profile

• Boolean widget for CRIS entities

• Text Widget for CRIS entities now support input from controlled list using dropdown, checkbox or radio buttons

5.2 (released on May 25th, 2015 - click here to browse the code on github)
- ORCID integration (authentication)
- Ability to claim profiles (submission lookup on ORCID)
- Global search with Text Highlighting

4.3 (released on Apr 15th, 2015 - click here to browse the code on github)
- many layout improvement
- Global Search funded by University of Hong Kong
- ORCID integration (authentication, submission lookup and import into cris)

4.2 (released on Mar 11th, 2015 - click here to browse the code on github)
- bug fixing of the 4.1.2 release and update to DSpace 4.2 release

2014

4.1.2 (released on Jul 12th, 2014 - click here to browse the code on github)
- bug fixing of the 4.1.1 release

4.1.1 (released on Jun 28th, 2014 - click here to browse the code on github)
- bug fixing of the 4.1.0 release

4.1.0 (released on Jun 13rd, 2014 - click here to browse the code on github)
- upgrade to DSpace 4.1 and to the bootstrap layout also for the DSpace-CRIS pages
- full support for Oracle (tested on 11.g R2 and 12.c), other than PostgreSQL 9.x
- Extensive testing on Oracle
- Easier installation process

2013

1.8.3-beta (released on Sep 6th, 2013 - click here to browse the code on github)
- bug fixing of the 1.8.2.1-beta release
- upgrade to dspace 1.8.3 (security fix)

3.2.0-beta (first draft on Jul 31, 2013 - released on Aug 3rd, 2013 - click here to browse the code on github)
- porting to DSpace 3.2

1.8.2.1-beta (released on July 24th, 2013 - click here to browse the code on github)
- bug fixing of the 1.8.2.0-beta release
- Data Model: ability to define new object types via UI to manage 2nd level CRIS entities: prize, equipment, laboratory shared and linked to one or more 1st or 2nd level CRIS entities

1.8.2.0-beta (released on June 24th, 2013 - click here to browse the code on github)
- Usage Statistics
  1. CRIS entity detail page visit
  2. Global & Top related CERIF Entity views & downloads referencing the CRIS entity (projects for researchers, researchers for OrgUnits, etc.)
  3. Global & Top item views & downloads referencing the CRIS entity
  4. email and RSS alerts
- PubMed Article level metrics
  1. cited-by count in the item page
  2. number of pubmed articles for researcher
  3. total citations in pubmed for researcher (only items in local DSpace database will be counted)
- Integration with DSpace
  1. ability to hide publications (or any other related entity: projects, etc.) in the researcher profile
  2. make a list of selected publications (or any other related entity: projects, etc.)
  3. claim/disclaim (link/unlink) previously DSpace entered publication items, to a researcher profile
- SOAP WebServices for READ-ONLY access to CRIS information
- Network visualization and analysis
1.8.2.0-alpha1 (unreleased, available on github since February 4th, 2013)

- bug fixing of the alpha release

2012

1.8.2.0-alpha (released on November 26th, 2012)

- Management of the 1st level CRIS entities: Researcher Profiles, Projects, Organization Units
  1. Administrative UI for data model definition using the JDynA framework
  2. Detail page for any entity organized in Tab and Box themed with JQuery UI
  3. Faceted Search using the DSpace Discovery 3.0 configuration
  4. Customizable Browse indexes using a backport of the SOLR Browse DSpace 3.0 contribution

- Basic integration of DSpace-CRIS entities with publications (DSpace Item):
  1. CRIS entities as authority for Item metadata
  2. list of referencing DSpace items in the detail page of the CRIS entities