

DSpace Community Annual Report 2017 - July 2018



DSPACE

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SUMMARY

DSpace is a community-based, open source project that produces the DSpace repository platform. With a 16-year history, strong membership support, and active participation from a wide variety of stakeholder institutions located all over the world. 2017-2018 was a year of progress toward the key community priority of developing and releasing DSpace 7 with a new, single Angular user interface and enhanced REST API. The DSpace Steering and Leadership Group has directed this work. This governing body is made up of repre-

The bulk of technical efforts were focused on DSpace 7 which included a great deal of groundwork and foundation support for the new REST API. Plans for a Beta release of DSpace 7 with support for entities are on track for early 2019.

sentatives from member institutions with input from community groups including, the DSpace Community Action Team (DCAT), the DSpace Committers, and the DSpace 7 UI Outreach Group who contributed to and promoted work on DSpace7 throughout 2017.

The DSpace Steering and Leadership Group continued to increase its engagement in leading the community. This governance group met regularly via teleconference throughout the year and twice in person to make progress on key initiatives outlined in the [2015-2018 community-developed Strategic Plan](#) including growing and maintaining an active user and developer community around the DSpace open source product, sustaining the existing user base and ensuring both the

DSpace open source product and our community remain vibrant for years to come, and advancing DSpace technology based on a shared vision. As a community-based project, DSpace depends on the Steering and Leadership Group to represent the needs of more than 2,000 stakeholder institutions around the world who use DSpace.

The technical roadmap for 2017 focused on DSpace 7 development. As a production repository DSpace needs to meet the needs of large and small stakeholder institutions, so minor updates were released as needed. At the same time the bulk of technical efforts were focused on DSpace 7 which included a great deal of groundwork and foundation support for the new REST API. Plans for a Beta release of DSpace 7 with support for entities are on track for early 2019.

At the end of 2017 the DSpace community identified the increasing strategic importance of Current Research Information Systems (CRISs) and Institutional Repositories (IRs) for higher education and research institutions as a way to foster research and innovation and to provide a faster and broader technology transfer to industry and society. The DSpace Entities Working Group was convened in 2017 to investigate possible solutions that would enable DSpace to support, manage and relate entities. Based on the work of the DSpace Entities Working Group, in June 2018 the DSpace Steering Group strongly recommended that the DSpace 7 data model be expanded to support new object types (entities) to provide these immediate benefits: alignment with the COAR Next Generation Repositories recommendations (especially around identifiers, e.g. ORCID), compliance with OpenAIRE v4 guidelines, and ensuring that DSpace stays current and competitive with other repository solutions while being interoperable with existing research information systems.

Building and sustaining a strong community is a central goal for the DSpace Project. To this end, training webinars and user group meetings were offered throughout the year; see the complete list in the Events section at the end of the report.

USER COMMUNITY

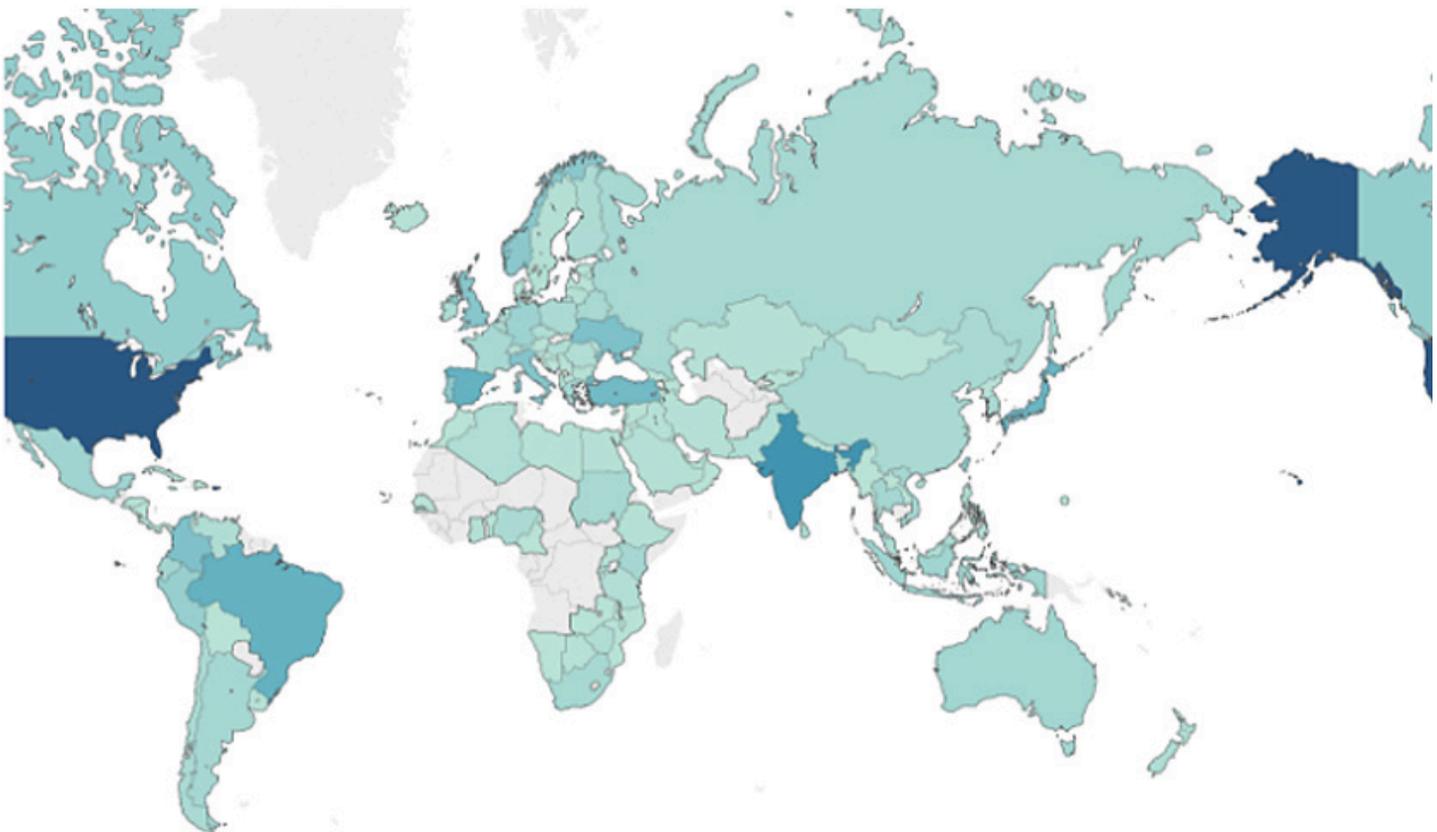
The DSpace Community is the broadest open source repository community globally. In the DSpace User Registry (registry.duraspace.org/registry/dspace) there are 2445 registered instances of DSpace. There may be many more DSpace instances running of which we are not aware. At the beginning of 2018 DuraSpace launched a campaign to clean and update the data in our registry, asking the community to check the data to confirm that the information was correct and still valid, or update. We thank the hundreds of community members who took the time to update their data and take this opportunity to ask the ones who have not done this yet to take a few minutes to check their

information. The registry is a useful tool for the community. Each entry shows country, use cases, type of content, and technical information such as the version being used. As a community resource, it allows users to to contact peers and share ideas and best practices.

DSpace around the world

The map below gives a geographic representation of the regions where DSpace is currently implemented. There are very few regions in which DSpace is not being used. DuraSpace is interested in better understanding commonalities and differences in the use of DSpace based on the different regions of the world in order to be able to offer a better support to the users and the community and to facilitate the exchange of best practices.

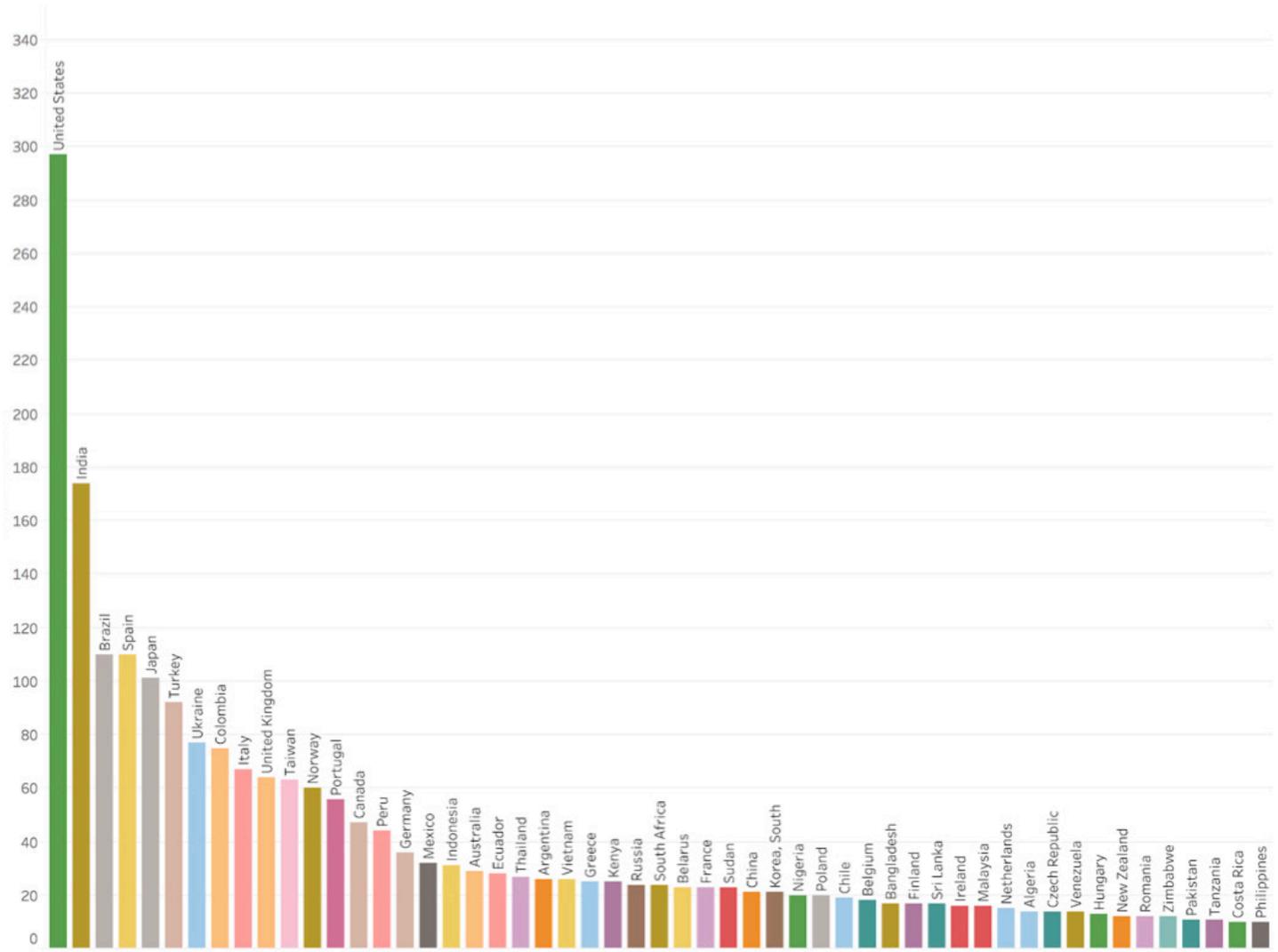
Where in the World are DSpace Repositories?



NUMBER OF INSTALLATIONS

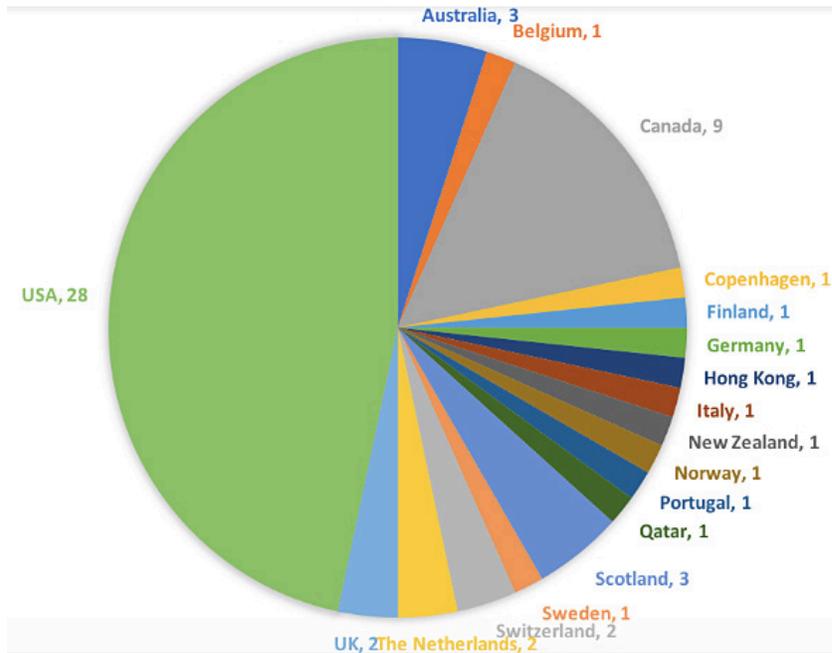


Number of Registered Installations and Geographic Distribution.



1 of Number of Records for each Country. Color shows details about Country. The marks are labeled by Country. The view is filtered on Country, which keeps 53 of 130 members.

MEMBERSHIP



The list of DuraSpace members supporting DuraSpace's effort to advance the design, development and sustainability of DSpace grew in 2017-2018. We welcomed the CINECA, ETH Zurich/ETH Library, Naval Postgraduate School, University of Stirling, Qatar University, bringing the member total to 60. The majority of our members come from the United States, but DSpace membership now includes institutions from more countries. This geographical diversity is particularly represented in the Governance of DSpace, where members from ten different countries are represented.

The full list of DuraSpace members supporting DSpace includes:

Platinum \$20,000

Texas Digital Library

Gold \$10,000

Fundacao para a Ciencia e a Tecnologia, I.P.
 Indiana University Purdue University
 Indianapolis
 The National Library of Finland
 The Ohio State University
 University of British Columbia
 University of Cambridge
 University of Minnesota
 Massachusetts Institute of Technology

Silver \$5,000

CINECA
 ETH Zurich, ETH Library
 Georgia Tech Library
 Imperial College London
 University of Calgary
 University of Edinburgh
 University of Kansas
 University of Manitoba

Bronze \$2,500

Auburn University Libraries

Brandeis University
 Copenhagen Business Library
 Creighton University
 Dalhousie University Libraries
 George Mason University
 Georgetown University
 Gothenburg University Library
 Griffith University
 Laval University - Université Laval
 Malmo University
 Naval Postgraduate School
 New Jersey State Library
 Oakland University, Kresge Library
 Qatar University
 Scottish Digital Library Consortium
 State University of New York
 Université de Montréal
 University of Adelaide
 University of Auckland
 University of Hawaii at Manoa
 University of Hong Kong
 University of Illinois
 University of Liege
 University of Maryland
 University of Oslo
 University of Ottawa
 University of Stirling
 University of Technology Sydney
 University of Texas at Dallas
 University of Victoria
 University of Waterloo
 Utrecht University
 Vanderbilt University Library
 Vrije University Amsterdam
 Wake Forest University
 Washington State University Libraries
 World Bank Group
 Youngstown State University

Other

East Carolina University, Joyner Library
 McMaster University
 University of Oklahoma Libraries

COMMUNITY PROFILES

The most common use of the DSpace software is by academic and research libraries as an open access repository for managing faculty and student outputs. There are also many organizations using the software to host and manage subject based, datasets, or media-based repositories. The following profiles of two member institutions, one an academic library in the United States, and the other a national library in Europe, highlight the flexibility of DSpace in meeting diverse institutional requirements.

Georgetown University

Terry Brady, Salwa Ismail

What strategic organizational or institutional goals did DSpace help you meet?

Georgetown University Library is an agile organization that respects the heritage of the past while anticipating the requirements of the 21st century. One of our goals in support of this mission is to develop flexible and innovative spaces, both physical and virtual, that encourage research, teaching, learning, and collaboration, and that extend the library's services and collections to the global community. DSpace, which is one of the technological tools in the Library's repertoire, has helped us achieve the goal of being able to provide a dynamic and innovative virtual space that helps us showcase our vibrant digital collections and campus scholarship. The engaged community and robust features of DSpace provide a powerful platform for scholarly communications, which helps the Library meet its goal of actively providing creative tools and employing collaborative partnerships to enhance teaching and learning. DSpace's integration with SHERPA/RoMeo, ability to provide statistics, easy ingest workflows among other features posits to help our Library meet its technologically innovative goals, which are in turn aligned with the goals of our University.

Why did you decide on DSpace?

We made a decision to be really good at one repository rather than having multiple repositories for separate purposes. While many folks do not think of DSpace as a platform for digital collections, we have been delighted at what we have been able to accomplish. We have integrated a streaming audio player, a streaming video player, and a IIIF image viewer into our repository.

Each tool that we build to support our IR content is transferable to our digital collections. We also wanted to support open software and platforms and be involved in platform that is developed by the community for the community over an off-the-shelf product. DSpace is a great platform that shows how an active community can shape the development of its products and ensure that they are well positioned to meet the community's ever evolving and changing needs.

What deployment advice would you give others in the community?

Many features of DSpace are easy to implement using just configuration files or simple changes to the theme layer. If you are getting started, create a test environment and practice building and deploying changes to the system. With each change you implement, it becomes much easier to understand how to further enhance the system. We have found that a little work on the theme layer and on the search facets has created a satisfying experience for our collection owners. DSpace has a robust set of tools for ingesting content into the repository. Be sure to learn about the bulk metadata and Simple Archive Format ingest processes. The community is very eager to help. If you encounter a challenge, reach out and be persistent. Someone in the community has likely experienced the same issue in the past. Get involved. If you are running a DSpace instance, you are more than qualified to participate. The community would appreciate your involvement.

What are your roles with DSpace at your institution?

Terry Brady is a Senior Software Developer at Georgetown University Library with the lead role for development of DigitalGeorgetown, which is built on DSpace. Terry is also a committer for the DSpace project.

Salwa Ismail is the Head of Library Information Technology for Georgetown University Library. Salwa was the chair of the DSpace Steering Group and DSpace Leadership Group from 2017-2018.

The National Library of Finland (NLF)

Samu Viita

Your role with DSpace at your institution

Samu Viita works at the National Library of Finland (NLF), in a unit which is called Library Network Services. His work concentrates mainly on technical side of things, including programming and DSpace maintenance. He also does customer service, communication

and training sessions for our customers.

Why did you decide on DSpace?

When I came onboard in 2006, DSpace was already in the early stages of use and testing. I helped to further evaluate and test DSpace for about 6 months. Prior to using DSpace the library had been using a proprietary software platform that did not really meet our needs. The conclusions were that DSpace would be the most helpful for meeting our organizational requirements for the long term. One important factor was the out-of-the-box nature



of DSpace, as we didn't have resources and time to start from scratch with e.g. Fedora. Another important factor was the Manakin (XML UI) interface, which was just in an alpha stage when we adopted it. It enabled us to make separate interfaces for different customers within one DSpace instance like Doria. A third important factor was that the software was open source.

DSpace was probably the first major open source software platform used at the National Library. I think that the choice we made at the time has proven to be right, as we probably wouldn't have repository services at this level without DSpace. And I think that good experiences we have had with DSpace may have encouraged some of our other projects (like Finna and Finto) to invest in the development of open source software.

What strategic organizational or institutional goals did DSpace help you meet?

The most important goal for our repository services is to provide permanent online access to many kinds of interesting materials produced in Finland. These include scholarly publications, cultural heritage materials and publications of the Finnish public sector organizations.

Attendees at the DuraSpace-euroCRIS Interoperability Event focused on interoperability between DSpace repository and CRIS held on June 13, 2018 (in advance of the CRIS 2018 Conference in Umeå, Sweden).

As an open-source-based, out-of-the-box software that has good import functions and customizable user interfaces DSpace has been an excellent basis for building our repository services. With these functionalities it has been possible to make the service attractive and reliable enough to be adapted widely at so many Finnish organizations.

This wide adoption has also had one positive side effect: It's easier to find information on many topics. For example, before services like Theseus or Valto, the universities of applied sciences and the Finnish ministries had their own websites where they published their theses or publications. Now all of them can be found in one place and they have same metadata schema to help information retrieval. And eventually taxpayers get more with less money spent.

TECHNICAL OVERVIEW

After the DSpace Steering Group formally selected Angular as the new platform for the next DSpace UI, the DSpace 7 Working Group was established to formalize the process of building a new Angular user interface (UI) and REST API for the DSpace 7.0 release.

Early in 2017, this DSpace 7 team concentrated on planning the architecture (especially for the enhanced REST API) and building the "framework" for the Angular UI.

In parallel, a DSpace 7 UI Outreach Group was established to help with outreach, and update/capture use cases needed to be met by the new UI. This group also created a plain-language summary of DSpace 7 decisions and features.

In late 2017, the DSpace Entities Working Group was established to analyze options for enhancing the DSpace data model with additional "entities" (objects) for improved integration with CRIS systems and external identifier systems such as ORCID. Key goals of this effort were to achieve better alignment with the COAR Next Generation Repositories recommendations (especially around identifiers) and compliance with OpenAIRE v4 guidelines. The analysis of this working group started from an in-depth analysis of DSpace-CRIS and resulted in the suggestion to reengineer entities in the core code and in a subsequent recommendation by the DSpace Steering Group to expand the DSpace 7 data model to include new, configurable entities. The effort to build and implement these configurable entities continues in 2018.

Throughout 2017 and into 2018, DSpace 7 development has ramped up, and training/learning opportunities and resources have become more widespread. The DSpace 7 Working Group has established ongoing DSpace 7 Community Sprints, allowing existing and new developers to virtually contribute to and learn DSpace 7 technologies in a hands-on, collaborative fashion. The first sprint, (in May 2018, resulted in 14 pull requests from 12 developers, two of whom had

not previously contributed to DSpace. Additionally, the Committers team, led by Terry Brady, established ongoing DSpace Developer Show & Tell meetings, to allow for virtual knowledge sharing among our wide-spread developer community.



DSpace committers attending the Open Repositories Conference 2018 in Bozeman, Montana.

The DSpace 7 Working Group is split into two subteams: an Angular Subteam, led by Art Lowel (Atmire), which is concentrating on building a modern, responsive, client-side user interface using Angular, and a REST API Subteam, led by Andrea Bollini (4Science), which is concentrating on building a new REST API based on state-of-art technologies, standards and best practices.

In June, at OR2018, DSpace 7 developer workshops were led by Angular UI and REST API subteams leaders about the new REST API and Angular UI. Additionally, a detailed DSpace 7 roadmap update was presented, including a recorded demo of DSpace 7 progress and new features. The DSpace 7 final release is estimated for early 2019, with a public beta version preceding it in late 2018.

GOVERNANCE, FINANCE

The DSpace Leadership Group is made up of representatives from institutions that contribute funding and/or in-kind effort to the project. The Leadership Group approves the overall priorities and strategic direction of projects by approving the annual budget and product roadmap, nominating and electing Steering Group members, voting on key decisions presented by the Steering Group, and helping to raise funds and secure other resources on behalf of DSpace. The Leadership Group meets virtually once a month and once a year in person.

The DSpace Steering Group is an elected body of nine representatives voted from the Leadership Group. The Steering Group provides project oversight and ensures that the priorities of the Leadership Group and members are met by providing guidance to the Technical Lead and Committers Group, recommending an annual budget, and presenting key decisions to the Leadership Group for discussion and approval. The Steering Group meets virtually once per month and meets in person annually as part of the larger Leadership Group.

The 2017 membership campaign set of goal of raising \$257,500 to fund the DSpace project, including staff, travel, marketing and meetings and infrastructure. We concluded the membership drive with \$239,500 in funding, which is 94% of our goal. The detailed financial breakdown is below:

Financials

	Income (\$)	Expenditures (\$)
Membership Revenue	\$239,500	
Service Provider Revenue	\$27,862	
Other Income	\$300	
Staff		\$179,823
Contractors		\$3,475
Marketing & Meetings		\$2,460
Travel		\$8,053
Office Expenses		\$9,985
Infrastructure & Support		\$13,343
Total	\$267,662	\$217,139

January 2017 - 31 December 2017 Summary:
Net income from above: \$50,523

Progress on Key Initiatives

Technical accomplishments:

- Recorded demonstration of DSpace 7 progress / new features: <https://youtu.be/yKnos2jTdSQ>
- OR2018 DSpace 7 Roadmap update: <http://tinyurl.com/or2018-dspace7>
- OR2018 Workshops on DSpace 7:
 - REST API: <http://tinyurl.com/or2018-dspace-rest>
 - Angular UI: <http://tinyurl.com/or2018-dspace-ui>
- Public DSpace 7 demo sites–UI demo site: <https://dspace7-demo.atmire.com/>
- REST API demo site: <https://dspace7.4science.it/dspace-spring-rest/>
- [Plain language summary of technology decisions behind DSpace 7](#)
- [DSpace 7 Community Sprints \(ongoing\)](#)
- [DSpace Developer Show & Tell meetings \(ongoing\)](#)
- Service providers: DuraSpace Service Providers have made an investment in our open technologies and a commitment to work cooperatively with DuraSpace to best serve the community of users: <https://duraspace.org/community/service-providers/>

EVENTS

Training webinars, user group meetings, and show and tell events were held throughout 2017 and 2018 to build a strong and sustainable DSpace community. DuraSpace webinar slides and recordings may be found on the DuraSpace webinars page: <https://duraspace.org/webinar/>

2017

February 28, 2017 - “Introducing DSpace 7”, a community webinar presented by Claire Knowles, Tim Donohue, Art Lowel, & Andrea Bollini.

March 7, 2017 - “DSpace for Data: issues, solutions and challenges”, a community webinar presented by Claire Knowles, Ryan Scherle & Pauline Ward.

March 15, 2017 - “How to contribute to DSpace –be a part of the team!”, a community webinar presented by Claire Knowles, Maureen Walsh, Bram Luyten, Hardy Pottinger, & Kim Shepherd.

May 17, 2017 - A UK and Ireland DSpace User Group Meeting held at the University of Cambridge.

June 15, 2017 - “DSpace-CRIS: How it works and how to leverage it”, a community webinar presented by Susanna Mornati, Andrea Bollini (4Science) introduced DSpace-CRIS and its flexible and extensible data model, which allows for the creation and management of various kinds of entities.

June 20, 2017 - DuraSpace and Atmire offered a free DSpace User Group Meeting prior to the OAI10 conference in Geneva.

June 27-30, 2017 - Workshops and sessions on Angular UI development for DSpace, DSpace-CRIS, DSpace extensions and integrations presented by DuraSpace, Atmire, 4Science and other contributors at the Open Repositories 2017 conference in Brisbane, Australia.

August 22-23, 2017 - The Georgetown University Library hosted a DSpace North American User Meeting in Washington. The idea was to offer the DSpace Com-

munity the possibility to share ideas, best practices and use cases at a Regional level (in this specific case, the US Region) and, at the same time, to present the vision and roadmap for the new DSpace 7 UI project. There were 39 attendees from 22 different institutions at the meeting and the discussion was vibrant and engaging. There were sections for DSpace Developers to discuss technical issues, and there were conversations led by Repository Managers dealing with managerial and organizational processes, integration and interoperability, assessment and metrics.

September 21, 2017 - The Library Code GmbH, the Universitätsbibliothek Stuttgart and the Fraunhofer Informationszentrum Raum und Bau IRB organized in Stuttgart the 4th edition of the DSpace Anwender-treffen (German-speaking DSpace User Group meeting). More than 70 attendees from all over Germany and Switzerland gathered together to share ideas and best practices about the use of DSpace. Among the interesting topics discussed there were: the future of DSpace and its single UI expected with DSpace 7; DSpace-CRIS and the use of repository as research information management tools; research data; ORCID integration; interoperability with external systems, etc.

2018

February 27, 2018 - The first meeting in the new DSpace Developer Show and Tell series focused on AWS, Janitor and DSpace (.)

March 27, 2018 - DSpace Developer Show and Tell meeting - Janitor and DSpace, DSpace Development on Codenvy.

April 17, 2018 - DSpace Developer Show and Tell meeting - IDE Showcase .

April 24, 2018 - “Making DSpace Your Own”, a community webinar presented by Terry Brady, Georgetown University Library.

May 15, 2018 - DSpace Developer Show and Tell meeting - Using Docker in Development.

June 3-7, 2018 - Workshops and sessions on DSpace 7 REST API, Angular UI development, Demo and Road-Map, DSpace extensions and integrations presented by DuraSpace, Atmire, 4Science and other contributors

at the Open Repositories 2018 conference in Bozeman, Montana.

June 13, 2018 - DuraSpace and euroCRIS co-hosted a one-day event in Umeå, Sweden in advance of the CRIS 2018 Conference to focus on interoperability between DSpace repository and CRIS systems and bring the two communities together.

4Science offered a free workshop on DSpace-CRIS with presentations from various users.

June 26, 2018 - DSpace Developer Show and Tell meeting - OR 2018 Recap.

July 3, 2018 - Atmire held a DSpace User Group Meeting at The Repository Fringe Conference in Edinburgh.

July 18, 2018 - DuraSpace and CONCYTEC (the Peruvian National Council for Science, Technology and Innovation) organized the first DSpace workshop in Peru as a pre-conference event during the National Conference on Research Information (website). Together with the DSpace training session delivered by Joan Caparros from CSUC (the Catalan Consortium of University), there was a presentation about COAR's Next Generation Repositories and how DSpace is implementing such recommendations and the afternoon was dedicated to a training on DSpace-CRIS provided by 4Science. There were over 160 attendees and 120 more followed the event online.

Contributors to the DSpace Annual Report

Thanks to:

Terry Brady (Georgetown University)
Claudio Cortese (4Science)
Tim Donohue (DuraSpace)
Felicity Dykas (University of Missouri)
Valorie Hollister (DuraSpace)
Mariya Maistrovskaya (University of Toronto)



Attendees at the first DSpace workshop in Peru, a pre-conference event during the National Conference.

Michele Mennielli (DuraSpace)
Carol Minton Morris (DuraSpace)
Kristi Searle (DuraSpace)
Samu Viita (National Library of Finland)

