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1. Foreword

Over the fourth and final year of Europeana DSI-4 (September 2021 to August 2022), global challenges continued to impact society at large and the cultural heritage sector in particular. COVID-19 is still affecting the way we go about our daily lives, interact with each other, work and travel. Threats to democracy challenge us all, and have repercussions for cultural heritage with Russia's invasion of Ukraine a particular concern. In this, the final year of Europeana DSI-4, we worked with these challenges in mind, whilst also continuing to champion inclusion and diversity in the sector, and to explore how we can mitigate our sector's impact on our planet's ever-changing climate.

We have continued to strive to give more people more agency to do more things with digital culture - to share more, to share better and to reap the rewards of doing so. And to ensure that Europeana - its infrastructure, its networks, its philosophy - is ready to take the next steps as it evolves to be at the heart of a common European data space for cultural heritage.

We have delivered on all three of our strategic priorities - strengthening the infrastructure, improving data quality, and building capacity for digital transformation.

Developments to Metis improved the speed and reliability of the data publishing process and the prototype of Metis Sandbox - used by partners to test their datasets - matured into a full application available for wider use. Strengthening aggregation infrastructure in this way improved the aggregation workflow to make it easier and more rewarding and an aggregator survey showed a very good satisfaction rating of 76.2% with our products and services.

New training resources for aggregators and data partners support the ingestion of high quality data (this year our high-quality metadata increased by 5.8% with 70.8% of the total now at Tier A+ and high quality and reusable content increased by 4.6% with a total now at 50.8% Tier 3+), a new online Knowledge Base provides access to ingestion documentation, and case studies and recommendations support the identification and management of diversity, equity and inclusion in collections.

Elsewhere, we gave specific attention to 3D materials, including an update to the Europeana Publishing Guide, and more accurate representation of 3D content in Europeana. Crowdsourcing saw data quality enriched before it was ingested by Europeana while Artificial Intelligence (AI) technologies supported multilinguality, search and data quality.

This year, we've worked hard on understanding our partners, stakeholders and audiences, using surveys, interviews and impact assessments to find out what they need and how we can improve our support for them. This has led to improvements across the board, with particular emphasis on our aggregation processes and capacity building.

For our audiences, updates to Europeana.eu's About Us and Home pages as well as improvements in browsing, filtering search results, and finding editorial content - all based on evidence from our audiences - make it easier to understand what Europeana is all about, as well as to discover and engage with new content.

Our editorials remained current, inclusive and relevant with themes this year including sport, Black history and women's history. We continue to encourage content reuse with user galleries (over 4,000 created this year), GIF IT UP and our second Digital Storytelling Festival.

A highlight of our education work this year was *Built with Bits* - a mentoring programme and educational challenge contributing to the New European Bauhaus movement. It brought teachers and students together with experts and mentors from Europeana's network, to explore and combine open software and cultural datasets, creating virtual spaces for a better world.

Research into our API users showed us that what they need is clear documentation, transparency and solid support. So we focused our efforts on the visibility of our API suite and increased personal support, with outreach being particularly successful towards university students.

And for the Europeana Initiative, we listened to the topics important to our members and instigated cross-Initiative activities bringing members together in a new Climate Action community, Digital Transformation Task Force and Ukraine Working Group.

Cultural heritage professionals were supported with a range of events, recordings and online resources. Highlights this year include an updated Events Toolkit, guidelines for producing training, and the final phase of the Europeana Impact Playbook. Our events included a successful Europeana 2021 conference - entirely online, and Presidency events in Slovenia and France on the topics of engagement and the creation of the common European data space for cultural heritage respectively.

The knowledge we've gained as a result of exploring the needs and ambitions of our stakeholders, partners and audiences has not only gone into our activities this year, but also into our thinking as we look ahead now beyond DSI-4 to being at the heart of a common European data space for cultural heritage.

DSI-4 has prepared us well to take this next step. We thank everyone involved for their contributions as we now conclude the Europeana DSI-4 project.

Harry Verwayen
General Director, Europeana Foundation

2. Introduction

Together with the European Commission and the Member States, the Europeana Initiative fulfils the European Union's aim to enable easy access to digital culture and resources, for citizens, education, academic research and the cultural and creative industries.

The Europeana Digital Service Infrastructure (DSI) showcases and provides online access to Europe's digital cultural heritage. As an initiative of the European Union, and funded under the Connecting Europe Facility (CEF)¹, Europeana DSI-4² is the project that operates the Europeana DSI. The service is provided by a consortium of 19 partners, coordinated by the Europeana Foundation (EF).

The consortium collaborates with the Europeana Network Association (ENA), a strong and democratic community of over 3,500 experts working in the field of digital heritage. We also work closely with the Europeana Aggregators' Forum (EAF), consisting of national, domain and thematic aggregators.

This annual report summarises the main outcomes achieved in the fourth year of Europeana DSI-4, covering the timeframe from 1 September 2021 to 31 August 2022. In the past year, the consortium partners, EAF and ENA worked in close collaboration towards our goals in line with the Europeana Strategy 2020-2025³ to provide a strong public service that supports Europe's cultural heritage sector in its digital transformation. As a result, we strengthened the Europeana infrastructure, we improved data quality and we built capacity for digital transformation.

Implementation plans were supported by the European Commission and the Commission expert Group on the common European Data Space for Cultural Heritage (CEDCHE)⁴ and its subgroups.

¹ <https://ec.europa.eu/inea/en/connecting-europe-facility>

² <https://pro.europeana.eu/project/europeana-dsi-4>

³ <https://pro.europeana.eu/post/europeana-strategy-2020-2025-empowering-digital-change>

⁴ <https://ec.europa.eu/transparency/expert-groups-register/screen/expert-groups/consult?lang=en&groupID=3800>

2.1 Consortium partners

Europeana DSI-4 is provided by a consortium of 19 partners, coordinated by the Europeana Foundation.

EF	Europeana Foundation (Coordinator), The Netherlands
AIT-Graz	AIT Angewandte Informationstechnik Forschungsgesellschaft mbH, Austria
AIT-Vienna	AIT Austrian Institute of Technology GmbH, Austria
APEF	Archives Portal Europe Foundation, The Netherlands
BL	The British Library Board, United Kingdom
CARARE	Connecting Archaeology and Architecture in Europe, Ireland
CLARIN	CLARIN ERIC, The Netherlands
DEN	Stichting Digitaal Erfgoed Nederland, The Netherlands
DFF	Deutsches Filminstitut & Filmmuseum e.V., Germany
EFHA	European Fashion Heritage Association, Italy
EUN	EUN Partnership AISBL, Belgium
EuroClio	Euroclio European Association of History Educators, The Netherlands
F&F	Facts & Files Historisches Forschungsinstitut Berlin Drauschke Schreiber Partnerschaftsgesellschaft Archiv-, Geschichts- und Literaturwissenschaftler, Germany
MCA	Michael Culture AISBL, Belgium
NISV	Stichting Nederlands Instituut voor Beeld en Geluid, The Netherlands
NTUA	National Technical University of Athens, Greece
Photocons	International Consortium for Photographic Heritage Photoconsortium, Italy
PSNC	Instytut Chemii Bioorganicznej Polskiej Akademii Nauk - Poznańskie Centrum Superkomputerowo-Sieciowe, Poland
SPK	Stiftung Preussischer Kulturbesitz, Germany

2.2 Abbreviations

AI	Artificial Intelligence
CHIs	Cultural Heritage Institutions
DSI AGG	DSI aggregators
EAF	Europeana Aggregators' Forum
ECBF	Europeana Capacity building framework
EDM	Europeana Data Model
EIF	Europeana Impact Framework
ELF	Europeana Licensing Framework
ENA	Europeana Network Association
EPF	Europeana Publishing Framework
GS	Generic Services
IIIF	International Image Interoperability Framework

3. Strengthen the infrastructure

In the past year, we maintained and continuously improved Europeana DSI's main services and functionality. We focused on an easy and rewarding data publishing process, a satisfying Europeana website⁵ experience for our users, and a reliable and high-performing platform infrastructure. We also provided engagement activities for users to discover Europeana's digital cultural content.

3.1 Easy data publishing

EF and PSNC offered a fully functional data and aggregation infrastructure through *Metis*⁶, which allows EF to import, transform, validate and enrich metadata for aggregators. This year, developments continued driven by the implementation of the aggregation strategy⁷. We enhanced the speed and reliability of the publishing process via *Metis* and significantly matured the *Metis Sandbox*⁸ that supports data providers in the testing of their data before sending them to Europeana. Efforts contributed to improved and faster processes for publishing data in Europeana.

Extend and maintain Metis

The extension and maintenance of *Metis* is essential to make data aggregation and publication in Europeana faster and more effective. This year, EF and PSNC focused on improving the media service responsible for validating the links to content provided in the data and extracting technical metadata needed to compute the content tiers. Aggregators reported the fact that some media source servers were not able handle the volume of requests that they receive from the Europeana pipeline during media processing. This prevented us from scaling up media processing (as this could exacerbate the issue). We alleviated the issue by implementing a throttling mechanism allowing a user to specify and limit the number of concurrent requests that can be sent for any given dataset, relieving the media servers. With this mechanism in place, we can start scaling up media processing, allowing more media processing jobs to happen simultaneously without impacting aggregators or CHIs media servers negatively. We will be able to increase even further the throughput in the aggregation workflow.

We also maintained and upgraded systems to be reliable and performant. Specific attention was given to improvements to eCloud which is responsible for the processing and storage of the data. The Cassandra database that is behind eCloud and all its functionality has been gradually filling up. In order to mitigate this issue, we have optimised certain aspects of this data storage. We have been working on preventing big partitions (which helps with a more balanced server load), and we upgraded to the next version of Cassandra, which in itself reduced the required disk space noticeably (by

⁵ <https://www.europeana.eu/en>

⁶ <https://metis.europeana.eu/>

⁷ <https://pro.europeana.eu/post/europeana-dsi-4-aggregation-strategy>

⁸ <https://metis-sandbox.europeana.eu/>

approx. 30%). We also greatly simplified the data model by reviewing and refactoring the Authorization and Authentication functionality in eCloud (which connects clients i.e. *Metis*). This update resulted in a more optimal data storage which is estimated to save around 15% of disk space per Cassandra machine.

Metis was also extended to support data quality improvements and more specifically requirements from the Europeana Publishing Framework (EPF) such as normalisation of dates and improved precision and display of 3D content (see section [Raise the quality of content and metadata](#)).

The past year saw several *Metis* releases. Besides the functionalities reported above, the releases contained the following highlights:

- improved data management and file handling which resulted in a significant speedup of our record processing;
- new test repository for records, which will greatly facilitate our testing process;
- improved functionality (e.g. making it easier to troubleshoot errors, making it visible which user triggered or cancelled which process, and a better handling of EDM definitions);
- code (quality) improvements (e.g. improved enrichment/dereferencing code);
- increased coverage of our automated tests;
- customary maintenance in the form of bug fixes and library updates.

Enable Metis Sandbox

The *Metis Sandbox* is a key component of the aggregation strategy. It allows data providers to test and resolve data issues before submitting data to EF. The application was still very much a prototype at the beginning of the year, while we have turned it into a fully mature application, and thus enabled it for wider use.

We extended the *Sandbox* with a feature that allows additional data sources as entry format. The functionality allows the user to translate records from any XML-based format to the EDM format required by the Sandbox. This saves a user performing this translation themselves on their own infrastructure. The mapping was successfully run with data from the BNF (National Library of France) and can easily be applied to other data partners.

We also extended the *Sandbox* with several functionalities to be used by data providers to iteratively improve their records before sending them to *Metis* for processing, thus reducing the need for, and the delays that come with, manual feedback from EF staff. For one, we implemented a tiers calculation module that allows users to examine the quality of any record by viewing the record's properties and the resources that influence the tier calculation. We also added the field warnings functionality, which gives users warnings if certain fields in their data are not what we expect (e.g. a description that is deemed too short or a duplicate title) (see section [4.1 Quality assured data](#)). We also enabled users to view statistics across their dataset. Finally, we added a notification that

warns Metis users if any records have tier 0. All features will place the user in a position to take corrective steps before Europeana attempts to ingest the records.

We also developed training resources⁹ and an extensive user guide¹⁰ for the Metis *Sandbox* that focused on how aggregators can get insight into potential problems in their datasets before they offer them for ingestion. We used the training materials to train aggregators (i.e. at a IIF training session).

We also worked with our network of aggregators and CHIs to define further requirements for the *Sandbox*. This feedback was mostly collected during training and user feedback sessions. We made various improvements in terms of usability. The most significant was a full redesign of the form for creating a dataset and uploading the data.

Additionally, the *Sandbox* was continuously maintained and improved. Besides regular maintenance work (including code (quality) improvements, customary bug fixes and library updates), we improved the application's robustness and user experience (for instance making the application more resilient to faulty user input) and also enabled the *Sandbox* to provide metrics about performance and throughput, which will not only allow us to better diagnose issues but also be instrumental in our performance tests.

Enable fast track publishing workflow

Metis and the Metis *Sandbox* are the enablers of a more automated and integrated publication workflow referred to as Fast-Track. The features developed in DSI-4 Y3 have significantly changed the core aggregation infrastructure and the possibilities of collaborating with data providers.

This year, we worked with our network of aggregators and CHIs to evaluate the features developed in Y3 and their impact on the speed of data publication. User feedback allowed us to identify the features that best serve the needs of the community and to complete a series of additional developments for the Metis *Sandbox* (not initially part of the Y4 implementation plan) (see also [Enable Metis Sandbox](#)).

We further developed and improved the operational workflow (known as fast track) allowing a better integration of the tools part of the Metis Suite. With several tools being opened to the public, more activities around customer support was needed. Europeana has started to develop practices to better manage the communication and exchange of information with aggregators and CHIs. These activities are currently handled in Jira. We have also implemented a 'helpdesk' option for users. Through a link in the application users are able to navigate to a Jira Helpdesk, set up to receive user-created tickets for bugs, feature suggestions and general remarks/requests for assistance. In addition to allowing the team to respond to the users in a structured and visible manner, this gives us an even better feeling for directions we can take in the area of continued application development.

⁹ <https://europeana.atlassian.net/wiki/spaces/EF/pages/2227765249/METIS+Sandbox+Training>

¹⁰ <https://europeana.atlassian.net/wiki/spaces/EF/pages/2104295432/Metis+Sandbox+User+Guide>

We also reviewed the Aggregation Strategy in order to better align the Strategy with the future needs of the Data Space for cultural heritage. We proposed new directions which should lead to a revised version of the Strategy. In particular, the re-positioning of a data quality as the driver the further development of the aggregation model (including processes, workflow and infrastructure). The Strategy also outlines how these new directions may inform the process and revision cycle (including stakeholder feedback) which should accompany the further development of the Strategy and the technical directions which should be prioritised as part of a reviewed roadmap.

3.2 Europeana website experience

The Europeana website¹¹ is the single multilingual access point to digital resources of European heritage. Currently, it provides access to around 53.8 million¹² objects from thousands of institutions across Europe, operating as a multi-sided platform intending to create value for cultural heritage institutions and for end-users. To achieve high value and use, we maintained and continuously improved the website with a focus on a satisfying experience for users.

Note: In 2021/2022 a number of technological, behavioural and policy changes – specifically around data privacy – occurred which impacted the Europeana website and the social media platforms on which Europeana is active. These changes affected our ability to accurately and consistently report on users and usage. For example, the user return rate, one of our key metrics to evaluate the success of the Europeana website. Since introducing a new cookie consent banner on the Europeana website in September 2021, we have no longer been able to accurately record the user return rate.¹³

Number of visits is our key success metric for the Europeana website with a target to reach 500,000 visits per month. In the past year, we saw about 463,500 monthly visits on average which is close to our set target.

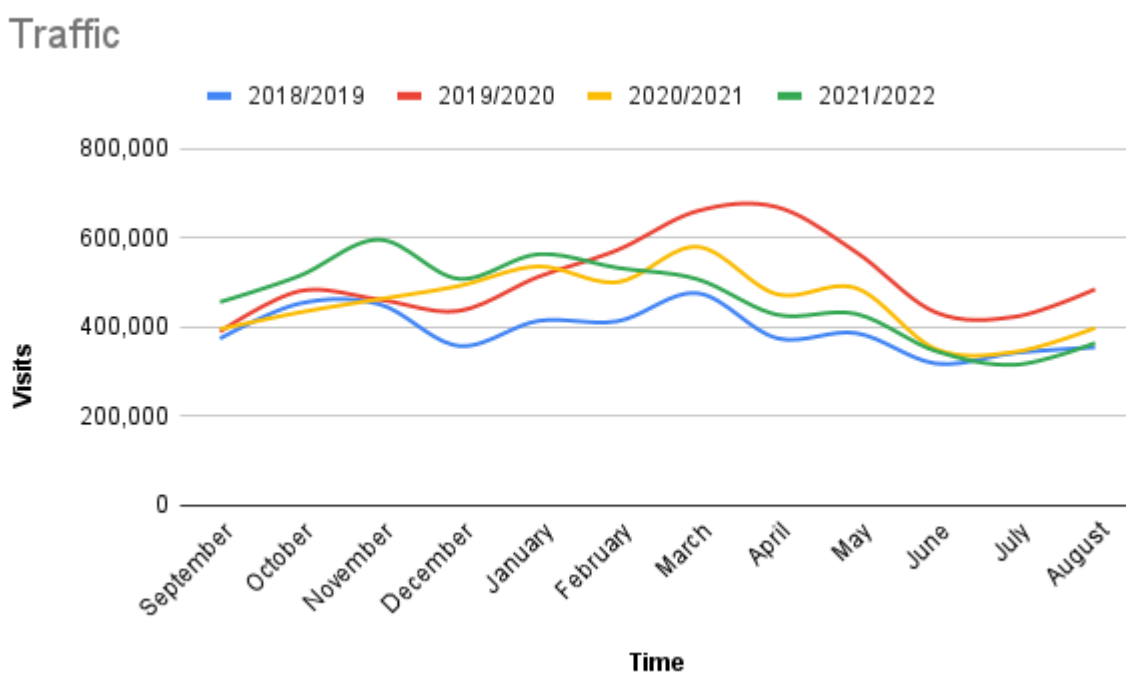
At the beginning of the COVID-19 pandemic in 2020, we saw an exceptional spike of traffic as more people sought online options for cultural heritage. In 2021/2022, the traffic levels reverted to the pattern seen in previous years.

¹¹ <https://www.europeana.eu>

¹² Total number excludes Tier 0 material. Tier 0 material is non-compliant with the Europeana Publishing Framework. It is suppressed in the initial search results on the Europeana website however users can view items if they wish by interacting with the 'item quality' filter.

¹³ More information can be found in C.2/C.3 Users and usage reports available on the Europeana DSI-4 project page. <https://pro.europeana.eu/project/europeana-dsi-4>

Traffic to Europeana website¹⁴



Two user satisfaction surveys for the Europeana website, completed in DSI-4 Y4, showed a good average satisfaction of about 77% for the question 'How likely is it that you would recommend our service to a friend or colleague?' (compared to 73% average satisfaction in DSI-4 Y3).

Extend user engagement features

We aim to retain people that visit our website and encourage them to return frequently. This year, we redesigned the homepage¹⁵ to highlight how a website user can engage with Europeana content and to make it easier for people to discover new content. The redesign communicates our unique value proposition, inviting people to find and use Europe's digital cultural heritage. The new homepage also helps to achieve our strategic goals to increase the number of account holders and newsletter subscribers.

We see a high number of new visitors and we want to ensure that those people understand our value proposition. So, we redesigned the 'About us'¹⁶ page to inform users who we are and what we offer. We also released a notification informing people when a new feature is available on the website.

Further, we improved the browsing experience by adding the possibility of discovering our collection by CHI¹⁷, also providing value for data providers on the Europeana

¹⁴ Comparing Europeana DSI-4 Y1 (Sep 18 - Aug 19), Y2 (Sep 19 - Aug 20), and Y3 (Sep 20 - Aug 21), Y4 (Sep 21 - Aug 22)

¹⁵ <https://www.europeana.eu/>

¹⁶ <https://www.europeana.eu/en/about-us>

¹⁷ <https://www.europeana.eu/en/collections>

website. We also added a search feature to find editorial content such as blogs and exhibitions which works in conjunction with our main search.

Additionally, we further developed the user account functionality making it more robust, accessible, and easier for people to use. For example, we developed a functionality that enables the user to delete existing user accounts.

We continuously maintained the performance of the website (including bug fixing and security and software updates). A more significant development this year was the switch to a new hosting service which improved the website's performance (reflected for example in the uptime metric) (see [Reliable platforms](#)). We also extensively tested the usability, visual styling and editorial copy of the homepage design. We continuously reviewed the website looking for accessibility issues and bugs that need to be fixed and made sure to fix the most urgent issues.

Deliver better search experience

EF continued to improve the search experience and content findability for users by progressing with the implementation of the Search Improvement Strategy¹⁸.

We redesigned filters on search¹⁹ and entity collection pages²⁰ making it easier for people to interact with them. The update introduced two new filters, 'item quality' and the 'rights statement' filter.

We also made our editorial content (Stories) more discoverable on the website.²¹ Stories related to a search query are shown at the bottom of the search results and on the entity collection pages. This feature makes it easier for people to discover stories relevant to their current interest. We also improved search results by taking metadata and content quality into consideration in the ranking.

We further developed the recommendation service (based on language models) delivered by the Europeana XX project²² (see also [Reliable platforms](#)). The service (API and front end) was extended to allow data partners who were assigned the 'curator' role to curate the entity pages (see [Extend entities to support better browsing](#)). The user-driven recommendations were also further developed.

We also developed new search functionality on the Search API, which could later be deployed on Europeana.eu or other services. Europeana's search engine can now properly index place information (geographic coordinates) for objects, which is necessary for enabling more advanced search functionality in the future, such as search on a map. We also experimented with the ranking of items by tuning the weight of

¹⁸ Roadmap available at <https://pro.europeana.eu/post/europeana-search-strategy>. Actions are flagged with their associated reference number for cross-reference purpose.

¹⁹ <https://www.europeana.eu/en/search>

²⁰ <https://www.europeana.eu/en/collections/topic/156-natural-history>

²¹ You can view an example of the implementation at the bottom of this page.

<https://www.europeana.eu/en/search?page=1&view=grid&query=flower>

²² <https://pro.europeana.eu/project/europeana-xx>

metadata fields for search with the aim of ranking more highly the objects that match queries based on the most relevant metadata fields - for example when an object's title matches the query term.

In the past year, we also improved the existing search functionality by significantly enhancing the data or metadata it is based on. For example, through the normalisation of dates (see [Raise the quality of content and metadata in the metadata](#)), improvements to the entity collection that expand coverage of search by entities (see [Extend entities to support better browsing](#)), and the benefits achieved by reindexing the data repository (see [Reliable platforms](#)). Additionally, EF and AIT-Vienna implemented a solution for newly added transcriptions to be displayed and searchable in real-time (for example, contributed via Transcribathon.eu or other platforms). We built a pipeline that allows for transcriptions to be integrated into the fulltext infrastructure which was also redesigned to better deal with the dynamics of the data. It allows the Europeana website to display transcriptions within the IIF viewer, harmonising and improving the experience to the end-user. Finally, we have explored the possibility to enhance the transcriptions that Europeana gets for its Newspapers collection by means of OCR processes.

Extend multilingual reach

Multilingual access is key to extending the reach and impact of the Europeana website. The website is fully available in the official 24 EU languages, with all features translated before their release.

We continued to progress the multilingual strategy²³. Most notably, we deployed multilingual search for the Spanish version of the website²⁴. The queries sent by users are translated into English, which enables them to find more results, as this English translation can match more metadata records than the original query (usually in Spanish). The implementation was followed by an evaluation for technical quality and further improved and assessed strategically and technically to determine the feasibility of including more languages in the multilingual search. The evaluation highlighted the complexity of assessing the quality of search results in a multilingual context and provided some key insights into the amount of resources and the costs involved to safely deploy the service to all official EU languages.

We started measuring the progress of multilingual developments with a first implementation and evaluation of metrics focusing on entities. These indicators focus on the completeness of the Entity Collection in terms of language tags, as well as on the number of connections between the Entity Collection and the metadata collection. Following this year's update of the Entity Collection (see [Extend entities to support better browsing](#)), on average, there are 9.57 different languages available per entity in the collection, almost 7 more than in the previous version of the entity database. There is no longer a big gap between the most present language in the collection, English (89%), and the rest.

²³ <https://pro.europeana.eu/post/europeana-dsi-4-multilingual-strategy>

²⁴ <https://www.europeana.eu/es>

Next to the improvements on the Entity Collection, we also worked to extend the range of 'de-referencing' that enables Europeana to enrich its data with contextual information from Linked Data vocabularies (with particular attention to support multilingualism). We updated related documentation in the recently released Europeana Knowledge Base, set up a new form to manage providers' requests to de-reference vocabularies, and extended data mappings from various (multilingual) authority files (e.g. we included the GND - in German with co-reference links to the multilingual Wikidata; and the KulturNav vocabulary - in Norwegian).

Some aspects of the strategy were delivered through partner projects outside the scope of Europeana DSI-4, such as Europeana Translate²⁵ working on a dedicated back-end translation service for Europeana's metadata. In the past months, we supported the project acquiring training metadata from Europeana datasets and the project performed training for some first language pairs. In addition, it has begun to work on connecting the future translation engines (API) to the Europeana components that will apply them. Further, we gathered a group of experts to support the project and discussions on multilinguality for the next phases of development.

Finally, we also worked on enhancing normalisation of the tags that indicate the language of the metadata that Europeana gathers from its partners or third-party sources. It is possible to extend the earlier normalisation to fix some more cases where tags appear in a non-standard way or using different standards (for example 'fre' vs. 'fr'), but this concerns mostly old datasets for which updates are technically more difficult to perform. So instead, we applied the extended normalisation to training metadata for the Europeana Translate project. This effort provides us insights on the impact of this work and ensures that our project partners (and ultimately the eTranslation service) can already benefit from it.

3.3 Reliable platforms

The Europeana website, APIs, and aggregation systems are currently part of the Europeana core service platform. Europeana products were available 24/7 with an average uptime of over 99.95% (excluding scheduled outages).

In DSI-4 Y3 we encountered stability issues with our infrastructure cloud environment and in Y4 we evaluated and tested alternative hosting platforms to improve the reliability of the infrastructure. Throughout the year, we transferred part of the infrastructure (website and APIs) to a new hosting service within our current hosting environment (from the IBM Cloud Foundry environment to IBM Kubernetes). The chosen direction was confirmed by the announcement from IBM of the deprecation of

²⁵ Note: the project will end in April 2023 and the integration of relevant outcomes in Europeana CSP will only happen after DSI-4. During the project, EF will contribute to making progress towards the technical requirements definition, training datasets selection and evaluation.
<https://pro.europeana.eu/project/europeana-translate>

Cloud Foundry²⁶ (June 2022). The migration of the website immediately resulted in the improvement of the performance and stability of the website (for example in our uptime metric).

To maintain a reliable platform, we performed routine and maintenance tasks, such as the reindexing of the data in Solr (search index) and MongoDB (metadata storage). The whole Europeana dataset was re-enriched and re-indexed in October 2021 and June 2022. This contributed to improved search, enhanced representation of 3D content and location information, and more links to entities (resulting in new Entity pages and millions more items linked to Organisation pages, Topic pages, and Person pages).

In DSI-4 Y3 we integrated a recommendation service into the core infrastructure. This year, we dedicated time to fine-tune the service to meet production level requirements (redundancy, scalability as well as the update of recommendations). We implemented a solution that allows us to manually trigger the engine to retrieve updated information for all Europeana records so recommendations made to users on the Europeana website remain up-to-date.

We also maintained and upgraded components of the APIs and the infrastructure (including efforts on resolving bugs, attacks, and doing clean-ups, upgrades, and back-ups).

For the overall infrastructure, some highlights for the past year are:

- log4j2 library improved (core APIs and impacted backend services) to prevent vulnerability that might allow attackers to divert logging and possibly to take over a system entirely
- resolved an issue with our centralised logging service (ELK) and established a mitigation plan to reduce possible related risks and impact in future
- updated out-of-date SSL certificates as the result of security checks

For Europeana APIs some highlights for the past year include:

- improved fulltext infrastructure (see section [4.1 Quality assured data](#));
- improved entity related APIs (see section [4.2 Enriched data](#));
- improved recommendation service (see above);
- Search & Record API: improved support for translations; improved default sorting in search to give more precedence to high quality content;
- User Sets API: improved listing of galleries and first implementation of publication workflow for user galleries;
- Annotations API: call to action workflow for Transcribathon.eu implemented; improved workflow for the submission of subtitles and transcriptions and its integration with the fulltext infrastructure (including the ability to extract statistics and monitor the content being made available in the service);
- Preparation of APIs for deployment in the Kubernetes infrastructure (see above);

²⁶ <https://cloud.ibm.com/docs/cloud-foundry-public?topic=cloud-foundry-public-deprecation>

We updated our technical documentation covering the set-up, configuration and monitoring of the whole Europeana platform (including updates needed because of the switch to the new hosting service), performed stress, performance, and disaster recovery tests and improved disaster recovery procedures accordingly.

Finally, we made progress in ensuring that our products and services are IDPR-compliant and that they respect the standards set by the European Commission. In particular, we have put in place various new privacy statements (for events, surveys, contact points and newsletters), we have reconsidered the use of certain third-party tools, analysed their compliance, and effectively switched to other providers. Finally, we developed internal guidelines to inform EF staff about data protection-related aspects and set up a data protection cross-team that will effectively and consistently coordinate decision-making and implementation of IDPR compliance requirements across our activities.

3.4 Discoverability of digital cultural content

This year we intensified our efforts to make cultural heritage, and narratives about pan-European history and culture, more discoverable to online audiences. In doing so, we made it easier for people to use cultural heritage for education, research, creation and recreation. Users engaged with cultural heritage on the Europeana website, via social media, and on partner websites like Transcribathon.eu. We also offered services for educational audiences and API consumers.

Deliver high-quality editorial features

To showcase the digital collections of our partners, and to make history and cultural heritage relevant to contemporary audiences, last year we published and promoted a diverse array of high-quality editorial content. Our main storytelling formats are exhibitions and blogs, which are curated and produced in collaboration with partners²⁷, and showcased on the Stories page²⁸ of the Europeana website.

In the past year, we published 14 exhibitions²⁹ and 122 blogs³⁰. The new exhibitions published this year achieved a high average audience satisfaction rate of 88%, while the exhibitions *The art of reading in the Middle Ages*³¹ and *Louise Weiss: a committed European*³² were particularly popular.

'I rarely get the chance to read about so many notable people and their disabilities. I love this curation for the disability awareness month.' - Audience comment from a survey on the exhibition [Heroes of the Olympic Games](#)

²⁷ Several Europeana Generic Services projects also contributed to editorials.

²⁸ <https://www.europeana.eu/stories>

²⁹ <https://www.europeana.eu/exhibitions>

³⁰ <https://www.europeana.eu/blog>

³¹ <https://www.europeana.eu/en/exhibitions/the-art-of-reading-in-the-middle-ages>

³² <https://www.europeana.eu/en/exhibitions/louise-weiss-a-committed-european>

'It adds another dimension to my understanding of medieval Europe.' - Audience comment from a survey on the exhibition [The Art of Reading in the Middle Ages](#)

'Thank you for introducing me to the wonderful drawings of these ornithologists.'
'Very topical and it is always fascinating to read about women whose names are widely unknown but should be known by everyone.' - Audience comments from a survey on the exhibition [Women writing birds](#)

Making exhibitions available in non-English languages increases their appeal and increases user engagement with the content. In the past year, 57% of the exhibitions that were published were offered in more than one language and notably, two exhibitions from the European Parliament Archives were published in all 24 of the European Union's official languages.

We also highlighted user-created content such as galleries made by Europeana account holders. Last year, account holders created almost 2,200 private galleries and almost 2,300 public galleries. We featured outstanding examples of user-generated galleries on europeana.eu (such as madness in art³³, landscape paintings³⁴, and drawings from the Democratic Republic of Congo³⁵). Almost 17,200 users registered for a europeana.eu account in the past 12 months.

Every day last year we published and promoted new stories, and repromoted existing editorial content. We also developed and published stories within short thematic seasons, on topics that included sport³⁶, Black history³⁷, and women's history³⁸.

In September 2021, we completed the Europeana Sport season, building on activities that commenced in DSI-4 Y3. New editorial was published, which was included on feature pages relating to sport³⁹, as well as a dedicated page for the Olympic and Paralympic Games⁴⁰. During the European Week of Sport, a sporting history email course was promoted with compilations of sport-themed editorials (333 subscribers). Social media stories were also created during this week. The season was supported by collection day events across Europe including three in September 2021 (Amsterdam, NL; Dublin, IE; and Polangis, FR), two in October 2021 (Girona and Torre del Greco, IT) and an online collection day organised in November 2021 in Scotland.⁴¹

The Black History Month season in October 2021 aimed to highlight Black history in Europe. We published the exhibition *Black lives in Europe*⁴² with the support of a sensitivity reviewer. The exhibition and various editorials produced by EF and guest

³³ <https://www.europeana.eu/en/set/5867>

³⁴ <https://www.europeana.eu/en/set/5212>

³⁵ <https://www.europeana.eu/en/set/2730>

³⁶ <https://pro.europeana.eu/page/europeana-sport>

³⁷ <https://www.europeana.eu/black-history>

³⁸ <https://www.europeana.eu/womens-history>

³⁹ <https://www.europeana.eu/sport>

⁴⁰ <https://www.europeana.eu/the-olympic-games>

⁴¹ Events were organised under the Europeana Sport GS project.

<https://pro.europeana.eu/project/europeana-sport>

⁴² <https://www.europeana.eu/exhibitions/black-lives-in-europe>

writers were gathered together on a dedicated feature page⁴³, while an email course (with 1,070 subscribers) and an Instagram quiz shared stories about the lives and communities of Black people in Europe. The season also promoted activities to professionals, with Pro News articles⁴⁴ focusing on work that professionals in the sector are undertaking in relation to Black history and culture that is often missing in the narratives of European history.

During this year's *Women's History Month*⁴⁵ (March 2022), we published new stories about women including the exhibition *The Pill*⁴⁶ (published in seven languages). The season was complemented by Pro News articles⁴⁷. In an Instagram take-over, six museums and organisations took over Europeana's Instagram stories to present historical women as well as to showcase their work bringing more visibility to women's history.

Communication and dissemination to European citizens

To drive traffic to the Europeana website and to engage audiences with Europeana and digital cultural heritage, last year we actively promoted Europeana on our social media channels, via our monthly newsletter (reaching 50,000 subscribers) and via the communication channels of partner organisations.

In the past year, our presence on social media (Facebook⁴⁸, Pinterest⁴⁹, GIPHY⁵⁰, Twitter⁵¹ and Instagram⁵²) was very successful. We had more than 450 million impressions on social media with an average of about 190,000 likes, shares, or comments monthly, and a 3.8% increase of fans/followers (about 8,600 fans/followers in total). Comparing Europeana posts on various social media platforms with the median engagement per post for all industries and non-profits showed that Europeana performs very well with high average engagement rates per post.

Note: The implementation of GDPR and Apple's iOS 14 update (to protect users' privacy) on social media has impacted our metrics gathering. With more limited options for data collection, we observed a drop in impressions and engagement.

We celebrated Black History Month (October 2021) and building on the success of previous years, we again participated in Women's History Month (March 2022) which once more proved to be our most popular activity in terms of engagement and traffic generated.

⁴³ <https://www.europeana.eu/black-history>

⁴⁴ <https://pro.europeana.eu/tags/black-history-month-2021>

⁴⁵ <https://www.europeana.eu/womens-history>

⁴⁶ <https://www.europeana.eu/exhibitions/the-pill>

⁴⁷ <https://pro.europeana.eu/tags/womens-history-month-2022>

⁴⁸ <https://www.facebook.com/Europeana/>

⁴⁹ <https://www.pinterest.de/europeana/boards>

⁵⁰ <https://giphy.com/europeana>

⁵¹ <https://twitter.com/europeanaeu>

⁵² https://www.instagram.com/europeana_eu/

We raised awareness of Europeana and engaged new users through partnerships, such as the global GIF-making contest GIF IT UP and the Digital Storytelling Festival.

The global GIF-making contest GIF IT UP⁵³ 2021 (October 2021) motivated users to create GIFs with digital cultural content. The contest was co-organised with the partners DPLA (USA), Digital NZ (New Zealand), Trove (Australia), Japan Search (Japan), Art Institute of Chicago (USA) and DAG Museums (India). Over 158 eligible GIFs by creators from across the world were submitted for the competition and the GIF IT UP website received almost 16,300 visits during the contest (October 2021). Innovations for this year's GIF IT UP contest included: 'The GIF-making Academy', a three-part email course offering the first-time GIF maker the opportunity to receive information and training resources directly into their mailbox; a dedicated category for sporting GIFs created to align with the Europeana Sport season; a new partner in the Art Institute of Chicago (USA); and previous entrants sharing how they make GIFs and get inspired, on the Europeana blog.

Another highlight was the second edition of the Digital Storytelling Festival⁵⁴, an international creative contest that brought people and cultural heritage together, organised in partnership with The Heritage Lab, India. To kick off the festival, we hosted an online Opening Gala (May 2022), full of interactive workshops, practical tips and presentations to encourage participation and reuse of cultural heritage. We welcomed 363 unique participants over the two days, and the audience satisfaction rate was 83%. The Festival concluded in early August with a webinar announcing and discussing this year's winning stories⁵⁵. Eleven stories were assessed by the jury and public, an increase from nine stories judged in 2021. Overall, this year's Festival built on last year's debut event, with greater participation and new resources being created.

We shared artworks from Europeana with over one million DailyArt app users, and publish guest blogs in their online magazine⁵⁶. We also participated in the #ColorOurCollections campaign and promoted Europeana's colouring books, including the new edition Celebrating European Year of Youth⁵⁷.

In addition, we continued the cooperation with the #DisHist community, raising the awareness of disability in cultural heritage and historical material. We published more editorials on the topic of disability (e.g. the Disability Heritage⁵⁸ feature page) and also strived to include more stories on notable people with disabilities in our seasons to show the intersectionalities of people's identities.

Europeana Transcribe⁵⁹

⁵³ <https://gifitup.net/>

⁵⁴ <https://pro.europeana.eu/event/digital-storytelling-festival>

⁵⁵ <https://medium.com/digital-storytelling-festival/meet-the-winners-of-the-2022-digital-storytelling-festival-914d7623e471>

⁵⁶ <https://www.dailyartmagazine.com/author/europeana/>

⁵⁷ <https://www.europeana.eu/en/blog/european-year-of-youth-colouring-book>

⁵⁸ <https://www.europeana.eu/en/disability-heritage>

⁵⁹ <https://transcribathon.eu/>

Europeana Transcribe is a crowdsourcing platform allowing users to add transcriptions, tags and georeferences to historical material (historical letters, diaries and pictures). F&F and EF encouraged and facilitated the transcription of historical material by organising online events and runs⁶⁰. For example, the continuous online *Stories of the Month Run*⁶¹. Each month, Europeana Transcribe highlighted several stories in various languages, selected around certain themes such as essential workers, expeditions, poetry, and photography.

We also collaborated with the Enrich Europeana + project⁶² and collaboratively organised an online training run⁶³ in Dublin (November 2021), the Dublin Transcription week⁶⁴ (March/April 2022), and the Wroclaw Transcription week⁶⁵ (May/June 2022). In addition, the Public History Bremen SUMMER SCHOOL 2022 – TRANSCRIBATHON⁶⁶ (June 2022) was organised in collaboration with the Bremen University and the Leo Baeck Institute.

Over one year, this contributed to an 6% increase in the number of users (more than 3,500 registered users in total, Aug 2022) and 21% increase in characters transcribed (46.1 million characters ever transcribed, Aug 2022).⁶⁷

Engage with educational communities

EF delivered value for educational audiences, including museum educators, and worked to raise their digital skills and capacity. We promoted Europeana and its offers by participating in events, conducting webinars, workshops, and publishing articles. Teachers using Europeana services at our events evaluated Europeana with an excellent average satisfaction rate of 91%⁶⁸.

We collaborated with educational partners on cross-promotion and joint community outreach campaigns. In March/April 2022, for example, we contributed to the Annual Open Education Week⁶⁹ and All Digital Week campaign⁷⁰.

In July 2022, we supported a survey, set-up by Centrum Cyfrowe, Poland on '*Open GLAM & education. Teacher's and educator's perspective on digital culture resources*'⁷¹. The survey was accompanied by a brainstorming meeting with experts from Centrum Cyfrowe, EF,

⁶⁰ A Transcribathon 'run' is a competitive event, highlighting content for transcription, and offering prizes for those who transcribe most material in a set period of time.

⁶¹ <https://europeana.transcribathon.eu/stories-of-the-month/>

⁶² <https://pro.europeana.eu/project/enricheuropeana>

⁶³ <https://europeana.transcribathon.eu/runs/dublin-run/>

⁶⁴ <https://europeana.transcribathon.eu/runs/dublin-transcription-week/>

⁶⁵ <https://europeana.transcribathon.eu/runs/wroclaw-2022/>

⁶⁶ <https://europeana.transcribathon.eu/runs/bremen-run/>

⁶⁷ Note: the increase was calculated comparing July 2021 with August 2022 (as the only numbers available for comparison, taken from C.2/C.3 Users and usage report M35, July 2021)

⁶⁸ For the question 'How likely is it that you would recommend our service to a friend or colleague?'

⁶⁹ <https://oeweek.oeglobal.org/resources/>

⁷⁰ <https://pro.europeana.eu/event/all-digital-weeks-2022>

⁷¹ <https://oeg.centrumcyfrowe.pl/index.php/336775?lang=en>

EuroClio and Creative Commons to shape together valuable recommendations for policymakers and all stakeholders relevant to Open Culture and Open Education.

Europeana Education community

Our work was supported by the Europeana Education community⁷², composed of professionals who believe in the important role culture can play for innovative teaching and learning.

One highlight this year, organised in collaboration with the community, was the *Built with Bits*⁷³ mentoring programme and educational challenge which contributed to the New European Bauhaus movement (January 2022). In two months, 26 educators from four European countries (Italy, Spain, Greece and Portugal) participated in the programme that invited students and educators to design virtual spaces for education (using Mozilla Hubs⁷⁴). 16 projects were finally submitted, we ran 15 hours of synchronous learning and produced 25 online resources for capacity building⁷⁵. 536 children were involved in the design of educational metaverses inspired by the New European Bauhaus. Additionally, we published a series of interviews for people to learn more about the winning projects⁷⁶.

The Built with Bits programme was followed up with the new *Built with Bits* 2⁷⁷ (Brussels) (June 2022) event as part of the Festival of the New European Bauhaus. It was organised as a citizen lab at the House of European History in Brussels. More than 40 attendees gathered together to contribute ideas which will form part of a mentoring programme for students of LUCA School of Arts and KU Leuven, in which students will be supported to further develop the ideas and to produce a virtual space for education.

In the past year, the community also strengthened its collaboration with the Copyright community (for example, via the Copyright Office Hours⁷⁸) to support educators in navigating the new directive and the respective national transpositions.

The outreach to the Europeana Education community was very successful in the past year, resulting in a 21.8% increase in ENA community members (c. 2,200 members in total). In August 2022, we reached over 10,200 people with key communication channels dedicated to education (mailing list, LinkedIn, Facebook).

Educational partnerships

Together with European Schoolnet (EUN) and Historiana (EuroClio), we encouraged the use of digital cultural heritage in formal and non-formal education. In the past year, EUN and Euroclio developed a total of 155 new learning resources with Europeana data and regularly published the best examples for teachers and museum professionals to use.

⁷² <https://pro.europeana.eu/network-association/special-interest-groups/europeana-education>

⁷³ <https://pro.europeana.eu/page/built-with-bits-designing-virtual-spaces-for-the-future>

⁷⁴ <https://labs.mozilla.org/projects/hubs>

⁷⁵ 10 video tutorials are [available on Pro](#) and materials and other documentation are [available on Notion](#).

⁷⁶ <https://pro.europeana.eu/page/built-with-bits-designing-virtual-spaces-for-the-future#the-winners>

⁷⁷ <https://pro.europeana.eu/post/built-with-bits-brussels-kicks-off-at-festival-of-the-new-european-bauhaus>; <https://www.youtube.com/watch?v=idzXMndFwI4>

⁷⁸ <https://pro.europeana.eu/event/copyright-office-hours-use-of-digital-cultural-heritage-in-education>

We also invested more effort in translating learning resources into different European languages.

European Schoolnet⁷⁹

EUN coordinated both the *Europeana Ambassador Network*⁸⁰ and the *Europeana User Group*⁸¹ and developed new learning resources that were promoted on the *Teaching with Europeana blog*⁸², the *Future Classroom Lab (FCL)*⁸³ and the *EUN YouTube channels*⁸⁴. In the past year, almost 1,600 educators from 43 countries were actively involved in creating learning resources.

One highlight this year, was the *Europeana MOOC Digital Education with Cultural Heritage rerun* in English⁸⁵, Italian⁸⁶, Croatian⁸⁷ and Greek⁸⁸ (March 2022). Over 2,400 people from 52 countries registered for the course and 510 participants completed the MOOC and got a certificate (34% completion rate). 96% of post-survey respondents rated the overall value of the course as good or very good and 93% agree or agree strongly that they will use the ideas and examples presented in the course in their everyday work. The different language versions of the *Digital Education with Cultural Heritage MOOC rerun 2022* resulted in 50 new learning scenarios. Those have been published already on the *Teaching with Europeana blog*⁸⁹ or will be added to the blog over the coming months for audience engagement.

Another highlight was the *Europeana Education Competition 2022*⁹⁰, organised in collaboration with the 2022 STEM Discovery Campaign⁹¹ (February to April 2022). It invited primary and secondary school teachers of all subjects, museum educators and other CHI professionals to submit innovative learning scenarios and stories of implementation using digital means. A total of 111 entries were received and a group of 21 winners and the Europeana Ambassadors were invited to a Europeana workshop⁹² (June 2022) that served as the closing event.

Historiana⁹³

EuroClio further developed the educational offer on Historiana. In the MySources section of Historiana, members can now find and select audiovisual Europeana sources and/or upload their own sources. Once a video is imported as a source it can be used in

⁷⁹ <http://www.eun.org/>

⁸⁰ Teacher Ambassadors from nine different countries working with its supporting education ministries, and three Museum Educators Ambassadors.

⁸¹ 88 teachers and 14 museum educators from diverse countries.

⁸² <https://teachwitheuropeana.eun.org/>

⁸³ <http://fcl.eun.org/directory>

⁸⁴ <https://www.youtube.com/c/EuropeanSchoolnet59>

⁸⁵ https://www.europeanschoolnetacademy.eu/courses/course-v1:Europeana+Culture_EN+2022/about

⁸⁶ https://www.europeanschoolnetacademy.eu/courses/course-v1:Europeana+Culture_IT+2022/about

⁸⁷ https://www.europeanschoolnetacademy.eu/courses/course-v1:Europeana+Culture_HR+2022/about

⁸⁸ https://www.europeanschoolnetacademy.eu/courses/course-v1:Europeana+Culture_EL+2022/about

⁸⁹ <https://teachwitheuropeana.eun.org/>

⁹⁰ <https://teachwitheuropeana.eun.org/europeana-competition-2022/>

⁹¹ <http://www.scientix.eu/events/campaigns/sdc22>

⁹² <https://www.facebook.com/groups/EuropeanaEducation/permalink/1658062467908720/>

⁹³ <https://historiana.eu/>

eActivities as well as in other places.⁹⁴ Additionally, Historiana now offers a dashboard⁹⁵ for partners to gain insights into usage of Source Collections or eLearning Activities (which ones are most/least popular and what search terms visitors to the partner pages are using and whether they found what they were looking for).

EuroClio also offered personalised training and co-creation sessions to aggregators and CHIs on how to create partner pages and learning materials⁹⁶. Outcomes of this effort are new Source Collections and eLearning Activities published on the Dutch Royal Library's Partner Page⁹⁷ and new Source Collections on the Photoconsortium's Partner Page⁹⁸.

From December 2021 to May 2022, EuroClio organised a webinar series for advanced users - *'Using Historiana to Teach History from Different Angles'*⁹⁹. During this series, each webinar focussed on a specific topic, using exemplar content from the Europeana collections, and a critical thinking skill.

During the DSI-4 Y4, Euroclio also hosted several train-the-trainer sessions¹⁰⁰ to increase the number of trainers reaching more educators with their offers (sessions were organised in Czechia, Georgia and Slovakia).

Thanks to the train-the-trainer programme, EuroClio also progressively increased its multilingual offer of eLearning activities on Historiana. 53 new multilingual e-learning activities were provided either by translating existing eLearning activities or creating new ones (in English, Spanish, Bulgarian, German, Czech, Georgian and Slovak).

Integrations of educational offers in external platforms

We nurture the integration of Europeana content in virtual educational environments, such as portals of national Ministries of Education, CHI portal projects, online European and international campaign pages, and other platforms widely considered as EdTechs.

Currently, Europeana content is integrated into the portals of seven Ministries of Education (France, Spain, Portugal, Flanders-Belgium, Greece, Poland, Netherlands). Last year, we collaborated especially with the Ministries of Education in Spain, Portugal, Greece and Italy for the promotion and outreach of the Built with Bits event at national level. The respective ministries disseminated the event through their channels and

⁹⁴ <https://historiana.dev/av-integration/>

⁹⁵ <https://historiana.eu/my/dashboard> (login required)

⁹⁶

<https://pro.europeana.eu/post/realising-the-potential-of-glam-collections-through-partnerships-between-educators-and-cultural-heritage-professionals>

⁹⁷ <https://historiana.eu/partners/koninklijke-bibliotheek>

⁹⁸ <https://historiana.eu/partners/photoconsortium>

⁹⁹ <https://euroclio.eu/event/using-historiana-to-teach-history-from-different-angles-2/>

¹⁰⁰

<https://pro.europeana.eu/post/euroclio-s-new-training-programme-brings-historiana-to-educators-across-europe>

educational platforms¹⁰¹ and their representatives took part in the final ceremony of the programme announcing their national winners¹⁰².

The training Centre for the Librarians within the National Library of Moldavia organised a training on the National Digital Library MOLDAVICA, promoting Europeana resources in educational activities of the library to more than 100 librarians.¹⁰³

In the past year, we integrated or updated Europeana sources (manually curated or via the Europeana APIs) in the following educational portals:

Platform	Type of integration	Status
MI.MOMO Faro	Adoption of the learning scenario methodology ¹⁰⁴ and integration of 18 learning scenarios using Europeana resources and content in Portuguese ¹⁰⁵	New
European Schools intranet and online curricula	Adoption of the learning scenario methodology (translated in three languages) ¹⁰⁶	New
PLANEA	Integration of the 'Built with Bits' methodology in the annual academic online magazine ANIDA and centre of educational resources for the network PLANEA ¹⁰⁷	New
Unsplash	Two new thematic collections on Unsplash: Black History month ¹⁰⁸ and Art by Queer artists ¹⁰⁹	Update

Attract API users and grow data usage

This year we continued our efforts to encourage the use of Europeana APIs that support the development of new products, services and creations with cultural data.

In January 2022, we reviewed and updated the API outreach strategy¹¹⁰. In general, most of the tasks laid out in the original strategy were successfully achieved: the contact with the API community was re-established, feedback was garnered from the API community on what needs they had moving forward, outdated documentation pages were updated, and the Europeana APIs were presented at several events related to software development in the GLAM sector. The update identified areas of improvement, focusing

¹⁰¹

<https://www.indire.it/en/2021/12/28/europeana-cerimonia-finale-e-annuncio-dei-vincitori-del-concorso-built-with-bits/>

¹⁰² <https://www.youtube.com/watch?v=lg1wPllTmqY>

¹⁰³ <https://www.facebook.com/media/set?vanity=cfpc.bnrm&set=a.3153549964908701>

¹⁰⁴ https://mimomofaro.pt/wp-content/uploads/2021/02/CA_MiMoMoFaro_Faro_2027_Pereira_2021.pdf

¹⁰⁵ <https://mimomofaro.pt/cenarios-de-aprendizagem/>

¹⁰⁶ <https://bit.ly/3O4TEvr>

¹⁰⁷ <https://archive.org/details/anida-02-destripando-la-tecnologia-para-crear/page/n47/mode/2up>

¹⁰⁸ <https://unsplash.com/collections/EmktK16UBm0/black-history-month>

¹⁰⁹ <https://unsplash.com/collections/m02oS7-hKO8/art-by-queer-artists>

¹¹⁰ Available on request.

on the need for more personal 1:1 support of API users and more insight into the user segments of this community.

User feedback gathered in DSI-4 Y3 showed that the community is not very interested in new products and services. We identified that the main needs of API users are clear documentation, transparency and solid support. Therefore, we focused our efforts on visibility of our API suite, keeping the developer community up-to-date with changes, and more personal 1:1 support of API users.

We promoted Europeana API services at relevant outreach events to increase awareness and usage (e.g. Futurs Fantastiques conference¹¹¹). Data providers and aggregator partners were kept up-to-date about changes in our entity collection and updates to the query-based thematic collections, which changed substantially due to the reindex in July 2022. Researchers and students were informed of updates to normalisation of tags and entities, which opened up new research possibilities using Linked Open Data terms.

We also provided personalised support to users of our APIs. New onboarding and check-in messages were created to inform API users about documentation resources and to offer help where it is needed. This has resulted in several tech support calls with API users, and further dissemination of the Europeana APIs. For example, we provided personal support to higher education students at the University in Leuven, Belgium and Leiden University, Netherlands who started to use the Europeana APIs as a case study for personal projects. This exercise provided excellent feedback on what higher education students struggle with or find challenging about the Europeana API suite, and informs how we further develop documentation and capacity building resources for educators using GLAM APIs.

We also maintained and updated our documentation. This included updates to the Harvesting and Downloads documentation page¹¹², and newly created documentation relating to the PyEuropeana Python Library for Europeana's APIs¹¹³.

In the past year, we recorded an average of about 16.1 million external API requests per month. Analysis of our API Key signup form showed that about 48.2% of key holders identify as being part of the education sector, 22.3% identify as being part of the research sector, 8.5% identify as being part of the cultural heritage sector, 5.5% identify as being in the creative industries sector, and 15.5% selected 'Other'. This information is very useful in determining how we approach capacity building for our API suite. An increased focus on providing support to the education and research sectors is part of our strategy for API outreach in the coming years.

¹¹¹ <https://www.bnf.fr/en/les-futurs-fantastiques>

¹¹² <https://pro.europeana.eu/page/harvesting-and-downloads>

¹¹³ <https://rd-europeana-python-api.readthedocs.io/en/stable/#>

4. Improve data quality

In the past year, we increased high-quality content and metadata to improve access to and usage of digital cultural content. This included new technological approaches towards enriching data, such as crowdsourcing and machine-learning. The efforts contributed to a more satisfying user experience on the Europeana website.

Europeana data repository

The Europeana repository currently offers access to over 53.8 million¹¹⁴ digitised cultural heritage objects from thousands of cultural heritage institutions: libraries, museums, archives and audiovisual collections from all EU Member States. In the past year, the repository grew by 2.8% which equates to almost 1.5 million more records available.

Most of the content are images (55.9%), followed by text (42.0%), sound (1.4%), video (0.6%) and 3D (0.01%). 49.8% of the objects are in the public domain or licensed for free reuse (1.4% increase) while an additional 28.7% (3.4% increase) allow for some kind of reuse, for example, educational purposes. This equates to most of Europeana content allowing for some kind of reuse (78.5%), supporting our aim to provide (openly) accessible digital cultural heritage resources.

4.1 Quality assured data

The improvement of data is a continuous effort and some data issues can only be resolved through a multi-year effort. In the past year, we continued to work with aggregators and data providers to raise the quality of content and metadata. As part of this effort, we further developed our data and publishing frameworks, standards and documentation for partners and influenced global interoperability and technological innovation through our networks.

Raise the quality of content and metadata¹¹⁵

We worked towards raising the quality of data available on the platform. The objective was supported by the Europeana Aggregators' Forum (EAF)¹¹⁶, the Data Quality Committee¹¹⁷, the working group on IIF & Europeana¹¹⁸, and the Libraries Working Group¹¹⁹.

EF supported data partners with data publication (DSI AGG, Generic Services project partners, national aggregators, and others) including feedback about their data with

¹¹⁴ Excluding items that are not compliant with the Europeana Publishing Framework (Tier 0 material). The total of all items available in the Europeana repository (including Tier 0) is about 61.4 million items.

¹¹⁵ Data quality is defined by the Europeana Publishing Framework.

¹¹⁶ <https://pro.europeana.eu/post/publishing-framework>

¹¹⁷ <https://pro.europeana.eu/page/aggregators>

¹¹⁸ <https://pro.europeana.eu/project/data-quality-committee>

¹¹⁹ <https://pro.europeana.eu/project/iif-europeana-working-group>

¹¹⁹ <https://pro.europeana.eu/project/libraries-working-group>

concrete advice on how to improve data quality and how to solve data modelling problems. A total of 581 datasets and over 16.5 million records were progressed in the past year. This resulted in a total of 491 unique datasets updated, representing over 14.3 million updated records.¹²⁰ The updates included 161 newly ingested datasets (equal to approximately 1.6 million new records ingested). Below are some highlights of the past year:

- The national aggregator in Poland (Federacja Bibliotek Cyfrowych) updated a dataset from Biblioteka Uniwersytecka we Wrocławiu that had lots of media issues and now comes with IIIF manifests in high quality.¹²¹
- EFHA published a collection of jewellery items from Rijksmuseum, all in very high content and metadata quality.¹²²
- Major update of the BnF manuscript collection in Europeana, increased from 76,812 to 123,885 items, improved in quality. This update includes items for the ARMA GS project¹²³ but also other manuscripts.¹²⁴
- The collection from the Austrian Belvedere Gallery was already a highlight¹²⁵, but for the first time, parts of the collection are now published with IIIF manifests¹²⁶ - EF collaborated very closely with the national aggregator Kulturpool to realise this.
- BL revived old TEL collections, rerouted them under Europeana Sounds and improved almost 200,000 records, including more than 60,000 records with IIIF content¹²⁷.

We made good progress on improving content quality. The updates led to an increase in Tier 2+ content of 2.5%, which resulted in a total of 70.7% of Europeana content being in Tier 2+. Tier 3+ content increased by 4.6% which resulted in a total of 50.8% at Tier 3+. In addition to bringing in high-quality content from new institutions, our efforts to resolve broken links had a significant positive impact on the tier stats.

We also made very good progress on metadata quality improvements, which is visible in the 5.8% increase of Tier A+ metadata, which resulted in a total of 70.8% at Tier A+.

We published 121 new CHIs in Europeana during the past year (DSI AGG and other projects). Below are some highlights:

¹²⁰ Many datasets were processed multiple times over the year to achieve the best data quality and to add new records when it was available at source.

¹²¹ https://www.europeana.eu/en/search?query=edm_datasetName%3A0940429_%2A

¹²² https://www.europeana.eu/en/search?query=edm_datasetName%3A739_%2A

¹²³ <https://pro.europeana.eu/project/the-art-of-reading-in-the-middle-ages-arma>

¹²⁴ https://www.europeana.eu/en/search?page=5&view=grid&query=edm_datasetName%3A9200519_%2A

¹²⁵ https://www.europeana.eu/en/search?view=grid&query=edm_datasetName%3A15513_%2A&page=1

¹²⁶

https://www.europeana.eu/en/search?query=edm_datasetName%3A15513_%2A%20AND%20sv_dcterms_conformsTo%3A%2Aiiif%2A&page=1&view=grid

¹²⁷

https://www.europeana.eu/en/search?page=1&view=grid&query=proxy_dcterms_isPartOf%3A%22The%20European%20Library%22

- The Swedish national aggregator (SOCH) published a collection from Dalarnas Museum in very high content and metadata quality. It was a very well-prepared submission that was straightforward to publish.¹²⁸
- APEF worked in the last year with the Center for Research on the Liberation Movement from Ukraine and published their collection in Europeana.¹²⁹
- Deutsche Digitale Bibliothek published many collections from new CHIs during DSI-4 Y4, often small collections from less-known CHIs, but mostly in very good quality and processed in a smooth and efficient way. One example is Museum Burg Posterstein¹³⁰, another one is Kurt Tucholsky Literaturmuseum.¹³¹
- MCA as a partner in Europeana Sport¹³² brought new high quality content to Europeana from new CHIs (e.g. collection from the Romanian Biblioteca Județeană ‘Octavian Goga’¹³³).

Many of the collections added or updated are small (<1,000 records). Smaller contributions are still very important for the growth of the network and for achieving our goals to support CHIs across Europe (small and large) with their digital transformation. They are also important to power editorial features and content dissemination.

Developments that support data quality improvements and data publication

This year, we updated our workflow in Jira to make both the progress with data processing and the process for flagging issues clearer to data partners. This new workflow was developed in consultation with data partners to make sure we can provide the best possible support.

The Metis Sandbox and the Data Statistics Dashboard helped significantly with providing feedback and supporting data partners to improve data quality. Data partners can analyse their data in a more granular way using the Dashboard, and can test mappings and quality improvements using the Sandbox. The same is true for EF and as EF and data partners look at the same interface when discussing results, it makes it easier to speak the same language when fixing issues.

To inspire and encourage data partners to deliver high quality data, EF and DSI AGG collected examples of what aggregators consider their best records and why. EF published those examples together with XML versions where possible as best practice,

¹²⁸ https://www.europeana.eu/en/search?page=1&query=edm_datasetName%3A602_%2A&view=grid

¹²⁹

<https://www.europeana.eu/en/collections/organisation/1482250000037157001-center-for-research-on-the-liberation-movement>

¹³⁰

<https://www.europeana.eu/en/collections/organisation/1482250000044968001-posterstein-castle-museum>

¹³¹

<https://www.europeana.eu/en/collections/organisation/1482250000046543021-kurt-tucholsky-literature-museum>

¹³² <https://pro.europeana.eu/project/europeana-sport>

¹³³

https://www.europeana.eu/en/search?page=1&qf=DATA_PROVIDER%3A%22Biblioteca%20Jude%20C8%9Bbean%20C4%83%20%5C%22Octavian%20Goga%5C%22%22&query=proxy_dcterm%3AisPartOf%3A%22Europeana%20Sport%22%2A&view=grid

next to the other EPF example records that indicate the minimum requirements to reach a specific tier of the EPF.¹³⁴

We also maintained the link resolution process named CLIO (Checking Links in Operation, established in DSI-4 Y3) to automatically detect broken links in the repository and to keep the broken links to digital media to a minimum. We have quarterly cycles in place to identify datasets that have broken links. Data partners are then asked to work on the identified datasets before we resolve the issues at the end of the quarter and before we start a new quarterly cycle. The number of broken links identified within a quarter can vary a lot since datasets with broken links can occur at any time. For example, in February 2022 we recorded about 283,300 broken links and in June 2022 there were 1.8 million broken links.

We improved the normalisation of dates in the metadata. Data partners send date values in various formats (e.g. as free text, date ranges or approximate dates). Research was done on the variety of date formats, which ones we should support and how we can best parse the dates and represent them in a single definitive format in our enriched records. The algorithm that resulted from this was incorporated into the Metis suite and is now part of the aggregation workflow. This work will enable people to search for items on the website that were created on a particular date. Currently, this is only possible in the newspapers collection. The normalisation work will allow us to extend this functionality to other collections as well.

Together with SPK, we investigated the quality of the optical character recognition (OCR) produced some years ago by the Newspapers project¹³⁵ and which is the basis of the full-text available in the Newspapers collection¹³⁶. We have re-run OCR on a subset of the collection, using ABBYY (the software used to generate the existing OCR), Tesseract, and a combination of Tesseract with layout detection, and compared the character and word error rates against a manually corrected version. The results of this work will allow us to understand the benefits of re-OCRing the corpus, choose the best solution and understand the technical implications if we were to apply it to the whole collection.

Finally, we developed recommendations for identifying and managing diversity of cultures and heritage in Europeana. Embedded in space, time and history, the collection building, cataloguing and exhibition practices of CHIs reflect and reproduce world views that we are considering nowadays as discriminatory, alienating and inappropriate, not only with regard to colonial content. The displayed object or the descriptive metadata might harm audiences, in particular those communities that are represented in a stereotyped or derogatory way. A DSI AGG working group supported by the EF D&I cross team analysed the challenges ahead when addressing diversity, equity and inclusivity in the collections of Europeana data partners and developed case studies and recommendations. In this context, another report was produced by CARARE, to share the results of a review of diversity and inclusion in archaeology from representation in

¹³⁴ <https://europeana.atlassian.net/wiki/spaces/EF/pages/2238447617/Examples+of+high+quality+data>

¹³⁵ <https://pro.europeana.eu/project/europeana-newspapers>

¹³⁶ <https://www.europeana.eu/en/collections/topic/18-newspapers>

the profession to the way archaeologists make sense of the evidence, how countries decide which heritage to preserve and how the discipline is becoming more inclusive.¹³⁷

Developments towards 3D

This year, we gave specific attention to 3D materials with the aim of providing an accurate representation of 3D content in Europeana.

Criteria for quality of 3D content in line with the Europeana Publishing Framework (EPF) were not well defined before DSI-4 Y4. This gap was closed with the update of the Europeana Publishing Guide.¹³⁸ Based on outcomes of the 3D Task Force¹³⁹ and follow-up work in the Data Quality Committee, criteria for 3D content quality were defined, following the same principles as for all other content types. Now we have a clearer definition of what is needed for 3D content to be compliant with each of the EPF tiers. Having this well-defined will help us classify the increasing number of 3D items that we expect over the next few years.

We improved the precision of the content tier measurement of 3D in Europeana by recalculating tiers for 3D records based on the new criteria for 3D content. This calculation was retroactively applied to all records in the Europeana dataset. We also re-labelled 15,615 records representing images that were wrongly labelled as 3D. For most of the records we were able to reprocess the datasets in collaboration with the aggregator to correct the type (from 3D to Image). In August 2022, there are 10,523 3D items published on the Europeana website (4,069 items are of high quality - those are in Tier 2+ and in Tier A+ quality).

Work with inactive data partners

Millions of records in our database come from inactive data partners. While we have structured the work with inactive data partners and re-engaged with a number of inactive former aggregators in DSI-4 Y3, there was still a lot more work that needed to happen to revive records.

As a contribution to this strand of work, we launched the Libraries Working Group¹⁴⁰ to facilitate the engagement and support of national libraries that are not operating as a national aggregator in their countries. The execution of the link resolution process was also a contribution to this strand of work. In addition, the work of DSI AGG contributed significantly to the re-engagement of inactive data partners. For instance, MCA re-engaged with former AthenaPlus partners and rerouted many of them to DDB, CulturalItalia or MUSEU.

¹³⁷ <https://pro.carare.eu/documents/100/CARARE - Diversity review 2022.pdf>

¹³⁸ Requirements for 3D content (Tier 1): <https://europeana.atlassian.net/wiki/spaces/EF/pages/2059796518/Requirements+for+3D+content+Tier+1>, Technical criteria for 3D content (Tier 2-4): <https://europeana.atlassian.net/wiki/spaces/EF/pages/2059796527/Technical+criteria+for+3D+content+Tier+2-4>.

¹³⁹ <https://pro.europeana.eu/project/3d-content-in-europeana>

¹⁴⁰ <https://pro.europeana.eu/project/libraries-working-group>

All these activities decreased the number of data from inactive data partners. About 18 million records out of the total of 62 million records were identified in autumn 2020 as coming from data partners that are not active at that moment. In August 2022, the number of records decreased to 12.4 million records (resulting in 31% less records from inactive data partners by either updating or depublishing records) .

Maintain data and publishing frameworks, standards and documentation

We create and manage frameworks, standards and documentation to support high-quality data and the interoperability of cultural heritage data, specifically through the Europeana Publishing Framework (EPF)¹⁴¹, the Europeana Data Model (EDM)¹⁴² and the Europeana Licensing Framework (ELF)¹⁴³.

Implementing and amending the Europeana Publishing Framework (EPF) is an iterative process. Based on the experiences and lessons learned with previous iterations, we worked on improving various services and products of the EPF. Products that were developed or improved in DSI-4 Y4 include the Europeana Knowledge Base as the new home for guidelines, documentation and training material (see [Deliver training and professional development resources](#)), the Metis Sandbox with features to report on problem patterns (field warnings) (see below) and the Metis Media Service that is now able to respond better to the needs of our data partners (see [Extend and maintain Metis](#)). We also improved the representation of 3D content in the EPF and improved the accuracy of rights statements, incorporating recommendations and requirements developed in DSI-4 Y3. We also developed a general framework design as part of work under WP3 and the EPF is the first Europeana framework using the new framework management template (see [Manage and develop Europeana frameworks and standards](#)).

The Metis Sandbox now contains a mechanism (field warnings) to report on data issue types (e.g. multiple records with the same title; a title that is too similar to the description; or a title that is not human-readable). These issues have differing urgency/severity indicators, guiding the users in addressing the issues. Users of the Metis Sandbox can get an overview for all the detected issue types in their dataset, complete with sample records where these issue types were detected. The user can also request to analyse individual records (or click on one of these sample records) to see all data issues that occur in that particular record.

To support data partners in their data monitoring and reporting activities, we also maintained and further improved the Statistics Dashboard¹⁴⁴. We added a feedback/help desk functionality that allows users to initiate contact in case they have questions or suggestions. We also improved the filter options for licences. It used to show the literal value that is set in the record and the improved functionality instead looks at the

¹⁴¹ <https://pro.europeana.eu/post/publishing-framework>

¹⁴² <https://pro.europeana.eu/page/edm-documentation>

¹⁴³ <https://pro.europeana.eu/page/europeana-licensing-framework>

¹⁴⁴ <https://statistics-dashboard-production.eanadev.org/>

human-readable licence category which allows for easy searching and grouping.¹⁴⁵ In addition to these, we improved the user experience of the application (also based on user feedback).

Further, we developed a self-paced training resource for the Statistics Dashboard¹⁴⁶ and a package for instructor-led training (available internally). The training material was tested and validated during two internal training sessions. The learning goals of the training are not only to teach stakeholders how to use the dashboard, but also to describe their own use case(s) and produce the reports for their use case(s).

We also maintained and further developed the Europeana Data Model (EDM). We published the EDM profile for annotations (see [EuropeanaTech community](#)). Additionally, we published an EDM extension for provenance of metadata enrichments and translations. Aggregators increasingly apply fully automated or user-assisted metadata enrichments and translations to improve the quality of the metadata provided to Europeana. This EDM extension, originally developed for Europeana XX, was made available¹⁴⁷ for other projects to use to support the representation of relevant provenance information. It especially allows the platform to distinguish original metadata from new enrichments and translations, and the confidence level of these additions.

Finally, we contributed a recipe for the IIF cookbook on handling multilingual subtitles¹⁴⁸, based on the modelling work done for handling said subtitles in the Europeana (Data Model) context.

Influence global interoperability and technological innovation

EF and NISV used their expertise to influence and organise interoperability efforts to benefit the cultural sector. We influenced and organised global interoperability efforts by co-ordinating and contributing to various Working Groups, Committees and Task Forces, not only to shape the global interoperability and innovation agenda, but also to keep up with recent developments and to maintain our own knowledge and skills. Most notable is EF's contribution in the executive committee of the IIF Consortium¹⁴⁹ and associated working groups.

The most visible outputs from the interoperability and innovation work were the numerous research papers and presentations that were reported on throughout the year. Those mainly revolved around artificial intelligence, multilinguality and semantics.

In addition, EF continued to work on interoperability by supporting stakeholders with appropriate data mapping and conversions. We consolidated the efforts on enabling Europeana to enrich its data with contextual information from (multilingual) Linked Data

¹⁴⁵ For example: the literal value '<https://creativecommons.org/licenses/by-nc/3.0/nl/>' now is displayed as 'CC BY-NC'. This allows grouping regardless of the language or version of the literal value of the licence.

¹⁴⁶ <https://pro.europeana.eu/page/europeana-data-statistics-dashboard-training>

¹⁴⁷ <https://pro.europeana.eu/page/edm-profiles#enrichments-provenance-profile>

¹⁴⁸ <https://iif.io/api/cookbook/recipe/0074-multiple-language-captions/>

¹⁴⁹ <https://iif.io/community/consortium/#staff>

vocabularies when these are used by its data partners in the metadata they submit. This involved both adding or correcting existing mappings between these vocabularies and EDM, and updating the documentation about which mappings are currently supported¹⁵⁰ (see also [Extend multilingual reach](#)).

We also published the Europeana (aggregated) dataset on the the European Union data portal, data.europa.eu¹⁵¹. The integration allowed the Europeana dataset to be included in the EU Datathon 2022 via its presence on the portal¹⁵².

EuropeanaTech community

EF, SPK and NISV collaborated with the EuropeanaTech community¹⁵³ - a community of experts from the R&D sector making sure that the Europeana Initiative leads the way with technological innovation in the cultural heritage sector.

Under the governance of the EuropeanaTech community, EF supported two Task Forces in the past year. The EuropeanaTech Task Force on annotations has published its final report, which enabled us to publish the EDM profile on Annotations¹⁵⁴, which underlies the annotations API that is used by several GS projects to exchange annotations with Europeana. The EuropeanaTech Task Force on Audiovisual payout in Europeana¹⁵⁵ issued a survey on audiovisual content in Europeana to instruct the making of recommendations for future developments in this area.

IIIF, EuropeanaTech and the Europeana Aggregators' Forum co-organised a IIIF workshop for EAF members (May 2022). The EuropeanaTech Data Quality Committee continued to support work on data quality improvement, especially on updates to the EPF and related data reporting (i.e. problem patterns, tier criteria for 3D) and the normalisation of dates and language tags.

In the past year, EuropeanaTech continued its general outreach activities via dedicated pages on Europeana Pro, the EuropeanaTech mailing list and the @EuropeanaTech Twitter account¹⁵⁶. In August 2022, we reached almost 6,600 people with key communication channels (Mailing list, Twitter). The ENA community saw an increase of 15.9% in the past year (c. 2,150 members in total).

4.2 Enriched data

The focus on enriched data is vitally important to the Europeana Initiative. As the scale of data publishing grows, new technological approaches are needed to improve the accessibility and use of cultural heritage data.

¹⁵⁰ <https://pro.europeana.eu/page/europeana-semantic-enrichment#enrich-your-own-metadata>

¹⁵¹ <https://data.europa.eu/data/datasets/europeana-aggregated-dataset>

¹⁵² <https://pro.europeana.eu/post/europeana-datasets-available-for-reuse-in-eu-datathon-competition>

¹⁵³ <https://pro.europeana.eu/page/europeanatech>

¹⁵⁴ <https://pro.europeana.eu/project/interoperability-of-annotations-and-user-sets>

¹⁵⁵ <https://pro.europeana.eu/project/audiovisual-payout-in-europeana>

¹⁵⁶ <https://twitter.com/europeanatech>

Extend entities to support better browsing

The extension of entities to support better browsing helps categorising items more usefully for Europeana website visitors. Entities are terms that represent a class of items and provide the basis for the collection browse experience on the Europeana website. For example, entities that support browsing by topic¹⁵⁷. The entity collection currently consists of more than 347,500 entities (persons, topics, places, centuries and organisation entities).

In DSI-4 Y3, we introduced organisation pages¹⁵⁸ (based on organisation entities) to give data partners more visibility on the Europeana website, strengthening our promise to provide more recognition and awareness. During the first iteration, about 13 million records were not assigned to an organisation entity and only English organisation names were displayed on the website. In the past year, we improved the representation of organisation entities. We added missing organisations, cleaned up and extended organisation-related information (e.g. typos in language and country information, alternative names for the organisations). This allowed for correct enrichment of organisation information and to additionally display the organisation name in its original language. As a result, > 6 million more items are now linked to an organisation page and 997 more organisation pages have items. Almost all records are now related to an organisation page (with about 1% not related to any organisation entity).

We also established a process to enrich records using the newly developed Entity Management service. The service was integrated in the Metis enrichment service as a source to allow new or updated records to be enriched with the most up-to-date version of entities during ingestion (limited only to new or updated records/dataset and not yet retroactively applied to the whole Europeana database). This resulted in a noticeable difference in the enrichments published on the website with richer and more up-to-date data that allowed linking more items to entities (e.g., ~ 13 million more items linked to a Topic page).

The newly developed Entity Management service also enabled us to start adding more entities to our collections (after five years of dormancy) and see items being linked to them. We used the themes of the Thematic Collections to drive and focus our efforts and expanded entities related to Archaeology, Manuscripts, Sports, Fashion and the 20th century. This resulted in over 9,000 new Person pages and > 1 million more links to the Person pages as well as over 1,800 new Topic pages¹⁵⁹ with > 19 million more links to the new Topic pages. We are now able to collect and visualise statistics about the Entity Collection allowing us to monitor the results of curation efforts.

We also completed a functionality that enables selected users to promote and curate items displayed within the entity pages. For example, this functionality offers data providers the possibility to curate their organisation pages. Additionally, we enabled curators to edit the descriptions of the entity collections.

¹⁵⁷ For example browsing by the entity Painting. <https://www.europeana.eu/en/collections/topic/47-painting>

¹⁵⁸ <https://www.europeana.eu/en/collections/organisations>

¹⁵⁹ For example: <https://www.europeana.eu/en/collections/topic/1843-basilica>

Finally, we reviewed, assessed and integrated data enrichments coming from GS projects (i.e. Pagode¹⁶⁰ and Europeana XX¹⁶¹). This helped to identify additional entities that could be beneficial to improve the Entity collection. Insights of the assessment of translations provided by Europeana XX are expected to help ongoing projects such as Europeana Translate to improve the quality of their results. We also gained insights for the further development of the EPF to better measure the quality and impact of enrichments.

Use of crowdsourcing and AI to enrich metadata

The use of crowdsourcing saw data quality enriched before it was ingested by Europeana while Artificial Intelligence (AI) technologies were experimented with to support search and data quality.

EF proposed a series of potential experiments of AI for enhancing data quality or providing better user service that were directly aligned to problems and use cases identified in Europeana products and services. The report also evaluated the complexity of the AI and machine-learning activities against the benefits those would bring to the platform.

We selected two areas of AI for further pre-implementation experiments: enhancing the resolution of low-quality images and testing and comparing selected automatic image tagging solutions to Europeana's images. The first experiment on image resolution enhancement gave rather positive results. Technical work has started for further (pre-implementation) design and tests, which would allow a decision on prioritising implementation of the technology in Europeana. The second experiment on image-based tagging had much more mixed results, with quality of results varying greatly. In particular, the open (non-commercial) tagging model was very low-quality. More work is needed on exploring the approach, for example on how to select and/or combine results forming from different tagging systems.

As crowdsourcing tools become more accessible, we saw more and more Europeana partners using these methods to enrich their metadata.

AIT Graz published two content clusters/galleries of botanical collections, curated and further enriched by domain experts (i.e. old herbaria¹⁶² and drawings from Democratic Republic of the Congo¹⁶³).

¹⁶⁰ <https://pro.europeana.eu/project/pagode-europeana-china>

¹⁶¹ <https://pro.europeana.eu/project/europeana-xx>

¹⁶² <https://www.europeana.eu/en/set/2729>

¹⁶³ <https://www.europeana.eu/en/set/2730>

APEF continued to work on the tool for automated topic detection¹⁶⁴. Using machine learning approaches, the tool helps to tag documents that have no topic associated with one of the predefined topics. APEF implemented an option for data providers to identify entities mentioned in their descriptions as a precursor to tagging these with URIs to LOD vocabularies.

APEF also worked with two new CHIs (National Archives of Malta, NAM; and the British Institute at Ankara, BIAA) to bring their collections into Europeana (including metadata creation and improvements, rights clearance for digital objects, etc.). NAM contributed a collection¹⁶⁵ of about 1,000 plans and sketches, and BIAA worked on a photography collection showing everyday life in the Tille Höyük region, Turkey¹⁶⁶. Both projects were supported by crowdsourcing activities: NAM worked with experts to confirm and enrich the descriptions, while BIAA worked with volunteers from the local community in the Tille Höyük region to create metadata for their photographic collection.

Photocons worked on two crowdsourcing campaigns involving university students who enriched the metadata of photo collections, followed by a validation done by Photocons members. This resulted in 538 enriched records with more subject terms being created (e.g. the following item had no subject terms before the campaign¹⁶⁷ and ended up with 10 subject terms coming from the crowdsourcing campaign¹⁶⁸).¹⁶⁹

F&F organised transcribathon runs/events to encourage users to transcribe historical material (see [Europeana Transcribe](#)) and maintained the Europeana Transcribe platform¹⁷⁰.

¹⁶⁴ <https://test.archivesportaleurope.net/topicdetection/detect.html>. Note: Overall the extension of the tool and the implementation of use cases qualifies for a beta version, apart for one use case still pending more acceptance testing. but as one new use case did not go through sufficient user acceptance testing, the tool is still displayed in alpha.

¹⁶⁵ https://www.europeana.eu/en/search?query=edm_datasetName%3A818_%2A

¹⁶⁶ https://metis-preview-portal.eanadev.org/en/search?query=edm_datasetName%3A834_%2A

¹⁶⁷ https://www.europeana.eu/en/item/149/https___withculture_eu_item_5d920b224c7479529a57fa4b

¹⁶⁸ <https://crowdheritage.eu/en/hungarian-history/5dbbf76d4c74792fee807c24>

¹⁶⁹ More details are available here:

<https://www.photoconsortium.net/educationalportal/2022/08/05/students-help-improving-metadata-of-cultural-collections-in-europeana/>

¹⁷⁰ <https://europeana.transcribathon.eu/>

5. Build capacity

The Consortium supported professionals and partners in three principal areas to build capacity for digital transformation. We engaged with professionals and partner organisations by organising and supporting events and by providing training and professional development resources. We nurtured our networks, in particular by supporting the governance and operations of the Europeana Network Association (ENA) and Europeana Aggregators' Forum (EAF). This included communication and promotion of activities and resources to our networks. Finally, we strengthened national infrastructures by supporting the adoption of Europeana standards and frameworks and by reinforcing the value delivered by the Europeana Initiative towards digital transformation of the cultural heritage sector.

5.1 Build capacity of aggregators and professionals

The Consortium built capacity to support the digital transformation of the cultural sector by delivering rewarding events and training for professionals and aggregators.

Develop event programming and training practices

EF worked collaboratively with professionals, ENA and EAF to develop and improve the standards of event management and programming.

We established improved processes for managing new and archived events on Europeana Pro (for example, keeping event pages¹⁷¹ up-to-date) and building promotion into these processes. The Europeana Events guide was replaced by the Events Toolkit¹⁷² (now offered as a web page instead of a PDF) on Europeana Pro which makes it easier to update information and to add new tools and insights in future. The toolkit was also updated based on the latest lessons learned, for example with regards to organising hybrid events.

Further, we developed guidelines¹⁷³ for delivering training and development activities which describe the requirements of future training resources and the process of developing these resources. The guide supports standardisation of the training opportunities that are developed within the Europeana Initiative, ensuring a basic level of quality and increasing the user experience of trainees.

We also enhanced the accessibility to our events by using a tool that allows participants to use closed captioning and made sure our keynotes at conferences are subtitled.

We continuously monitored and evaluated our programme, formats, tools and resources to provide best practices for engaging and stimulating our audiences. For

¹⁷¹ <https://pro.europeana.eu/page/webinars>

¹⁷² <https://pro.europeana.eu/page/events-toolkit>

¹⁷³ <https://pro.europeana.eu/page/guidelines-for-delivering-training-and-development>

example, we undertook an impact assessment of the Europeana 2021 conference to understand to what extent we are supporting capacity building through convening the sector (see [Deliver events for professionals and partners](#)).

We also developed a standardised way of assessing the satisfaction of our training resources (building on the Europeana Impact Framework and in particular the standardised question bank¹⁷⁴). Guidelines (available internally and shared with aggregators) set out the principles and ways in which to measure satisfaction and collect impact and evaluation data. The output and process is designed to empower organisers of a training activity to collect this data themselves. Further, we started using integrated post-event surveys to collect immediate feedback at the close of each event to measure satisfaction (see [Deliver events for professionals and partners](#)) and to collect valuable feedback that can help shape event practices in future.

Finally, we documented the channels used to disseminate capacity building resources, tools and services to CHIs professionals, and identified where, what and how data relevant to establishing satisfaction is gathered. We identified where and how refinements and improvements to the process could be acted upon, to provide input into the further development of a more holistic approach to gathering data from CHIs professionals.

Our work was supported by the Events Managers Group¹⁷⁵ that met regularly to share good and emerging practices (e.g. towards tools and policies). In the past year, the group focussed on going hybrid - bringing events in the cultural heritage sector online and on-site at the same time.¹⁷⁶

Deliver events for professionals and partners

We supported Europe's cultural heritage sector in its digital transformation by offering rewarding knowledge experiences for professionals. In the past year, EF worked collaboratively with ENA, EAF and partners to deliver a programme of online events¹⁷⁷. We (co)organised 30 events (including workshops and webinars) that saw over 2,750 participants in total. Those events covered themes such as improved data quality, AI, 3D, impact, copyright, open data, communication, research and education. We also measured the satisfaction of events with a high average satisfaction rate of 85%.

We showcased the diversity of our work at the Europeana annual conference 2021¹⁷⁸ (November 2021) with the aim of building brand awareness and sector wide recognition. The programme welcomed 800 participants and 67 speakers from 86

¹⁷⁴ <https://pro.europeana.eu/page/europeana-standardised-question-bank>

¹⁷⁵ The Events Managers Group includes several partner organisations including: Liber, Creative Commons, RightsConn, NEMO, Museum Computer Network, GIJN, Accessnow, IFLA, EuropaNostra and Wiki Foundation.

¹⁷⁶ <https://pro.europeana.eu/post/going-hybrid-bringing-events-in-the-cultural-heritage-sector-online-and-on-site>

¹⁷⁷ <https://pro.europeana.eu/page/webinars>

¹⁷⁸ <https://pro.europeana.eu/post/looking-back-on-europeana-2021>

countries across the world. Europeana 2021 was held completely online for the second time and there were high levels of satisfaction from both speakers and attendees (82% satisfaction rate). Learning and capacity building outcomes increased in all instances measured.

'I have been taking part at Europeana events since 2012 and everytime I found there the best professionals, the best expertise and the best case studies in the cultural field. I was honoured to be part of Europeana 2021 - a professional event which not only gathered the best professionals but addressed the most important issues in the cultural field and society at present time. Always a great event!.' *Speaker response to an open text question about their motivation to participate in Europeana 2021, Europeana 2021 post-event questionnaire*

'[The Europeana] annual conferences are captivating meetings that bring to light the latest trends in the digital cultural heritage sector. Various experiences and dissemination of good practices are taking place'. *Participant response to an open text question in the ENA impact and satisfaction survey, 2022*

"[It] was a pleasure to see the development of the Communities and the impact their contribute to the development of European Cultural Heritage." *Response to an open text question about professional or personal value created by Europeana 2021, Europeana 2021 post-event questionnaire*

81% of questionnaire respondents who were not Network members reported that the conference motivated them to become a member. *Europeana 2021 post-event questionnaire.*

Even more participants reported learning something that they could use in their work but, like in the past, reported not being able to make a tangible change. Though barriers to creating change in heritage organisations exist that are beyond Europeana's control, we can continue to respond with prioritising programming that provides the participants with concrete mechanisms (e.g. training) with a clear link to helping create change. Despite the online format, the feeling of being part of a community around digital heritage increased.

Another highlight this year was the bi-annual Europeana Aggregators' Forum meetings. The autumn meeting of the EAF was held online (October 2021) with around 60 people from 31 (of our 40 accredited aggregators) participating. On day one, the EAF general assembly was held, and the revised version of the accreditation scheme was signed off. Participants also explored funding opportunities for aggregators and kicked off the work on equity, diversity and inclusivity and what it means for data providers and aggregators. On day two, we celebrated the progress made on implementing IIIIF with a conference style programme with many contributions from EAF members. This programme also set the scene for the next steps of the Europeana Tech / EAF IIIIF working Group¹⁷⁹.

¹⁷⁹ <https://pro.europeana.eu/project/iiif-europeana-working-group>

The spring edition (April 2022) was the first ever hybrid EAF meeting that we organised. 87 participants joined either at the event location at the Netherlands Institute for Sound and Vision, Hilversum or online. 35 accredited aggregators (out of 40) were represented during the meeting. On day one we had the EAF general assembly, followed by a session on making out-of-commerce works available online and other updates (e.g. from the Aggregators' User Group, the Digital Transformation Task Force and the upcoming Enumerate Survey). How the EAF and its partners can help Ukraine and CHIs in the country was also discussed. Day two was focussed entirely on the development of the Europeana data space for cultural heritage and the role the EAF can play.

Further, we organised an online outreach event¹⁸⁰ (July 2022) as the public-facing event of the EAF in 2022. The purpose of the outreach event was to present and discuss the main outcomes of the Europeana Initiative in the current context and consider the challenges and opportunities ahead regarding aggregation in the context of the data space. We had 129 unique participants from 34 countries (including 23 EU Member States) and the event concluded with a satisfaction rate of 84%.

Throughout the year, we also supported other events organised by the ENA (and communities) and EAF (see [Maintain and develop operational activities of ENA/EAF](#) and [Deliver training and professional development resources](#)) and the bi-annual presidency events (see [Engage with Member States](#)).

Deliver training and professional development resources

DSI-4 Consortium partners developed and provided access to knowledge and training that supports digital transformation, supported by tools and processes established as part of the Europeana Capacity Building Framework (ECBF).

One highlight this year was the release of the Europeana Publishing Guide as a web-based version in the Europeana Knowledge Base¹⁸¹. The knowledge base allows improved access to resources that facilitate the aggregation of good quality data. The new format allows clearer presentation of the guidelines, easier access and navigation, and makes new updates transparent and instantaneously shared with the data partners.

As part of the new release, we also revised and updated components of the publishing guide. For example, we consolidated information that helps data partners to publish data compliant to the EPF, and we organised all rights information in a different way to make sure that we have no redundant information in different places. For more technical guidelines we also created a new Europeana Licensing Framework chapter¹⁸² to keep it aside from the EPF.

¹⁸⁰ <https://pro.europeana.eu/event/eaf-outreach-event>

¹⁸¹ <https://europeana.atlassian.net/wiki/spaces/EF/pages/2059763713/EPF+-+Publishing+guidelines>

¹⁸² <https://europeana.atlassian.net/wiki/spaces/EF/pages/1988657160/ELF+-+Selecting+accurate+rights+guidelines>

We developed user guides and self-paced training resources for Europeana products and services to further enhance and enable their use (such as the Metis Sandbox - see [Enable Metis Sandbox](#), Europeana Licensing Framework - see [Develop and maintain an interoperable licensing framework](#), and Statistics Dashboard - see [Maintain data and publishing frameworks, standards and documentation](#)). Additionally, we organised training for aggregators on using IIIF¹⁸³ to share media with Europeana and published the guidelines for future self-paced and instructor-led training¹⁸⁴. We also maintained a crowd-sourced open inventory of training opportunities offered throughout the sector to supplement our training offers.¹⁸⁵

Further, we assessed future training needs to support the use of technical tools and services which directly fed into the updated version of the ECBF/playbook (see [Develop processes and enable evidence of digital transformation](#)).

To facilitate building awareness and encouraging use of capacity building resources by professionals, we developed a pilot 'Learn with Us'¹⁸⁶ section for European Pro. This section applies the taxonomy of the Capacity Building Framework and breaks down specific resources that are available. The pilot will be tested with stakeholders and will be iteratively developed in future periods, building on user feedback.

We surveyed aggregator satisfaction with Europeana and achieved an average satisfaction of 76.2% (30 out of the 40 accredited aggregators responded to the survey). A key part of the questions addressed the satisfaction with the various steps of the ingestion process (prior, during and after ingestion) to find out if the level of support and feedback we provide is satisfying for the aggregators. Media processing was seen as a bottleneck, which justifies the improvements we implemented recently to mitigate the issues (see [Extend and maintain Metis](#)). We also asked about the Metis Sandbox and the Data Statistics Dashboard, both of which received a very promising satisfaction rate, supporting the development work we have done on both products.

A second cohort of network members followed the DEN Leadership programme. The programme was initiated to embed digital transformation in institutions and to research the possibilities of a sustainable offering of this (kind of) programme. Over 80 people applied for this second cohort. 16 selected participants from across Europe and different types of cultural heritage institutions participated. The programme consisted of reading material, guest speakers, individual exercises, close cooperation with fellow participants and group discussions. These took place in three modules spread out over six online meetings in three months. The participants indicated that this programme has helped them to work on the digital transformation of their organisation¹⁸⁷.

¹⁸³ <https://training.iiif.io/europeana/>

¹⁸⁴ <https://pro.europeana.eu/page/guidelines-for-delivering-training-and-development>

¹⁸⁵ <https://pro.europeana.eu/page/building-digital-capacity#step-3-training-courses-inventorisation>

¹⁸⁶ <https://pro.europeana.eu/page/learn-with-us>

¹⁸⁷ A public review of the programme by one of the participants:

https://www.linkedin.com/posts/miskostanisc_museums-archives-libraries-activity-6902953820029337600-D_pw/

All agreed that there is a need for a continued offering of this kind of training on management level, but also indicated that the reach of such a programme should be extended beyond the coalition of the willing. Lessons learned from the cohorts were used to develop the feasibility report which evaluates the potential for further programmes.

Throughout DSI-4 Y4, DSI AGG delivered 25 training events reaching over 1,050 people in total. The events revolved around themes such as the importance of democratic access to digital public spaces, the social role of digital technologies, sustainable digital transformation, educational reuse of digital collections, digital storytelling, copyright, machine translation, research, carbon footprinting, IIIF, impact, AI in archives, mapping data, enriching metadata and fostering diversity and inclusion.

In the framework of capacity building efforts, CARARE¹⁸⁸ and Photocons¹⁸⁹ developed two case studies about the benefits and impact that CHIs can gain from publishing high-quality, open access heritage collections in Europeana. In both cases, having digitised collections in high quality and making them available in Europeana has made it easier to create e-learning activities including these collections. In addition, and in a more general sense, the collections gained more visibility and supported the institutions with their mission in times when Covid-19 restrictions made physical access to collections impossible.

DSI AGG also supported 192 CHIs from 35 countries in their digital transformation by providing help desk activities and one-to-one support. DSI AGG shared the organisational and expert knowledge needed to prepare and ingest high-quality datasets for inclusion in the Europeana website. This included support for mappings, the uptake of multilingual vocabularies and of Europeana frameworks and guidelines. Efforts in DSI-4 Y4 to increase the amount of contributing data providers resulted in 37 new CHIs collaborating with DSI AGG.

5.2 Nurture networks

In support of our networks, we maintained and developed effective governance as well as the operational activities of the Europeana Network Association (ENA)¹⁹⁰ and Europeana Aggregators' Forum (EAF)¹⁹¹. We facilitated digital change by nurturing connections with professionals, partners and other networks such as research communities. Our work was enabled through communicating and promoting the value of the Europeana Initiative, and by developing the Europeana Pro website.

Effective governance of Network services (ENA/EAF)

EF continued to provide a secretariat service for the governance of the legally established Europeana Network Association (ENA) and the Europeana Aggregators'

¹⁸⁸ https://pro.carare.eu/documents/99/Case_Study_Hunt_Museum_v1.pdf

¹⁸⁹ <https://www.photoconsortium.net/educationalportal/2022/05/31/crdi-collections-in-europeana/>

¹⁹⁰ <https://pro.europeana.eu/network-association/sign-up>

¹⁹¹ <https://pro.europeana.eu/page/aggregators>

Forum (EAF). We supported periodic meetings, managed ENA and EAF memberships, and refined policies and procedures around membership, communications and governance structure.

In November 2021, around 120 ENA members gathered virtually at the ENA General Assembly. The audience learned more about the governance of ENA, the communities, their task forces and future plans. The members approved ENA-related documents and reflected on the ENA's achievements over the past year. One of the highlights was a panel discussion dedicated to engaging the network more in the work of Europeana. In an effort to help new professionals in the Europeana ecosystem and connect them with more experienced network members, a 'buddy system' was introduced during a social event that followed.

In 2022, we also renewed the Europeana Network Association governance with elections for both the ENA Members Council¹⁹² (November 2021) and Management Board¹⁹³ (January 2022).

In the past year, the Members Council (MC) met three times (December 2021, March and July 2022). The meetings provided the Councillors with an update on recent activities and priorities of the Europeana Initiative related to digital transformation and capacity building, diversity and inclusion, ENA governance, budget, and communities.

Maintain and develop operational activities of ENA/EAF

EF worked with the governing bodies of ENA and EAF to support the work of their members, Task Forces, Working Groups and communities. EF facilitated periodic meetings with the steering groups of EF, ENA and EAF to enable strategic and operational alignment, identification of opportunities and areas of common interest.

EF supported the development, validation and publication of ENA¹⁹⁴ and EAF¹⁹⁵ annual reports 2021 and ENA¹⁹⁶ and EAF¹⁹⁷ annual activity plans for 2022, and periodically reported progress to members. We disseminated ENA, EAF, member and community-building activities through Europeana Pro News and publications, the Europeana LinkedIn group and a monthly newsletter¹⁹⁸.

This year, we investigated ways to better report on network engagement recognising that the existing model for reporting does not adequately represent the multidimensional nature of network engagement. In subsequent periods, we aim to present richer data to evidence network engagement (such as the number of network

¹⁹²

<https://pro.europeana.eu/post/europeana-network-association-welcomes-its-27-new-members-councillors>

¹⁹³ <https://pro.europeana.eu/post/new-management-board-to-lead-europeana-network-association-1>

¹⁹⁴ <https://pro.europeana.eu/post/europeana-network-association-annual-report-2021>

¹⁹⁵ <https://pro.europeana.eu/post/europeana-aggregators-forum-activity-report-2021>

¹⁹⁶ <https://pro.europeana.eu/post/europeana-network-association-activity-plan-2022>

¹⁹⁷ <https://pro.europeana.eu/post/europeana-aggregators-forum-activity-plan-2022>

¹⁹⁸ <https://pro.europeana.eu/resources/document-archive/newsletters-and-updates>

members attending events or the number of network members responding to 'Calls to Action').

Europeana Network Association (ENA)

The ENA is a multidisciplinary network consisting of about 3,750 members from across Europe who give time and expertise voluntarily to strengthen the role of cultural heritage in society. In June 2022, we completed the annual impact and satisfaction survey of ENA members with a good average satisfaction of 78%.

63% of responding ENA members report that the Network has some value for their daily work. *ENA impact and satisfaction survey, 2022*

56% of respondents report that the Network helps them to learn knowledge, skills or information that they can use in their work. *ENA impact and satisfaction survey, 2022*

59% of respondents report encouraging others to explore the services provided by Europeana, for example, the Europeana website or its frameworks and standards. *ENA impact and satisfaction survey, 2022*

45% of Network members report an interest in being more involved in Europeana Network Association communities, Working Groups or Task Forces. *ENA impact and satisfaction survey, 2022*

A main objective continued to be expanding the Europeana network by attracting professionals working in the field of cultural heritage, while keeping the existing network engaged and active. We explored mechanisms and opportunities to grow membership (e.g towards new professionals see [Reach out and engage with other communities and networks](#)).

In the past year, our reach to the ENA continued to grow. We saw an increase of 45.8% for ENA newsletter subscribers (~ 3,760 subscribers in total) and an increase of 12% (~ 7,000 followers in total) for a LinkedIn profile dedicated to the ENA and the wider network.

ENA communities

The ENA manages a number of specialist communities whose members share a professional interest in specific areas related to creating, preserving and publishing digital cultural heritage online. Communities help ENA members to cultivate and share knowledge, expertise and best practices. The members can sign up to receive the newsletters, join various communication channels and social media groups, and participate in community-related Task Forces, Working Groups, events and meetings.

EF supported and coordinated the overall management of the established ENA communities: EuropeanaTech¹⁹⁹, Europeana Research²⁰⁰, Europeana Education²⁰¹,

¹⁹⁹ <https://pro.europeana.eu/network-association/special-interest-groups/europeanatech>

²⁰⁰ <https://pro.europeana.eu/network-association/special-interest-groups/research-community>

²⁰¹ <https://pro.europeana.eu/network-association/special-interest-groups/europeana-education>

Europeana Communicators²⁰², Europeana Impact²⁰³, and Europeana Copyright²⁰⁴. More details on the individual community efforts can be found in the corresponding content section of this report.

In February 2022, the work plans of the communities were formally approved by the Members Council (MC) and published on Europeana Pro. They include community budget and activities that every community aims to deliver by the end of 2022: EuropeanaTech²⁰⁵, Europeana Research²⁰⁶, Europeana Education²⁰⁷, Europeana Communicators²⁰⁸, Europeana Impact²⁰⁹ and Europeana Copyright²¹⁰.

This year, we launched one additional community - the Climate Action Community²¹¹. The Community acknowledges that climate change is an emergency and that cooperative action is required. It aims to drive impactful, cooperative and sustainable action to address the environmental impact of the digital transformation of the cultural heritage sector with systemic change within institutions and networks. The launch was accompanied by the announcement of the Climate Action Manifesto²¹². Through the manifesto, ENA, EF and EAF agree to advocate for and embed working practices that minimise the digital cultural heritage sector's impact on the climate and environment. In March 2022, the Climate Action Community formed its first Steering Group²¹³. The ENA community currently has about 195 members.

Europeana Aggregators' Forum (EAF)

The Europeana Aggregators' Forum exchanges knowledge and best practice that supports aggregators and CHIs in their work. EF coordinated the overall management of the EAF. As part of this we aim to expand the membership of the EAF. Since September 2021, we have not seen any new applications for accreditation. We are aware of new aggregators that may come forward as new candidates, but they are not ready yet to apply for accreditation. The EAF meets bi-annually and also organised a public facing event in 2022 (see [Deliver events for professionals and partners](#)).

Task Forces and Working Groups

EF supports the management of Working Groups (WGs) and Task Forces (TFs). ENA members take on specific subjects or areas of common interest by participating in TFs and WGs. In the past year, between 145 and 165 members participated on a voluntary basis in Task Forces and Working Groups per month.

²⁰² <https://pro.europeana.eu/network-association/special-interest-groups/europeana-communicators-group>

²⁰³ <https://pro.europeana.eu/what-we-do/impact>

²⁰⁴ <https://pro.europeana.eu/network-association/special-interest-groups/europeana-copyright#>

²⁰⁵ <https://pro.europeana.eu/post/europeanatech-community-work-plan-2022>

²⁰⁶ <https://pro.europeana.eu/post/research-community-work-plan-2022>

²⁰⁷ <https://pro.europeana.eu/post/education-community-work-plan-2022>

²⁰⁸ <https://pro.europeana.eu/post/communicators-community-work-plan-2022>

²⁰⁹ <https://pro.europeana.eu/post/impact-community-work-plan-2022>

²¹⁰ <https://pro.europeana.eu/post/copyright-community-work-plan-2022>

²¹¹ <https://pro.europeana.eu/page/climate-action-community>

²¹² <https://pro.europeana.eu/post/the-europeana-climate-action-manifesto>

²¹³ <https://pro.europeana.eu/page/climate-action-community>

TFs tackle specific subjects of interest related to the Europeana strategy. TFs run for a limited period and result in the delivery of recommendations on their subject. Recommendations of the completed Task Forces can be found on the respective Europeana Pro pages. The table below lists the TFs that were active in DSI-4 Y4 (newly started, ongoing or that were completed throughout the year):

Task Force	Status (August 2022)
Diversity and Inclusion (Initiative wide TF) ²¹⁴	Completed
Digital Transformation (Initiative wide TF) ²¹⁵	New and completed
Impact Lite Training and Community Building (ENA) ²¹⁶	New (still ongoing)
Audiovisual Playout in Europeana (ENA) ²¹⁷	Ongoing
Audiovisual Material in Europeana Classroom (ENA) ²¹⁸	Completed

This year, we further strengthened the connections between EF, ENA and EAF by supporting Europeana Initiative-wide TFs. For example, a TF dedicated to Diversity and Inclusion²¹⁹ was established (March 2022) which provided recommendations on how to support better capturing of diversity data across the Europeana Initiative. Another Initiative-wide TF addressed the role of capacity building in digital transformation (see [Develop processes and enable evidence of digital transformation](#)).

We also explored how recommendations and outputs of task forces can be utilised for the wider community of the Europeana Initiative. The recommendations will be used to identify tangible steps to improve the process for dissemination, and ultimately use of the TF results.

WGs are set up to address ongoing activities and issues of continuing relevance and run for as long as their purpose requires. The table below lists the WGs that were active in DSI-4 Y4 (newly started, ongoing or that were completed throughout the year) :

Working group	Status (August 2022)
Data Quality Working Group (ENA) ²²⁰	Ongoing
ENA Membership Working Group (ENA) ²²¹	Ongoing
Governance Working Group (ENA) ²²²	Ongoing

²¹⁴ <https://pro.europeana.eu/project/diversity-and-inclusion-task-force>

²¹⁵ <https://pro.europeana.eu/project/digital-transformation-task-force>

²¹⁶ <https://pro.europeana.eu/project/impact-lite-training-community-building-taskforce>

²¹⁷ <https://pro.europeana.eu/project/audiovisual-playout-in-europeana>

²¹⁸ <https://pro.europeana.eu/project/audiovisual-material-in-europeana-classroom>

²¹⁹ <https://pro.europeana.eu/project/diversity-and-inclusion-task-force>

²²⁰ <https://pro.europeana.eu/project/data-quality-committee>

²²¹ <https://pro.europeana.eu/project/ena-membership-working-group>

²²² <https://pro.europeana.eu/project/governance-working-group>

Out of Commerce works Working Group (ENA) ²²³	New
Supporting the digital cultural heritage of Ukraine Working Group (Initiative wide) ²²⁴	New
Libraries Working Group (EAF) ²²⁵	New
IIIF & Europeana Working Group (EAF/ENA) ²²⁶	Ongoing

In April 2022, we established the ‘Supporting the digital cultural heritage of Ukraine Working Group’²²⁷ (EF/ENA/EAF) to provide a forum for professionals to collaborate, coordinate, identify and develop opportunities and actions that support the needs of the Ukrainian Cultural Heritage sector. Through an open call it has attracted 32 members, and is led by a Steering Group. Members include representatives from Ukraine, as well as ongoing initiatives such as SUCHO²²⁸.

Reach out and engage with other communities and networks

EF worked with ENA and EAF to identify opportunities to further grow membership and to increase the use of services offered by the Europeana Initiative. This was done by reaching out and collaborating with external communities and networks.

This year, we placed specific attention on new professionals in the cultural heritage sector. We published a Europeana Pro News theme²²⁹ highlighting initiatives supporting new professionals which grew our connections with other organisations, including The Future is Heritage²³⁰. We promoted the work of European Students Association for Cultural Heritage²³¹ (ESACH) and co-organised an event (as part of the ESACH Talks series) on the digital transformation of the cultural heritage sector²³². Further, EF supported the cross-initiative Task Force on Diversity and Inclusion to take part in a consultation (organised by Europa Nostra and ESACH) on the ‘Youth for the Future of Cultural Heritage in Europe’.²³³

EF continued to invest in partnerships that can support the Europeana Initiative in its aim to digitally transform the sector. EF participated in several meetings of the European Heritage Alliance 3.0 (coordinated by Europa Nostra²³⁴) and the Commission

²²³ <https://pro.europeana.eu/project/out-of-commerce-works-working-group>

²²⁴ <https://pro.europeana.eu/project/supporting-the-digital-cultural-heritage-of-ukraine-working-group>

²²⁵ <https://pro.europeana.eu/project/libraries-working-group>

²²⁶ <https://pro.europeana.eu/project/iiif-europeana-working-group>

²²⁷ <https://pro.europeana.eu/project/supporting-the-digital-cultural-heritage-of-ukraine-working-group>

²²⁸ <https://www.sucho.org/>

²²⁹ <https://pro.europeana.eu/tags/new-professionals-interviews>

²³⁰ <https://www.thefutureisheritage.com/>

²³¹

<https://pro.europeana.eu/post/supporting-new-professionals-the-european-students-association-for-cultural-heritage>

²³² <https://pro.europeana.eu/event/esach-talks-may-2022-digital-transformation-and-cultural-heritage>

²³³

<https://www.europanostra.org/europa-nostra-and-its-youth-partners-launch-consultation-on-youth-for-the-future-of-cultural-heritage-in-europe/>

²³⁴ <https://www.europanostra.org/>

Expert Group on the common European Data Space for Cultural Heritage (CEDCHE) that strengthened the positioning of the Europeana DSI. EF also participated in several high-level meetings organised by UNESCO²³⁵ to discuss support for digital cultural heritage of Ukraine and we presented Europeana at the Memory of the World conference²³⁶ in Paris. Finally, both NEMO²³⁷ and 4CH²³⁸ (Competence Centres) have been added to the Advisory Board of the Europeana Foundation, hence strengthening interaction with these two important bodies.

Europeana Research

EF promoted collaborations between the cultural heritage sector, academia and research. The work of Europeana Research was supported by the Europeana Research Advisory Board²³⁹ and the DSI-4 consortium partner CLARIN²⁴⁰.

EF, CLARIN and advisory board members promoted Europeana resources, products and services in the SSH - Social Sciences and Humanities, especially in the Digital Humanities, with representatives presenting at various international events. This provided excellent opportunities to expand our outreach to academic and research communities, and cultural heritage professionals interested in research. For example, at the CLARIN Annual Conference 2021 and the DARIAH Annual Event 2022 on Storytelling.

One highlight this year was the completion of the 2021 Europeana Research Grants Programme with its strong focus on communities and cross-sectoral engagement. The call's theme was 'Crowdsourcing and Research'. Three institutions²⁴¹ - two museums and one university - were awarded a research grant to organise a series of hybrid events:

- three workshops on Anthropocenic objects. Collecting practices for the Age of Humans, designed by the Museum für Naturkunde in Berlin;^{242,243,244}
- a training workshop on Crowdsourcing designed by the Estonian War Museum - General Laidoner Museum;²⁴⁵
- a two-day workshop on 'Cultural Heritage Geodata. Polish perspectives' designed by the University of Warsaw - Faculty of History.²⁴⁶

²³⁵ <https://en.unesco.org/>

²³⁶ <https://en.unesco.org/programme/mow>

²³⁷ <https://www.ne-mo.org/>

²³⁸ <https://www.4ch-project.eu/>

²³⁹ <https://pro.europeana.eu/page/research-advisory-board>

²⁴⁰ <https://www.clarin.eu/>

²⁴¹ <https://pro.europeana.eu/post/meet-the-winners-of-the-europeana-research-grants-and-prizes-2021>

²⁴²

<https://pro.europeana.eu/event/what-is-an-anthropocenic-object-transdisciplinary-perspectives-on-natural-cultural-and-hybrid-objects>

²⁴³

<https://pro.europeana.eu/event/how-to-collect-store-and-curate-objects-in-the-anthropocene-on-participatory-and-digital-collections>

²⁴⁴

<https://pro.europeana.eu/event/anthropocenic-objects-perspectives-for-the-future-of-conservational-institutions-and-collection-practices>

²⁴⁵ <https://pro.europeana.eu/search?q=war+museum>

²⁴⁶ <https://pro.europeana.eu/event/cultural-heritage-geodata-polish-perspectives>

The events involved 130+ cultural heritage professionals, academics and researchers. The winners also delivered written outputs to disseminate the results of the events organised. The outputs shaped the corresponding Europeana Pro News series on the theme of the call ‘Crowdsourcing and Research’ including posts on the Anthropocene²⁴⁷, cultural heritage geodata²⁴⁸, and on workflows to develop crowdsourcing plans at museums²⁴⁹. EF also promoted a report commissioned to the National Museum of World Cultures in Sweden, which conducted a pilot project to ‘decolonise’ the Swedish database ‘Carlotta’, involving Brazilian indigenous communities in this process²⁵⁰.

CLARIN published Jupyter notebooks for data processing with Europeana newspaper data and CLARIN NLP (Natural Language Processing) tools.²⁵¹ The material was also shared on the SSH - Social Sciences & Humanities Open Marketplace, as gateway to the EOSC - European Open Science Cloud for digital cultural heritage data.²⁵² CLARIN also published a screencast²⁵³ to guide possible users of the Jupyter notebooks. Further, EF added an entry about Europeana.eu²⁵⁴, and entry to the bulk downloads and the APIs²⁵⁵ to the SSH Open Marketplace.

EF and CLARIN organised a training workshop to test the use of Jupyter notebooks for data processing of Europeana newspaper data (June 2022).²⁵⁶ The workshop was designed for university teaching staff potentially interested in using Jupyter notebooks in university classes or doctoral training activities. The number of participants was limited to 16 (plus a number of observers), while the interest in the workshop was much higher, also from cultural heritage professionals (the registration page got over 300 views). This experience encouraged CLARIN to plan more training activities, e.g. at the forthcoming CLARIN Annual Event 2022.

CLARIN also used full-text resources of the Europeana Newspapers collection to create a metadata collection with multiple levels of granularity on the CLARIN’s Virtual Language Observatory.²⁵⁷ This makes the Europeana Newspapers collection more reusable, thanks to methods of search and filter available on the VLO.

²⁴⁷

<https://pro.europeana.eu/post/new-project-at-the-museum-fuer-naturkunde-berlin-explores-crowdsourcing-for-the-anthropocene>

²⁴⁸

<https://pro.europeana.eu/post/new-project-at-the-university-of-warsaw-explores-cultural-heritage-geodata-and-crowdsourcing>

²⁴⁹

<https://pro.europeana.eu/post/new-project-explores-crowdsourcing-in-estonian-cultural-heritage-institutions>

²⁵⁰

<https://pro.europeana.eu/post/new-project-at-the-national-museums-of-world-culture-sweden-explore-crowdsourcing-to-decolonialise-data>

²⁵¹ <https://www.clarin.eu/notebooks>

²⁵² <https://marketplace.sshopencloud.eu/training-material/duVII1>

²⁵³ <https://marketplace.sshopencloud.eu/training-material/y1e7dT>

²⁵⁴ <https://marketplace.sshopencloud.eu/tool-or-service/Aq8t9H>

²⁵⁵ <https://marketplace.sshopencloud.eu/dataset/kubP4q>

²⁵⁶ <https://pro.europeana.eu/event/full-text-resource-processing-training-workshop>

²⁵⁷

<https://vlo.clarin.eu/search?jsessionid=2AA4A0000C55F0F8D17F6347B584DBE7?1&fqType=collection:or&fq=collection:Europeana+newspapers+full-text>

EF promoted partnerships that engage academic communities with digital cultural heritage. For example, EF collaborated with the LIBER Digital Scholarship Working Group²⁵⁸ (and more specifically with the sub-group on the Impact of digital scholarship), and the GLAM Labs Community. The Jupyter Notebooks that were developed with CLARIN will allow EF to position Europeana among the organisations offering computational access to digital collections that the GLAM Labs Community aims to foster and promote.²⁵⁹

Finally, EF joined the EC's competition EUDatathon as partner to foster the reuse of the Europeana aggregated dataset and APIs now available on data.europa.eu, especially involving interdisciplinary teams composed of academics, researchers and university students in the Humanities and Computer Science.²⁶⁰

Europeana Research community

EF continued to support the Europeana Research community²⁶¹.

In February 2022, the Europeana Research Community Cafés²⁶² were launched to foster interaction between the community members and encourage more people to join the community. For each Café, a guest speaker introduced themes around the opportunities that digital cultural heritage brings to research and higher education (themes included 'Collections as Data' and 'Legacies of Catalogue Descriptions').

Another highlight in DSI-4 Y4 was the publication of videos²⁶³ to encourage academics and researchers presenting their projects around digital cultural heritage to an audience of non-specialists by using audiovisual means. The initiative was framed under the capacity building pillar, and applicants to a call (launched in DSI-4 Y3) were provided with a small financial support, production guidelines and, where possible, tailored support.

Our outreach to research communities in the past year resulted in a 19.4% increase of ENA community members (c. 2,500 members in total). In August 2022, we reached over 6,900 people with key communication channels dedicated to the research community (mailing list, Twitter²⁶⁴).

²⁵⁸

<https://libereurope.eu/working-group/digital-scholarship-and-digital-cultural-heritage-collections-working-group/>

²⁵⁹ <https://glamlabs.io/computational-access-to-digital-collections/>

²⁶⁰ <https://op.europa.eu/en/web/eudatathon>

²⁶¹ <https://pro.europeana.eu/page/europeana-research>

²⁶² <https://pro.europeana.eu/search?q=research+community+cafe>

²⁶³ <https://pro.europeana.eu/page/europeana-research>

²⁶⁴ <https://twitter.com/eurresearch?lang=en>

Develop user and market research

This year, we increased our efforts to understand what professional audiences in the cultural heritage sector want and need from Europeana services.

In 2021 we started testing some holistic approaches: promoting the 'evergreen' offer of the Europeana Initiative, ensuring outputs and outcomes that are still relevant and usable are promoted beyond their initial launch or announcement; and ensuring that approach is joined-up across relevant channels. This included campaigns promoting our offer for research, copyright and impact, our general offer for our webinars and the Europeana Network Association, and specific tools/products such as the Europeana Impact Playbook and Europeana Research Grants. Insights from the evaluation informed 2022 promotion and campaigns, including giving indications about what kind of product and content performs best, and the benefits of different channels for different types of campaigns.

Between January and March 2022 we ran the second annual Europeana Pro user survey. We asked seven questions designed to understand: who users are (sector); what users want (motivations, things to improve, multilinguality); and how well users know us (relationship to Europeana, awareness and use of the Europeana website). The audiences remained consistent year on year and surveys of both Europeana.eu and Europeana Pro over the last year suggest that both websites are largely serving the same audiences. The Pro survey showed that nearly 50% of respondents were looking for professional development, showing the importance of our capacity building activities. Multilinguality was important to 65% of our users, and 50% of respondents were aware of the Europeana website, suggesting there is opportunity to grow awareness.

Further, we implemented a 'content taxonomy' system which allows us to internally categorise and filter content shared through Pro and our social media, based on 'topic' (e.g. Impact/Copyright/Tech), 'content type' (e.g. tool/update/event), and 'body' (e.g. Europeana body/project partner/other). The aim of this taxonomy is to help us understand the level of interest and engagement in order to fine-tune and improve our offer.

The market research undertaken throughout the year has provided insights to help inform product development and promotion of products to better meet our audiences needs. We have also used it to explore and recommend ways to centralise, standardise and simplify our work to further develop market research capacities, audience understanding and product development approaches.

Communicate and promote activities to professionals and partners

We communicated and disseminated our wide-ranging activities to keep audiences informed on news from across the Europeana Initiative and cultural heritage sector, to share capacity building activities, and to reinforce Europeana's values - that the work we

do is usable, mutual and reliable. We delivered high-quality and engaging content aligned holistically across EF, ENA and its communities, as well as the EAF.²⁶⁵

Europeana Pro²⁶⁶ is our primary communications platform for professionals and supports the cultural sector in the provision of interoperable digital cultural heritage. It reflects key Europeana values and goals while raising awareness of and providing access to relevant information and tools, such as frameworks, API documentation and rights statements. Europeana Pro is also the platform for ENA members to network with international professionals in the sector and to connect with our various communities.

We delivered content on Europeana Pro under a strategic and consistent editorial approach, supported by clear and consistent organisational narrative and messaging. Monthly themes and ongoing series on Europeana Pro News²⁶⁷ have provided inspirational content around varied topics (e.g. The CDSM Directive²⁶⁸ and new professionals in the cultural heritage sector²⁶⁹). We also exploited cross-platform narratives and engagement by highlighting activities related to the Europeana seasons (e.g. Black History²⁷⁰ and Women's History²⁷¹), activities towards reuse audiences (e.g. Built with Bits²⁷²; Digital Storytelling²⁷³), and we increased our efforts to raise awareness of Europeana's offers (e.g. updates on development of the Europeana website²⁷⁴) to professional audiences.

In January/February 2022, we evaluated 2021 promotional activity and used it to inform our strategies for key promotional channels, namely Europeana Pro, LinkedIn and Twitter (for professionals).

Over the year, communications were disseminated via our various newsletters and mailing lists (ENA and communities) and on social media. As an example, Europeana Twitter²⁷⁵ reach increased by 5.8% (~ 43,800 followers) and LinkedIn by 32% (~ 11,250 followers).

²⁶⁵ Detailed information is provided in D.1 Communication and dissemination plan (available on the Europeana DSI-4 project page). <https://pro.europeana.eu/project/europeana-dsi-4>

²⁶⁶ <https://pro.europeana.eu/>

²⁶⁷ <https://pro.europeana.eu/blog>

²⁶⁸ <https://pro.europeana.eu/tags/cdsm-series>

²⁶⁹ <https://pro.europeana.eu/tags/new-professionals-interviews>

²⁷⁰ <https://pro.europeana.eu/tags/black-history-month-2021>

²⁷¹ <https://pro.europeana.eu/tags/womens-history-month-2022>

²⁷² <https://pro.europeana.eu/tags/built-with-bits-interviews>

²⁷³ <https://pro.europeana.eu/tags/digital-storytelling-2022>

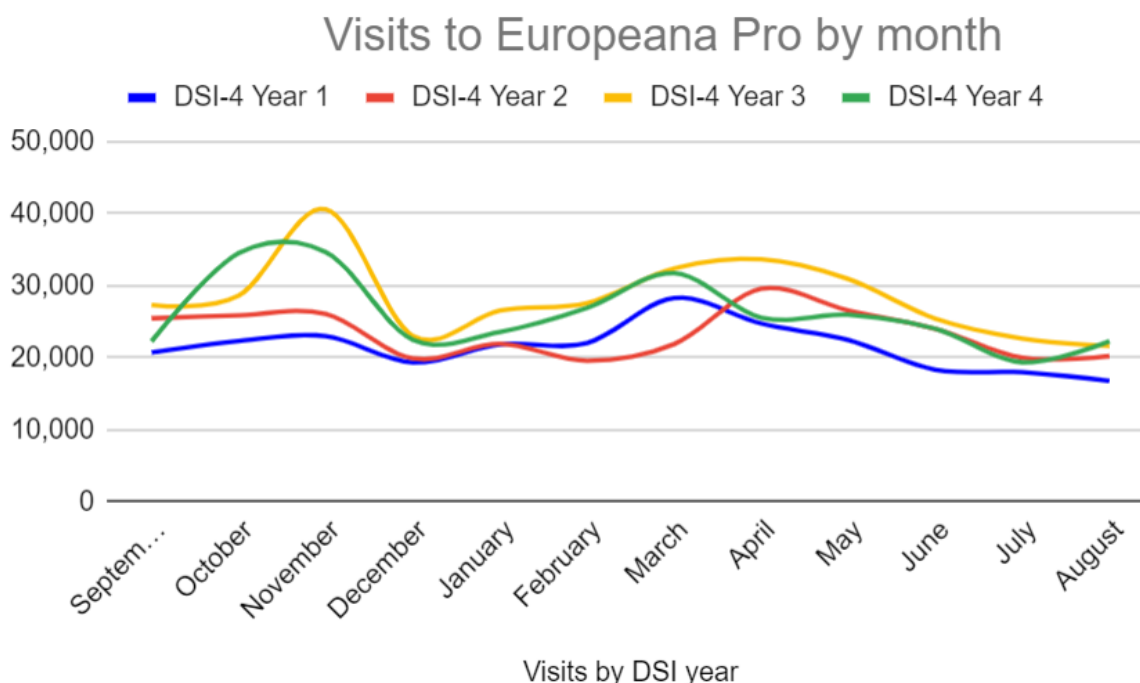
²⁷⁴ <https://pro.europeana.eu/search?q=What%E2%80%99s+new+on+the+Europeana+website%3F>

²⁷⁵ <https://twitter.com/Europeanaeu>

Europeana Pro website

EF maintained and developed Europeana Pro²⁷⁶ as a main element of the Europeana Initiative.

Traffic to Europeana Pro website²⁷⁷



Over the whole Europeana DSI-4 period, we saw an increase of traffic to Europeana Pro (see graph) from 258,067 total visits in the first year to 313,537 visits in the final year. In the past year, we saw a decrease of 7.95% compared to last year (which equates to ~ 27,088 fewer visits in total). However it should be noted that when we ran Google Analytics and Matomo alongside one another in the Summer of 2021 Matomo was reporting around 4% lower, and evidence suggests around a further 6% of visitors opt-out of tracking since we introduced a cookie consent banner in 2021. Plus, visits to our online Europeana 2020 programme were integrated into google analytics but in 2021 they were not integrated into matomo (for privacy reasons). These visits amounted to 6,883 in November 2021. Therefore we believe in real terms, we most likely saw a slight increase in traffic in year 4. As in year 3, the two biggest months in terms of traffic (October and November 2021) were driven by hosting a digital conference, and we also saw a spike in March 2022, which is usually a busy month with themes such as Women's History Month, and in 2022 we also ran a successful gif making workshop that drew high numbers of traffic to Pro.

In the past year, we worked closely with editors to enrich and refine content, ensuring that the website continues to provide relevant and up-to-date information and that

²⁷⁶ <https://pro.europeana.eu/>

²⁷⁷ Comparing Europeana DSI-4 Y1 (Sep 18 - Aug 19), Y2 (Sep 19 - Aug 20), Y3 (Sep 20 - Aug 21), Y4 (Sep 21 - Aug 22)

there is a coherent editorial approach that supports and conveys Europeana's key messaging.

We undertook technical enhancements and maintenance work to ensure a stable and user-friendly platform infrastructure (e.g. bug fixing, improved code quality and CMS). Most notably, we brought Europeana Pro up to common accessibility standards that focused on navigation, pagination, styling, images, attribution, documentation and zooming. In August 2022, the most visited pages averaged a score of 99 out of 100 for accessibility (initial score was 91). We also improved the aesthetics (e.g. more flexibility for styling) and usability of the site (e.g. 'tile' functionality is clickable, improved presentation of tags), and the options for sharing (Pro is embeddable on other websites, and new functionalities added to present links to external websites).

In July 2022, we ran a satisfaction survey in which respondents were asked to rank their satisfaction with Europeana Pro. 80% of respondents were either 'very' or 'completely' satisfied and the average score given was 82%. This shows a high satisfaction with the website.

Europeana Communicators' community

We continued to support the Europeana Communicators community²⁷⁸, whose goals are to: contribute to Europeana's shared knowledge by supporting the development and promotion of training resources, tools or activities; equip members with digital communications skills; and share examples of digital culture in action, demonstrating the relevance of Europeana and digital culture today. The ENA community grew in the past year by 14.8% (~ 1,670 people in total). In August 2022, we reached c. 2,900 people with key communication channels dedicated to the community (Newsletter, LinkedIn, mailing list).

In the past year, the community contributed to Europeana 2021 (November 2021) with sessions on inclusive language and impact and digital storytelling, and a successful #DigitalAperitivo on social media. The community also supported the Digital Storytelling Festival (May 2022) through the organisation of a session at the opening gala and a Pro News post to inspire audiences with examples of digital storytelling in action.

Finally, the community collaborated with other ENA communities, including the Copyright community on a 'Copyright Hours' event and submitting a joint proposal with the Climate Action community for Europeana 2022.

5.3 Strengthen national infrastructures

We maintained and developed activities that demonstrate the value of the Europeana Initiative to national infrastructures. We managed and further developed Europeana frameworks and standards to facilitate digital transformation. We developed policies and standards that contribute to data quality and enable access to and reuse of digital

²⁷⁸ <https://pro.europeana.eu/page/europeana-communicators-group>

cultural heritage. We also continued to develop the Europeana Impact Framework (EIF) and Europeana Capacity Building Framework (ECBF) to enable activity and evidence of digital transformation in the sector. Finally, we engaged with EU Member States to raise awareness of the Europeana Initiative.

Manage and develop Europeana frameworks and standards

Europeana standards and frameworks enable capacity building towards digital transformation of CHIs and provide shared approaches to making digital cultural heritage of good quality, more accessible and usable. These standards and frameworks are the Europeana Publishing Framework (EPF), the Europeana Data Model (EDM), the Europeana Licensing Framework (ELF), the Europeana Impact Framework (EIF) and the Europeana Capacity Building Framework (ECBF).

This year, we evaluated and compared various essential aspects of the frameworks to better understand how each framework relates to the other and identified areas for development and impact. The findings fed into the development of a Framework Management Template to facilitate the consistent management of all our frameworks (including creation, refinement and implementation) and created a strong basis for their development.

The first Europeana framework that was updated following the new Framework Management Template was the EPF. The document provides a problem statement and an impact assessment. It describes the core elements of the EPF together with the services and products in place to implement the EPF. It also describes processes important for the management of the EPF.

Finally, the Glossary of Terms²⁷⁹ on Europeana Pro was updated to support a coherent use of language across elements of Europeana frameworks, also with regards to relevant strategic objectives and activities in Europeana. This helps to ensure that terminology is used consistently across our frameworks' development and descriptions, in particular in our activities that support capacity building in the cultural heritage sector.

Develop and maintain an interoperable licensing framework

EF used its expertise to develop, influence and organise global efforts to encourage the accessibility, sharing and reuse of digital cultural heritage under the three priorities identified in the *Copyright Strategy 2020-2025*²⁸⁰.

We supported raising the quality of rights information assigned to digital cultural heritage in Europeana.eu (see [Raise the quality of content and metadata](#)). This year, we increased our efforts to build copyright capacity by providing training and guidelines.

²⁷⁹ <https://pro.europeana.eu/page/glossary>

²⁸⁰ <https://pro.europeana.eu/post/europeana-copyright-2020-2025>

We developed a strategy to encourage the accurate assignment of rights information in Europeana given that some rights statements on the Europeana website continue to be inaccurately used. The strategy provides a central place to establish clear objectives and keep track of all relevant products, activities, services and actors involved in addressing this challenge in collaboration with a range of stakeholders from across the Europeana Initiative.

Further, to improve the accuracy of rights statements we have developed self-paced training resources that support institutions that share data with Europeana. The resources consist of three different pages on Pro²⁸¹ with corresponding exercises and quizzes that individuals can do to test their knowledge. These exercises can also be used in instructor-led training sessions. We maintained a page giving access to copyright tools²⁸² and enriched it with the resources identified by the copyright community. The transfer of copyright knowledge was also part of training and events for professionals and aggregators (see [Build capacity of aggregators and professionals](#)).

We also collaborated with other initiatives to build stronger connections with networked associations working in and around the field of copyright and OpenGLAM. For example, EF supported the organisation of the *EUIPO datathon on out of commerce works*²⁸³ whose goal was to promote the use of the EUIPO portal and the Out-of-commerce works system. The datathon (April to June 2022), included three capacity building online sessions and a closing event.

Europeana Copyright community

We continued to support and collaborate with the Europeana Copyright community²⁸⁴, for example, to share information around legal and policy developments at the EU and national levels.

This year, we completed the Copyright Management Guidelines²⁸⁵ and a webinar for their promotion²⁸⁶ (May 2022). With the ultimate goal of supporting CHIs to harmonise all approaches to copyright across the organisation, they describe the detailed workflow to follow, including risk management, acquisition, digitisation, reuse, or even building copyright capacity within the organisation.

The Europeana Copyright community also tested the Europeana Capacity Building Playbook to determine their future capacity building efforts. This was supported by two workshops (October 2021 and June 2022). The outcome of the test was very positive, participants indicated that the playbook offered an easy to follow approach, improved their shared vocabulary with regards to capacity building and helped to determine their future planning of capacity building activities.

²⁸¹ The self-paced training can be found on the following pages: [identifying copyright in collection items](#), [how to select an accurate rights statement](#) and [available rights statements](#)

²⁸² <https://pro.europeana.eu/page/copyright-tools-and-resources>

²⁸³ <https://euiipo.europa.eu/ohimportal/en/web/observatory/datathon-2022>

²⁸⁴ <https://pro.europeana.eu/page/europeana-copyright>

²⁸⁵ <https://pro.europeana.eu/post/copyright-management-guidelines-for-cultural-heritage-institutions>

²⁸⁶ <https://pro.europeana.eu/event/introducing-the-copyright-management-guidelines>

EF supported the set up, promotion and development of the Copyright Office Hours²⁸⁷ held once a month. We also set up a working group on the topic of out of commerce works²⁸⁸ (April 2022) that seeks to encourage the use of these provisions.

Our outreach was successful in the past year, resulting in a 15.7% increase in ENA copyright community members (c. 1,400 members in total). In August 2022, we reached almost 4,200 people with key communication channels dedicated to the community (mailing list, LinkedIn, Facebook).

RightsStatements.org (rs.org)

EF continued to support the development and adoption of global interoperable rights statements provided through the RightsStatements.org²⁸⁹ consortium. As a member of the Statements Working Group we continued to represent Europeana partners' needs in developing the statements and we encouraged increasing the number of European language translations available (for example, we supported Croatian and Catalan translation partners).

We also shared good practices from Europe, to shape and influence international practices and implementation of the statements as part of the Implementation Working Group.

In August 2022, we recorded the percentage of active aggregators (accredited aggregators) that integrated rs.org into their infrastructure. 72.5% have integrated rs.org in their infrastructure. We also recorded that currently 82.5% of accredited aggregators share data on Europeana using a rights statement from rs.org. Currently, about 18 million objects are published with a rs.org rights statement on the Europeana website.

Develop processes and enable evidence of digital transformation

EF worked collaboratively with professionals, ENA and EAF to develop and expand the frameworks that enable structural capacity building for digital transformation in the cultural heritage sector.

This year, we updated the Europeana Capacity Building Framework (ECBF) developed in DSI-4 Y3. The framework provides guidance and a vocabulary for engaging in capacity building across the Europeana Initiative. V1 of the framework focused on the strategy for developing the framework, the collaborative approaches undertaken and the process of identifying capacity building needs at an organisation level and developing products and services responding to those needs. V2 builds on this by utilising the newly developed Framework Management Template, and clarifies how activities like training (e.g. on how to use Europeana products and services) can support CHIs in their

²⁸⁷ <https://pro.europeana.eu/post/copyright-office-hours-are-back>

²⁸⁸ <https://pro.europeana.eu/project/out-of-commerce-works-working-group>

²⁸⁹ <https://rightsstatements.org/de/>

own digital transformation. V2 also articulates the framework's strategic proposition, especially towards two focus areas for capacity building:

- Capacity building that facilitates easy and rewarding data aggregation; and
- Convening a sector to collaborate, share and learn together

We further validated the Capacity building playbook²⁹⁰ by organising workshops (with the Copyright community and WEAVE partners²⁹¹). General feedback was that the approach (impact exercises supplemented with mapping capacity building opportunities) allows to make a better connection between existing and new activities and give insights on the long term impact on the sector. The workshops gave insight into improvements for the next version of the playbook.

The work was supported by the Capacity Building for Digital Transformation Task Force²⁹², established in September 2021. The Task Force brings Initiative-wide stakeholders (ENA, EAF, EF, external stakeholders) together to (build on the) work done on capacity building to support the digital transformation of the GLAM sector. The TF organised three open consultation workshops to gather input from various stakeholders with 44 attendees from 19 countries. The input gathered during these workshops fed into the TFs action plan and vision of what digital transformation looks like in the sector. The TF published the outcomes of their work in a report and a guide²⁹³ for cultural heritage professionals to determine their capacity building needs.

We also further developed and provided supportive tools and resources for capacity building (see [Build capacity of aggregators and professionals](#)).

We developed further the Europeana Impact Framework and toolkit by publishing Phase four of the Europeana Impact Playbook²⁹⁴. Its development was guided by a small external advisory group and members of the Impact Lite Training and Community Building Task Force²⁹⁵. Phase four is dedicated to evaluating your impact assessment approach. We have now completed the four-phased Europeana Impact Playbook (Phase one was published in 2017).

EF continued to monitor and assess the impact of activities that facilitate digital transformation (e.g. by undertaking an impact assessment for the Europeana annual conference 2021, the Europeana Network Association, as well as impact assessments in different Generic Services projects).

We further developed a framework to evidence change relating to capacity building for digital transformation. The ENUMERATE survey, available alongside the InDICES

²⁹⁰ Available on request.

²⁹¹ <https://pro.europeana.eu/project/weave-widen-european-access-to-cultural-communities-via-europeana>

²⁹² <https://pro.europeana.eu/project/digital-transformation-task-force>

²⁹³ <https://pro.europeana.eu/page/building-digital-capacity#digital-transformation-task-force>

²⁹⁴

https://pro.europeana.eu/files/Europeana_Professional/Impact/europeana_impact_playbook_phase_four_evaluation_V.1.pdf

²⁹⁵ <https://pro.europeana.eu/project/impact-lite-training-community-building-taskforce>

self-assessment tool (developed as part of the InDICES project²⁹⁶) collected data needed to report on the evidence of digital transformation.

The ENUMERATE survey 2022 was completed at the end of June 2022. There were 219 responses from EU27 countries, from a mix of domains (libraries were represented most strongly). The results revealed that most institutions currently have digital strategies prioritising social media and marketing as well as traditional areas in the cataloguing of collections and items digitised (these are also the areas in which more staff members currently have expertise) with an interest to branch into other areas such as Artificial Intelligence, multilingual strategy and capacity building. 28% of respondents do not yet have a digital collection despite having physical collections, indicating that some of our audience can benefit from sectoral advice relating to digitisation and digital collections management. In addition, more than half of total respondents report that less than 2% of their annual budget is devoted to digital collections work. The biggest target audience and sector (after the general public) for most participating institutions is research and education and half of the institutions also reported collaborations in this area. A full report, including indicators for digital transformation was submitted in July 2022.

Europeana Impact community

We collaborated with the Europeana Impact community²⁹⁷ to share good practices, case studies and information around the assessment of impact. The transfer of knowledge and development of impact skills was also part of training and events for professionals and aggregators (see [Build capacity of aggregators and professionals](#)). For example, we organised workshops to support impact assessment at Europeana (e.g. contributing to areas like diversity and inclusion, product development, capacity building and climate action).

In March 2022, the community launched the Impact Lite Training and Community Building Task Force²⁹⁸. The TF aims to develop an Impact Lite training methodology and introductory course.

Our outreach to the impact community was successful in the past year, resulting in a 15.7% increase in ENA community members (c. 1,600 members in total). In August 2022, we reached over 2,500 people with key communication channels dedicated to the impact community (Newsletter, mailing list, LinkedIn).

Engage with Member States

EF, together with the Member States holding the presidency of the Council of the EU, organised two presidency events to share and reinforce the value delivered by the Europeana Initiative towards digital transformation of the cultural heritage sector.

²⁹⁶ <https://pro.europeana.eu/project/indices>

²⁹⁷ <https://pro.europeana.eu/page/europeana-impact-community>

²⁹⁸ <https://pro.europeana.eu/project/impact-lite-training-community-building-taskforce>

In December 2021, as an accompanying event of the Slovenian Presidency, the Europeana Conference 'Driving engagement - participatory approaches to digital cultural heritage'²⁹⁹ was held in collaboration with the Ministry of Culture of Slovenia. It involved 106 participants over two days. The main aim was to explore aspects of public engagement and participation with digital cultural heritage. The key outcomes of the conference were published in a dedicated report.³⁰⁰ The conference underscored the importance of community participation, as local cultural heritage institutions are typically best positioned to gather local knowledge and exploit local interest in safeguarding that community's heritage. Continuing to encourage local collaboration and community involvement in institutions and communities across Europe is essential while also acknowledging the challenges of sustaining that participation over time - especially to sustain the resources required of people, time and funding. Further, continuing to ensure tools for participation are user-centred and user-friendly/simple remain primary considerations.

In March 2022, the French Presidency Europeana Conference 'Building the Common European Data Space for cultural heritage together'³⁰¹ was held in collaboration with the Ministry of Culture of France and the Mobilier National. It involved 330 participants from 43 countries and received a very good average satisfaction rate of 82%. It aimed to stimulate reflection and dialogue around the creation of the common European data space for cultural heritage - the needs, the key challenges and the aspirations for achieving it. Some of the most important elements for the development of the data space were considered to be: a robust technical and technological infrastructure, interoperability, connection to other data spaces, multilingualism, 3D, long-term digital preservation, data quantity and quality, bridging gaps in capacity and funding, aggregation and aggregator communities. The most important outcome of this conference was the call for unity and action. Only if all actors and stakeholders work together collaboratively, can we ensure the success of the common European data space for cultural heritage. The report³⁰² from the conference encapsulates the basic findings that all stakeholders can use to refine their thinking as the work on designing and building the data space progresses.

Through the Member States newsletters³⁰³ we communicated relevant news, highlighted updates, shared successes and announced upcoming events or reported about them.

We also updated the country reports³⁰⁴ for EU Member States to keep them engaged and informed about their contributions to the Europeana Initiative and the benefits they receive from it, such as the amount and quality of the data their country provides, high

²⁹⁹

https://pro.europeana.eu/files/Europeana_Professional/Event_documentation/Events/Presidency/Slovenia-Presidency-2021-Digital-Programme-Public.pdf

³⁰⁰ <https://pro.europeana.eu/post/summary-of-the-slovenian-presidency-europeana-conference>

³⁰¹

<https://pro.europeana.eu/event/building-the-common-european-data-space-for-cultural-heritage-together>

³⁰² <https://pro.europeana.eu/post/report-from-the-french-presidency-europeana-conference>

³⁰³ <https://pro.europeana.eu/page/member-states>

³⁰⁴ <https://pro.europeana.eu/page/member-states>

level traffic, country's participants in Europeana Network Association, and an overview of their country's participation in Europeana related projects.

6. Integrate the results of Europeana Generic Services projects

This section describes the support given by EF to the Europeana Generic Services (GS) projects throughout the project year and elaborates on the integration of the outcomes in the Europeana core service platform (CSP) for GS projects completed during the reporting period.

EF supported all GS projects with the following:

- Advice on the correct implementation of Europeana frameworks and policies relevant and/or requested by the Generic Services calls, e.g. Europeana Publishing Framework, Europeana Data Model, Editorial Guidelines, Impact Framework.
- Sustainable integration of the project results into the Europeana platform, e.g. ingestion of content and metadata (if applicable), enrichments, editorials and tools.
- Promotion of the project outcomes on Europeana Pro, mainly in the Tools and Services section³⁰⁵ and Projects space³⁰⁶, as well as dissemination to the relevant Europeana audiences.

Additionally, on 11 and 12 October 2021, EF organised the Generic Services projects 2021 event. The virtual edition brought together over 60 representatives from projects, EF, and the European Commission. The event showcased the goals and achievements of the current Generic Services projects and also provided a forum to discuss common challenges, find synergies and strengthen connections. On the first day, the running projects presented their work and on the second day, EF shared updates related to the specific performance area of Europeana. Additionally, in depth discussions of specific topics of interest such as AI, Multilinguality, Education and Data quality were discussed during the breakout sessions.

During this period, four projects from the Europeana CEF-TC-2019-1³⁰⁷ call were concluded during the reporting period: Pagode - Europeana China³⁰⁸ in September 2021, Europeana XX: Century of Change³⁰⁹ in November 2021, Europeana Sport³¹⁰ in April 2022, ARMA -The Art of Reading in the Middle Ages³¹¹ in August 2022.

³⁰⁵ <https://pro.europeana.eu/about-us/services-and-tools>

³⁰⁶ <https://pro.europeana.eu/page/generic-services-projects>

³⁰⁷ https://ec.europa.eu/inea/sites/inea/files/2019-1_europeana_call_text.pdf

³⁰⁸ <https://pro.europeana.eu/project/pagode-europeana-china>

³⁰⁹ <https://pro.europeana.eu/project/europeana-xx>

³¹⁰ <https://pro.europeana.eu/project/europeana-sport>

³¹¹ <https://pro.europeana.eu/project/the-art-of-reading-in-the-middle-ages-arma>

EF delivered reports on the compliance of the project results with the Europeana CSP for each of these projects and joined their validation meetings with the European Health and Digital Executive Agency (HADEA)³¹².

The table below showcases the main project outcomes according to their contribution to the key performance areas of the Europeana DSI.

Performance area	Outcomes	Project(s)
Data	<p><i>Data ingestion:</i> More than 475,000 new records in Tier 2+ More than 46,000 updated records to Tier 2+</p> <p><i>Metadata enrichments:</i> More than 2.7 million items enriched with more than 6.5 million enrichments.</p>	Pagode, Europeana XX, Europeana Sport, ARMA
User engagement ³¹³	<p>199 editorials in Europeana.eu, including: 92 blogs, 49 galleries, 4 exhibitions, 40 browse discovery points, 10 topic pages³¹⁴, 3 feature pages, 1 century page³¹⁵.</p> <p>29 project related entries in Europeana Pro, including: 4 project pages, 9 event pages, 13 Pro news blogs; 5 tool and services entries.</p> <p>29 user engagement events: 7 crowdsourced enrichment campaigns, 2 pop-up exhibitions, 4 hybrid and onsite experiences, 4 online events and 14 collection/participatory events.</p>	Pagode, Europeana XX, Europeana Sport, ARMA
Infrastructure	<p>Development of 4 tools: Sage tool³¹⁶Heritage Metadata Automatic Translation system³¹⁷ Smart Editorial Support System (SESS)³¹⁸, Subtitle-a-thons platform³¹⁹</p> <p>Development of the Europeana</p>	Europeana XX

³¹² In March 2021, Innovation and Networks Executive Agency (INEA) ceased their operations and European Health and Digital Executive Agency (HADEA) was established to take over the CEF Telecom programme.

³¹³ All Europeana Pro blogs and editorials shared on Europeana.eu are promoted via different Europeana channels to relevant audiences.

³¹⁴ Topic pages are pages with unique URIs that are linked to an entity from Europeana's entity collection. They allow for multilingual browsing and filtering, and linking with other topic pages. An example of a topic page is <https://www.europeana.eu/en/collections/topic/2915-manuscript-illumination>.

³¹⁵ Century pages are topic pages that focus on a specific century in History. Europeana has Century pages for every Century from the 1st Century AD onwards. You can find all Century pages here: <https://www.europeana.eu/en/collections/times>

³¹⁶ <https://europeana-semantic.ails.ece.ntua.gr/manage>

³¹⁷ <https://pro.europeana.eu/page/heritage-metadata-automatic-translation-system>

³¹⁸ SESS consists of 4 separate components: the User Galleries, Similar items, the Entity Collection Curation flow and the Recommendation system. Information on the [recommendation system can be found here](#).

Information on the user [gallery components can be found here](#).

³¹⁹ <https://subtitleathon.eu/>

	<p>Recommendation API</p> <p>Enhancement of Europeana CSP in 3 key areas: (1) Metis aggregation system with the new EDM Provenance profile (2) Europeana website by creating new entity collections for time periods, enhanced media player with new subtitle feature, Integrating part of the Smart Editorial Support System (3) Extended functionality of 6 Europeana APIs: Entity API, User Set API, KeyCloak, Annotations API, IIIF Manifest, IIIF Fulltext.</p>	
Capacity building	<p>15 capacity building activities. 4 online workshops on the topics of licensing, copyrights and dataset enrichment, 10 training meetings for collection events, 1 webinar on the role of digitised medieval objects in education.</p> <p>Best practices to support CHIs to prepare, deliver and publish content on Europeana³²⁰. Guidelines for participatory events and collection days. Recommendations on knowledge exchange between educators and curators³²¹. Recommendations on implementation of IIIF in CHIs³²².</p>	Pagode, Europeana Sport, ARMA

³²⁰ <https://photoconsortium.net/pagode/good-practices/>

³²¹ <https://drive.google.com/file/d/19dvebnd1hf8L1POBcfvr-z1Jy8Vnu1vg/view?usp=sharing>

³²² <https://pro.europeana.eu/project/the-art-of-reading-in-the-middle-ages-arma>

7. Budget and realisation

Europeana DSI-4 is funded under procurement by the European Union. The funding for DSI-4 Y4 is equal to the past three years and is 7 million euro (period from 1 September 2021 to 31 August 2022). The work was performed in four separate work packages:

- 1) Strengthen the infrastructure
- 2) Improve data quality
- 3) Build capacity
- 4) Programme management

The realised division for the fourth year is close to the planned division.

Compared to the planning the effort spent on *WP1 Strengthen the infrastructure* is almost the same (- 0.18%), where the effort for *WP2 Improve data quality* is higher (+ 1.46%), and *WP3 Build capacity* took less resources than foreseen (- 2.04%). A small increase for *WP4 Programme management* (+ 0.77%).

The balance of efforts table below states the foreseen and actual percentages of resources allocated to each of the four work packages and its related tasks.

Balance of efforts per Work Package

Work package	Foreseen	Actual Aug 2022
WP 1: Strengthen the infrastructure	49.50%	49.32%
Task 1.1. Easy data publishing	11.60%	12.98%
Task 1.2. Europeana website experience	14.90%	13.61%
Task 1.3. Reliable platforms	8.40%	7.97%
Task 1.4. Discoverability of digital cultural content	14.60%	14.76%
Work package 2: Improve data quality	17.50%	18.96%
Task 2.1. Quality assured data	12.50%	13.63%
Task 2.2. Enriched data	5.00%	5.33%
Work package 3: Build capacity	26.50%	24.46%
Task 3.1. Build capacity of aggregators and professionals	10.80%	9.94%
Task 3.2. Nurture networks	9.60%	8.93%
Task 3.3. Strengthen national infrastructures	6.10%	5.59%
Work package 4: Programme management	6.50%	7.27%
Task 4.1. Programme management of Europeana DSI-4	6.00%	5.97%

Task 4.2. Relations with Europeana DSI Generic Services projects	0.20%	1.01%
Task 4.3. Governance (DCHE)	0.10%	0.20%
Task 4.4. Phasing-in and phasing-out periods	0.20%	0.09%
TOTAL	100%	100%