



# Common European data space for cultural heritage

*Annual Report 2022/2023*

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Please see the [glossary on Europeana Pro](#) for formal definitions of frequently used terms.

# Consortium partners

The [common European data space for cultural heritage](#) is deployed by a consortium of 19 partners, coordinated by the Europeana Foundation.



# Foreword

In the first year of deployment of the [common European data space for cultural heritage](#), we have shaped this new initiative and brought it to life. The data space offers the opportunity to support advances in technology and to innovate in areas like 3D and AI, to aggregate, enrich, promote and communicate high-quality digital data, to reach diverse audiences and provide them with ways and incentives to reuse this data, and to create digital environments that are inclusive, collaborative and jointly owned.

It has been an exciting year as we have started to deliver on these opportunities for the sector. Our evolution from a [digital service infrastructure](#) to a thriving data space is well and truly underway, and we can look back on the achievements of the first year with pride.

This year, collaboration took on an even greater significance. Cooperation between consortium partners, the Europeana Network Association, the Europeana Aggregators' Forum and the Data Space Support Centre enhanced our efforts in all areas, from data governance and supporting cultural heritage institutions to engage with aggregators, to thinking about a more decentralised aggregation model, and taking further steps to develop our capacity building framework.

Success of the data space will depend largely on the active and sustained contribution of Member States, so engagement here has been an important focus this year. We organised two events under the Presidencies of the Council of the European Union, building new connections and exploring the potential of 3D for the cultural heritage sector.

3D was, and will continue to be, at the centre stage of our activities. We launched the [Twin it! 3D for Europe's culture](#) campaign to encourage Member States to step-up their 3D digitisation efforts and mobilise the sector to innovate in this area, and are working with our partners to make the data space ready to exchange 3D data.

As we explore the potential of innovative technologies, we are testing and implementing new approaches - including those that use AI - to enrich data and ensure that we continue to develop and operate a reliable data space infrastructure. This infrastructure supports the products and services we make available to the sector, which were extended and improved over the past year. Improvements to our aggregation systems, enhanced search and multilingual access on the Europeana website, and extensions to our APIs have brought benefits to our aggregators, data partners and audiences.

For our audiences - educators, researchers, those working in the cultural heritage sector, creatives and Europe's citizens - we created both engaging content and opportunities for participation. Stories on the Europeana website highlighted subjects from European crafts, to mining heritage, and to 3D digitisation, while initiatives like GIF IT UP and the Digital Storytelling Festival encouraged and supported audiences to reuse open digital data. We reached researchers and educators through MOOCs and competitions, as well as regular outreach work and knowledge-exchange events from our ENA communities. Our Europeana 2022 conference was a highlight in bringing professionals together to connect and collaborate.

With this positive progress, we also acknowledge the shifting sociopolitical landscape and the challenges that our colleagues across Europe face. We stand in solidarity with the people of Ukraine, and are seeking to support cultural heritage professionals in the country through initiatives such as [Laptops for Ukraine](#) and a dedicated Working Group. We also acknowledge our responsibility towards the climate emergency, and, in line with our [Climate Action Manifesto](#), are working to ensure that the data space is environmentally conscious. And we aim to ensure that our work is inclusive of, and accessible to, our audiences, and reflects the diversity and beauty - and languages - of Europe.

We hope that you find reading about this work, and all that we have achieved this year, inspiring and informative. We thank everyone involved for their contributions and we look forward to moving into the second year of the data space together.

*Harry Verwayen, General Director of the Europeana Foundation*





## QUALITY OF SERVICE



**99.5%**

Uptime of Europeana website



**1.1s**

Response time of Europeana website



**99.6%**

Uptime of Europeana APIs



**0.2s**

Response time of Europeana APIs



**99.9%**

Uptime of Europeana Pro



**1.0s**

Response time of Europeana Pro



**AA**

WCAG 2.1 accessibility level of Europeana website



**AA**

WCAG 2.1 accessibility level of Europeana Pro

Average numbers for quality of service of Europeana products (Aug 2022 - Sep 2023). Europeana Foundation. August 2023. CC-BY-SA

# Data space infrastructure

The data space provided a reliable infrastructure and quality of service, and fostered innovation, interoperability and compliance with other data spaces.

## Data space infrastructure and quality of services

The Europeana DS consortium extended and maintained the four main digital products of the data space ([Europeana website](#), [Europeana Pro website](#), [APIs](#) and [aggregation systems](#)) as well as the underlying infrastructure to host, monitor and recover systems. Europeana products were available 24/7 with a high uptime and a low response time.

**Extend and maintain platform infrastructure and services.** EF assessed aspects of the data space ecosystem that can influence the stability, persistence and access of resources in the main data repository. We identified three problem spaces for which better support and handling of persistent identifiers is needed: 1) stability of object identifiers provided by data partners, 2) stability of identifiers originated by the aggregation into the Europeana infrastructure, 3) stability of identifiers shared with (or reused by) our audiences. These areas will be the focus of our implementation activities for the coming year(s).

We measured the use of persistent identifiers (PIDs), with results showing that 13% of records published on the Europeana website contain a possible PID. Three of the candidate PID schemes in use are known to be supported by reliable persistent identifier policies and resolution systems: ARK, HANDLE and DOI.

We published a [survey](#) to better understand the practices of aggregators and CHIs towards the implementation and use of PIDs. The information gained from this survey will support us in defining requirements for the provision of persistent and unique identifiers for the data space in Y2.

EF improved the overall enrichment framework and established a prototype framework for a post-publication enrichment pipeline which enables the continuous improvement of items after publication. We tested and used the framework to successfully translate 25 million metadata records to English as part of the [Europeana Translate project](#). We expect to develop this framework into production-ready software in Y2.

Substantive effort was put into infrastructure maintenance and technology upgrades to ensure high performance, resilience and maintainability. We dedicated significant time to the migration of all cloud-based applications to a new cloud environment (Kubernetes), bringing about significant performance and overall stability improvements. For example, we saw significant improvement in the response time for the Europeana website, with 1.7s response time in Sep 2022 compared to 0.9s in Aug 2023. With the migration of all services to Kubernetes, we also migrated the logging routines of applications running in the cloud environment into a standardised approach that works in Kubernetes and for all applications so that logs can be consistently pulled and pushed to the logging infrastructure.

Finally, we updated and maintained technical documentation, most notably to reflect the migration of various applications to Kubernetes, and performed disaster recovery and stress testing. We ensured compliance of our operations with the IDPR by maintaining and updating privacy statements and processes where relevant for our products and services as well as ensuring that the third party tools we rely on are compliant.

**Extend and maintain aggregation systems and services.** EF, PSNC and DATO progressed with the developments outlined in the Aggregation Strategy to make data aggregation easier and to assist providers in increasing the quality of their data. The development of the Metis Suite focused on the [Metis Sandbox](#). EF improved the current data-processing architecture and configuration, functionalities and user interface of the Sandbox to accommodate increased usage (see also reporting on improved practices in section 'Data acquisition and data improvements').

EF optimised the aggregation infrastructure, most notably by migrating [Metis](#) and the [Data Statistics Dashboard](#) to a new hosting environment called [Kubernetes](#), which increased performance, deployability and scalability of the products. PSNC focused on making eCloud, the core Metis data storage, sustainable for the future by reviewing the current data processing framework and testing the most popular alternative state-of-the-art solutions, aiming to implement the most promising new technology as an MVP in Y2.

EF defined metrics to assess the performance of the aggregation infrastructure and implemented the logging needed to measure the metrics. In Y1, an average dataset consisting of about 31,300 records needed around 22 hours of Metis/eCloud processing time for data publication.

**IIIF.** This year, we also focused on increased support for IIIF within the Metis Suite and aggregators' infrastructures. PSNC transitioned the currently implemented IIIF image service to a more openly licensed software, now supported by completely new state-of-the-art technology, which resulted in a simpler and more easy-to-manage setup. IIIF has high potential for sharing high-quality content efficiently with a wide audience and so we extended the support for IIIF technology within the aggregators' infrastructure.



More specifically, AIT-Graz developed two guides to support aggregators working with IIIF, the [IIIF Image Conversion Guide](#) to scale the conversion of images to IIIF compatible resources and a guide to scale the creation of IIIF manifests that will be released in Y2, accompanied by training resources.

**Ecosystem.** We developed and implemented a first version of a Sandbox API that allows aggregators to integrate the Metis Sandbox into their own aggregation infrastructure. Users can now trigger a full Sandbox workflow from within their own environments and are directed to the Sandbox where they can preview and validate their data in the usual way. They can also choose to perform validation and problem pattern analysis on a single record from within their own environments, after which a full report is returned. These integrations improve the data publication journey by shortening the Sandbox feedback loop and making it easier to apply and test data mappings and enrichments.

DATO maintained and improved [MINT](#). The infrastructure was upgraded to support incremental harvesting which in turn allows the Metis incremental processing algorithm to identify only updated records which will save processing resources (previously the full dataset had to be processed). DATO also provided related user support to map data to their own schema and support for updating data with enrichments.

**Extend and maintain Application Programming Interfaces (APIs).** The Search & Record APIs were the oldest of the Europeana APIs, designed in 2013. We split the APIs and fully redesigned the Record API (3rd version) to a newer version that follows today's standards and best practices for API design, development and Linked Open Data. It is expected that the new design makes usage for developers much simpler while, at the same time, optimising data delivery.



*3D modelling of proteins on computer. Mol. Biophysics, Oxford Univ. Wellcome Collection. CC BY*

EF assessed and re-engineered the recommendation engine to more closely match users' expectations and to work optimally with the Europeana APIs used to inform recommendations. The redesign is expected to improve the performance and stability of the service while enabling the integration of more sources of input to inform recommendations.

EF and AIT-Vienna developed a new API to allow internal Europeana products to connect to and use translation services from different translation service providers. This API is meant to act as a broker with external translation services making it easier to switch between services and therefore be more resilient to limitations and/or failures of such services. For the first version of the API, we focused on the design and development of the core framework and the migration of both Google Cloud Translation (being used for query and item metadata translation) and Pangeanic APIs (being used in the Europeana Translate GS Project) as plugins for the framework. The options for caching were also investigated and will be integrated in the coming months. This will prevent redundant translations and optimise costs.

Throughout the year, we maintained all Europeana APIs to perform well. Significant efforts went into the migration of all APIs to Kubernetes, which had a direct impact on increased stability and performance. We made significant investment into the IIIF range of APIs to support the addition and update of full-text and to optimise the display of media and full-text on the Europeana website. In line with this effort, we also updated the Annotations API to enable partners to submit full-text to the data space. Finally, we further developed the entity management to optimise and improve the quality of the data managed by this service.

## Innovation, interoperability and compliance with other data spaces

**Investigate innovative scenarios for aggregation models.** In Y1, the Europeana DS consortium started to explore innovative and alternative data aggregation models. As a first step, we completed a revised roadmap (based on the previous Aggregation Strategy) that guides the transition towards a new strategy for aggregation in the context of the data space (including a revised categorisation of actions).

We launched two Task Forces, one on [SOLID-based decentralised aggregation](#) which conducted a series of interviews to explore the potential of decentralisation when applied to data aggregation in the context of the data space. This resulted in a series of use cases which will be further refined in Y2 as part of centralised vs decentralised scenarios. Another [Task Force](#) focuses on demonstrating the value of linked data for data exchange and will develop guidelines and a technical proof of concept. In the meantime, first use cases have been provided by [DC4EU - Dutch Collections for Europe](#), the Dutch national aggregator for the data space which is already in the implementation phase of a linked data based aggregation model.

Based on the insights of those activities, we developed an approach for Y2 that will feed into the update of the Aggregation Strategy. A new working group on Innovative Operating models will be created to ensure a more holistic approach towards this topic and ensure liaison with other activities such as data governance.



**Synergies with other European data spaces.** The Europeana DS consortium worked towards close collaboration with relevant initiatives to ensure interoperability with other European data spaces. In Y1, we collaborated with the [Data Space Support Center \(DSSC\)](#) and data space initiatives including the two consortia working towards the data space for tourism and the data space for skills and science, research and innovation, EOSC. These collaborations focused on sharing Europeana's over 15 years of experience in managing and sharing data and in developing products and services around data.

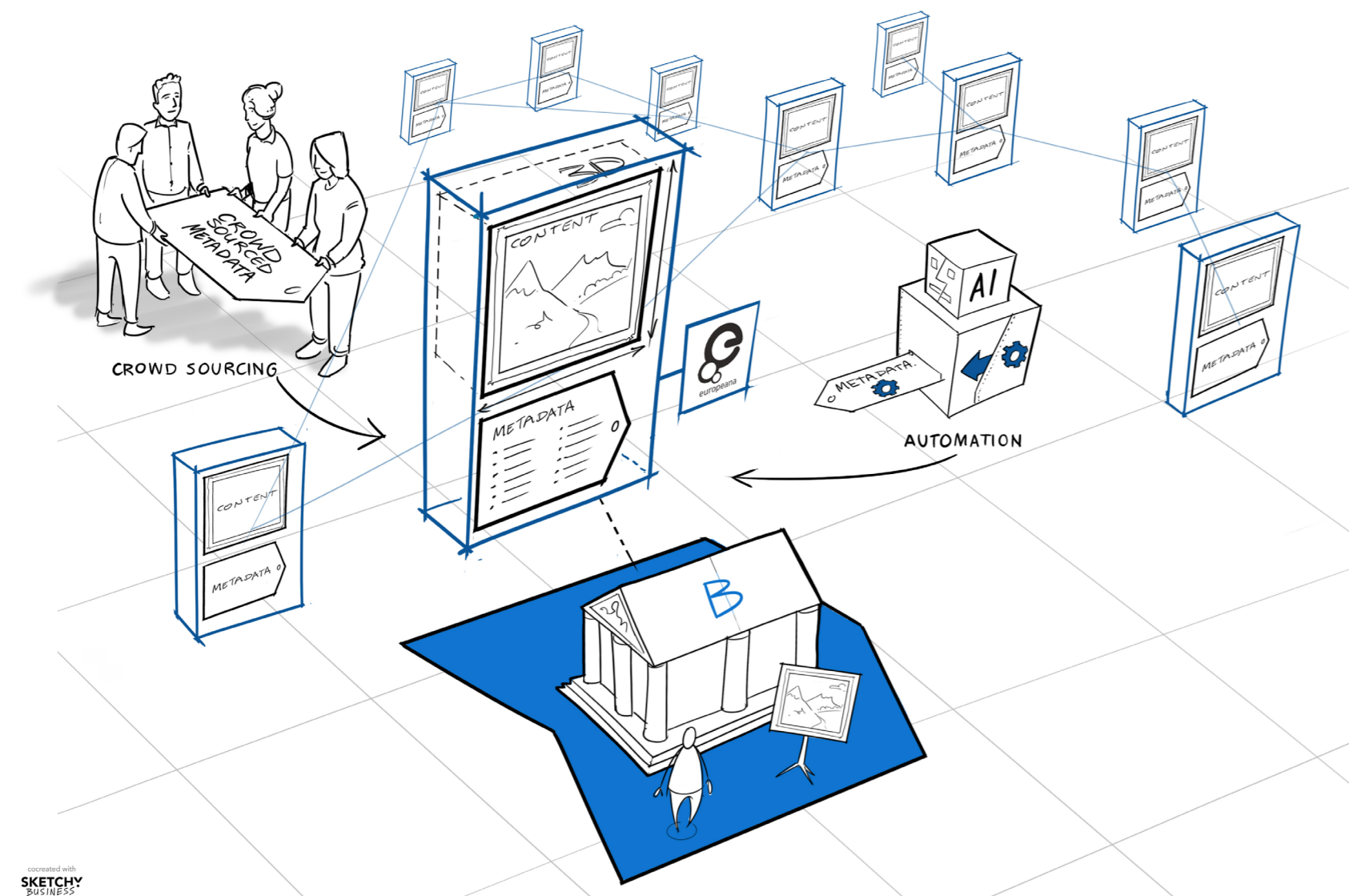
**Support interoperability and technological innovation for digital cultural heritage.** EF and NISV supported the [EuropeanaTech Community](#) and its Working Groups (WGs) and Task Forces (TFs). One TF aims to establish an easy-to-use [Workflow from shelf to Europeana](#) by developing a handbook to support smaller CHIs. In Y1, two TFs were launched: one to show aggregators the value of interlinking heterogeneous data from various sources and to provide guidelines to implement [Linked Data](#) (Nov 2022), and another one to study the feasibility of moving forward to [decentralised \(e.g. SOLID-based\) aggregation](#). This TF completed a report that gathers insights received from interviews from within the cultural heritage community and beyond, presents relevant technology, and proposes use cases to which this technology could be applied. Both fit well within the data space vision of decentralised and connected data. In addition, in Jul 2023, a new WG was launched (a collaboration between EuropeanaTech and Europeana Research) to look at [Datasheets for digital cultural heritage](#), seeking to promote best practices from the AI community on the transparency of provenance for datasets and models.

The community also organised webinars on technical innovations in the acoustics domain ([Oct 2022](#) and [Jun 2023](#)) and the automatic generation of subtitles ([Nov 2022](#)), in addition to the IIF webinars reported on here.

EF continued its involvement in the IIF community and contributed to the [IIF Executive Committee](#). EF was also active in the [IIF Technical Review Committee](#) and the [IIF Discovery Technical Specification Group](#) (which saw the [Europeana Data Model](#) added to the [IIF Registry](#) to align practices in the data space with the ones of the IIF community). The [IIF & Europeana Working Group](#) facilitated the adoption of the IIF standard in the data space by organising webinars ([Oct 2022](#) and [Jan 2023](#)), among other activities.

The [Data Quality Committee \(DQC\)](#) supported us in addressing key data quality issues with a particular focus on reuse and discovery of cultural heritage objects (i.e. data quality problem patterns and enrichments). We maintained the [Europeana Data Model](#) to the level of coverage and quality that is needed to keep it positioned as a cornerstone for semantic interoperability within the data space and other data spaces (including improvements to the support of Linked Open Data, multilingual data, interoperability for 3D content, and alignment of text and AV data patterns with the IIF community). We also supported data interoperability by [updating the mappings](#) needed to ingest Linked Open (multilingual) Data on contextual entities (like persons, places, concepts).

## DATA QUALITY



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Data quality. Sketchy Business. 2023. CC-BY-SA

# High-quality data

In line with the objectives of the [European Commission's recommendation on a common European data space for cultural heritage \(2021\)](#), the Europeana DS consortium increased high-quality, usable and accessible data in the data space, with particular attention given to 3D. The consortium extended data governance mechanisms to support the provision and management of data within the data space. Finally, we worked on automated approaches to address data quality issues at scale.

## Data governance mechanisms

**Data governance.** Data in the data space is governed through various organisational tools, principles, processes and standards that are harmonised so that the data is interoperable, manageable, reliable and remains useful in the future. These are progressively evolving, particularly through the actions outlined in the newly developed [Data Governance Strategy and Plan](#) in the data space. In May 2023, we established the [Europeana Data Governance Stakeholder Group](#) to facilitate collaboration and participation from stakeholders and experts with the actions described in the strategy. In support of the development of data governance actions, we also established a basic overview of the various legal obligations that impact or shape the way CHIs can govern cultural heritage data, which in turn translates into how it's governed in the data space.

In Y1, EF developed an [Enrichments Policy](#), which brings forward a vision and a set of conditions to comply with when working with machine-generated or human-generated enrichments (including transcriptions and translations) of digital cultural heritage published in the data space. The Enrichments Policy harmonises and gives direction to enrichment activities for automated approaches towards data quality.

**Frameworks and standards.** We started reviewing the [Europeana Publishing Framework](#) (EPF), the [Europeana Data Model](#) (EDM) and the [Europeana Licensing Framework](#) (ELF) to better represent enrichments and 3D.

With 3D content being a high priority for the data space, we reviewed our frameworks and identified actions to make the data space suitable for managing 3D content properly, and to make it fit for the needs of data partners and users working with 3D content. The extension of the EPF for 3D will be supported by a series of identified actions, including the development of usage scenarios for 3D and corresponding data quality criteria, the review of 3D viewers and our embedding strategy, and the identification of thresholds for quality and complexity of 3D, which is complemented by work on our training resources and documentation to support the Twin it! campaign. In Y1, together with INCEPTION and CARARE, we reviewed EDM for the support of 3D which resulted in recommendations for further development, for example, terms to be used in some specific fields (e.g. types of 3D).

The consortium and data partners are also investing in content and metadata enrichments but currently can not measure the impact of these enrichments. We validated the EPF as a tool to measure enrichment improvements, showing that the EPF has the potential to be used to capture the impact of data enrichment on data quality (e.g. by measuring changes in metadata tiers). Following up on this work, in Y2 we will implement a separate metadata tier calculation for data enriched by EF.

The [Data Quality Committee](#) (DQC) analysed problem patterns identified in recent years in order to prioritise next steps to address the long tail of data problems (e.g. metadata quality issues like ‘(seemingly) empty field’ and content issues like ‘duplicate objects within a dataset’). Out of over 60 patterns, 15 patterns were short-listed for work in the next year, either by:

1. Further (quantitative) investigation on their impact on the quality of the entire database,
2. Prototyping to assess the feasibility of detecting them at scale,
3. Tackling them by improving guidelines for data partners.

To support the implementation of the ELF we investigated ownership models that ensure adequate stakeholder engagement and identified various potential metrics, based on an impact model for the ELF. These results will be brought into the description and management document for the ELF and will guide future actions in the use of the framework.

We continued to support the [Europeana Copyright Community](#) in the set up of regular [copyright and policy office hours](#), promotion of the [Copyright management guidelines for institutions](#), publication of [Out of Commerce Works FAQs](#) (Sep 2022), and set up of a [new Task Force](#) on the implementation of Article 14 of the Copyright in the Digital Single Market Directive (May 2023).

EF maintained the [RightsStatements.org](#) website and resources and facilitated the development of the work of the Rights Statements consortium, and in particular is exploring the capacity building needs to support the use of the rights statements, which will continue to be addressed as part of the Data Governance Strategy.

## Data acquisition and data improvements

EF maintained and further developed processes and practices to support efficient data acquisitions and data improvements, while working towards a sustained increase of high-quality data in the data space.

**Workflows and practices for data publication.** In Y1, we refined the prioritisation process for managing the data ingestion backlog to increase our capacity in terms of publishing high-quality data. A core element of this process is the use of the [Metis Sandbox](#) by aggregators. Therefore, particular attention was given to developing processes for data publication for the Metis Sandbox to support its increased use by aggregators. In Y1, on average 50,000 records were processed per week (~78 datasets) and at least 25 accredited aggregators have used the Sandbox on a regular basis in their data preparation stages.

*'Metis Sandbox is a breakthrough and a great help as it allows us to know the status of the metadata we add before sending it to Europeana. This way we can inform our providers earlier and send records with the highest possible quality.'*

Colleague from Hispana, Spanish national aggregator

We optimised the communication mechanism around data quality by improving existing Sandbox reports (particularly on the problem pattern listing). We also added a new page which reports on the quality of submitted data (using tier calculations) which enables the user to identify which records score less well and then access detailed tier reports for these records in order to identify where improvements could be made.

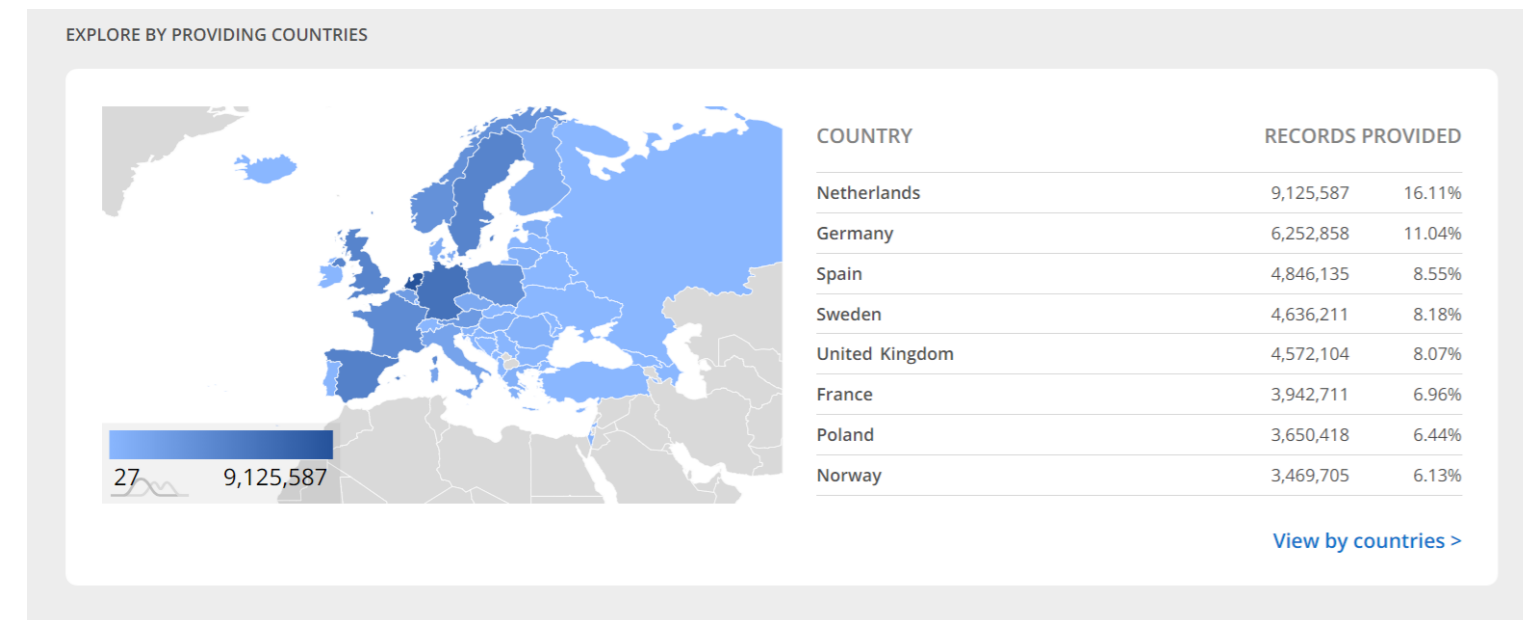
We added a mechanism for Sandbox users to select a more representative sample of their data for testing and we improved the overall user experience of the Sandbox, including an updated UI design in line with the style of the Europeana website and updates based on usability testing (e.g. a wider availability of tooltips and an export function for detected problem patterns).

In [Metis](#), we implemented a mechanism to prevent low-quality data (Tier 0) from being published to the Europeana website. We also identified a list of requirements to personalise user interactions within the Metis Suite (e.g. with user accounts) and prioritised which should be implemented as part of a future IAM (Identity and Access Management) system. We maintained and improved the [Data Statistics Dashboard](#). Most notably, we added the option for the user to initiate contact through a service desk, similar to the Metis Sandbox.

We created a [page for the Europeana website](#) where providing institutions can register to share their data with the data space, be exposed to other benefits of being part of the Europeana Initiative, and request a dashboard that shows usage statistics for items from their institution ([see example](#)). Via this process, EF will receive current contact details for the providing institutions so we can connect with them to improve their data and promote other services such as the account functionality on the website to curate their content, access our training material and join the Europeana Network Association.

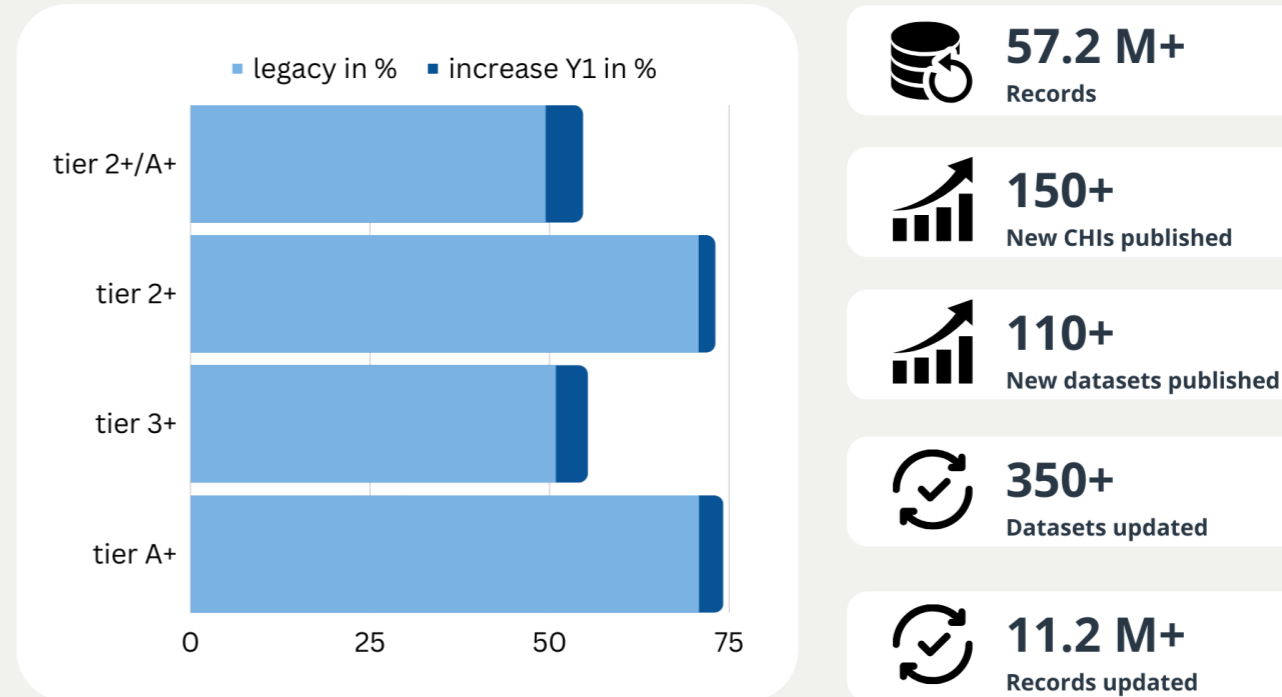


**Data quality.** We raised the quality of data available on the Europeana website by progressing with data cleaning and improvements and by ingesting new high-quality data. The Europeana repository currently offers access to almost 57.2 million items (excluding items that are not compliant with the EPF, Tier 0). This is 3.5 million items more than in Sep 2022 (6% increase). The graph below shows the division of data in the Europeana repository by country.



Countries with the highest contributions in the Europeana repository. Europeana Foundation. August 2023. CC-BY-SA. More details on country-related data can be explored in the [Data Statistics Dashboard](#).

## DATA QUALITY IMPROVEMENTS



During Y1, data quality updates (including contributions from data space supporting projects) affected over 11.2 million records and 355 datasets (including newly created and updated data). The updates and ingestion of new records as well as the depublishing of low-quality records led to an improvement of data quality available on the Europeana website, including a 5.2% increase for Tier 2+/Tier A+ data (54.6% out of total in Aug 2023), a 2.3% increase for Tier 2+ (73% out of total), a 4.5% increase for Tier 3+ (55.3% out of total), and a 3.4% increase for Tier A+ (74.2% out of total).

Data quality acquisition and improvements (Aug 2022 - Sep 2023). Europeana Foundation. August 2023. CC-BY-SA



Ongoing support to data partners included feedback about their data, with concrete advice on how to improve data quality and solve data modelling problems (with support of the Metis Sandbox and the Data Statistics Dashboard). We worked on reducing broken links in the data repository, noting that the number of broken links can vary a lot since datasets with broken links can occur at any time. For example, in Apr 2023 we recorded 0.63% and in June 2023 there were 2.04% broken links. In Y1, we reduced non-EPF compliant content (Tier 0) to 8.3% (4.1% decrease).

The consortium reviewed dormant collaborations with data partners in order to make new and updated data available to the data space or depublish data when collaborations could not be revived. In autumn 2020 we identified about 18 million records as coming from data partners that were no longer active. In the past year, work continued to reduce this number with a further 2.5 million records from previously inactive partners updated, taking the total of dormant records down to 8.8 million in Aug 2023.

The data quality increase was also supported by bringing in new data. In Y1, we published collections from 154 new CHIs on the Europeana website and 114 new datasets (equal to about 2.9 million records).



*View from Langelinie towards the Royal naval Dockyards at Nyholm, Copenhagen. Morning Light. Emanuel Larsen. 1850.  
National Gallery of Denmark. CC0*

**Entity collection.** EF and DS AGG worked together to improve the coverage and quality of the Entity Collection (EC) through semantic enrichment. Y1 saw valuable gains in the coverage of (multilingual) data present in the EC, mainly from the curation of data for organisations and the addition of more data in the EC (in particular Greek, Irish and Slovenian languages) which benefits multilingual accessibility across services.

We improved the current [organisation pages](#) and their curation mechanism (see an example curated page showcasing [Albertina](#)). This was introduced to several aggregators with a [guide](#) demonstrating how to curate a page and highlight the most important parts of their collections. Taking this work further will help highlight the collections of CHIs and give them more and better visibility on the Europeana website.

### ENTITIES ON EUROPEANA WEBSITE

 **33.8 M+**  
Records linked

 **27,200+**  
Entity collections

*Coverage of entity collection on Europeana website (Aug 2022 - Sep 2023). Europeana Foundation. August 2023. CC-BY-SA*

### 3D ON EUROPEANA WEBSITE

 **4,600+**  
3D records

 **870+**  
New 3D records

 **49**  
CHIs sharing 3D

 **4**  
New CHIs sharing 3D

*3D data on Europeana website (Aug 2022 - Sep 2023). Europeana Foundation. August 2023. CC-BY-SA*

**Aggregate 3D content.** The Europeana DS consortium, in collaboration with a wide range of partners, developed a series of activities to support CHIs with the integration of 3D into the data space. More specifically, representatives from INCEPTION, CARARE, TMO (and from Y2 onwards PHOTOCONS) formed a dedicated Working Group to act on the challenges brought by 3D.

In the past year, the total number of high-quality 3D items (tier 2+/A+) published on the Europeana website has increased from 3,761 to 4,635 (an increase of 874 items, including, for example, items from [CARARE](#)). The [Twin it!](#) campaign, a wider 3D campaign in which the Ministries of Culture of the EU are invited to submit one 3D digitised heritage asset to the data space, is expected to contribute to growth in the future. Collaborations with ongoing projects like [Eureka3D](#) and [5DCulture](#) are also important for bringing more 3D content to the data space.



## Automated approaches towards data quality

The consortium worked on automated approaches for addressing data quality issues at scale. EF and DATO worked towards the reduction of ambiguities in the current data enrichment process with the objective of creating more accurate links between cultural heritage item descriptions and contextual resources.

An approach, based on Large Language Models (LLM), was selected to further improve the enrichment algorithm and we created an inventory of ambiguity cases which will give us a better understanding of the challenges of the problem space, and ultimately inform future solutions for implementation.

This work was accompanied by publishing a first version of a [Methodology for evaluating and validating the result of \(automatic\) enrichment efforts](#), which seeks to address the validation principle of the Enrichments Policy for the data space. The methodology should especially be followed by data space partners who perform enrichments, in order to guarantee a minimum level of quality.

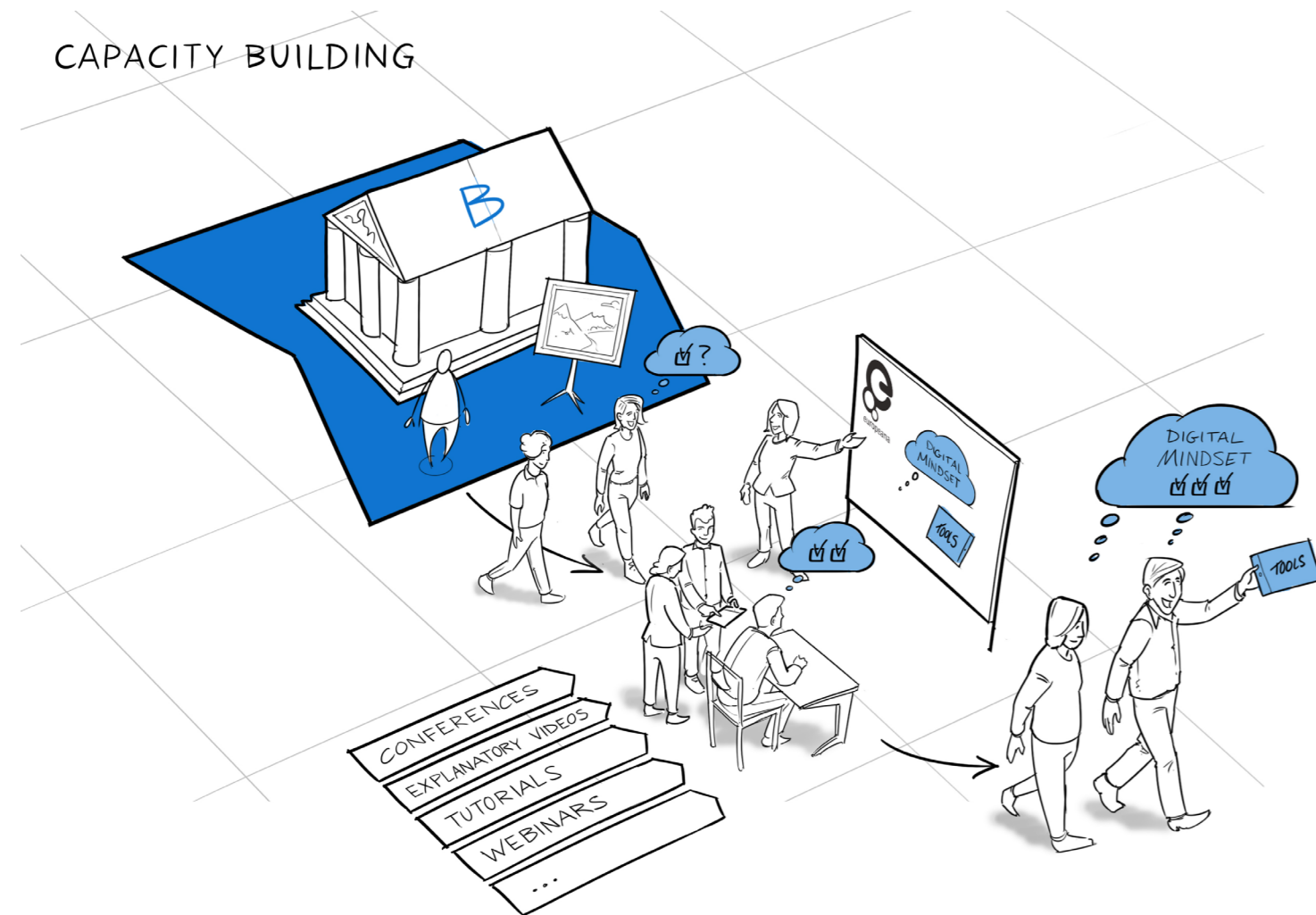
EF tested and implemented an Artificial Intelligence (AI) based image resolution enhancement service. The component will make it possible in future to present items with very low-resolution images on the Europeana website - these items would otherwise be suppressed as they do not meet publishing criteria (Tier 0). This is especially interesting for older datasets which are hard to update at source. The component is currently being applied to a selection of around 1.6 million Tier 0 items with appropriate rights. We also explored and experimented with other applications of AI to augment the quality of data and services. For example, to recognise image placeholders, property marks (watermarks) and similar images in datasets.



*Automation in bank offices. IPPA Staff. 1973. National Library of Israel. CC BY*



## CAPACITY BUILDING



created with  
SKETCHY

Capacity building. Sketchy Business. 2023. CC-BY-SA

# Capacity building and reuse

The Europeana DS consortium aims to strengthen the capacity of professionals and reuse communities working with digital cultural heritage. Specifically, we worked to develop capacity among cultural heritage professionals to create high-quality data that can be used in a wide range of user scenarios. We collaborated closely with the [Europeana Network Association](#) (ENA) and the [Europeana Aggregators' Forum](#) (EAF) to develop training, events and interaction programmes which support cultural heritage professionals to use the tools and services provided by the data space and become agents of change in their organisations and in the sector.

Equally, we worked towards developing capacity for the use and reuse of high-quality data in specified communities such as education, academia and research, and the developer communities.

## Cooperation throughout the data space

The Europeana DS consortium supported and further developed the effective coordination of activities across the data space, with specific emphasis on leveraging the synergies of the Europeana Network Association (ENA) and the Europeana Aggregators' Forum (EAF).

**Develop methods of cooperation.** We created a Model of cooperation (V1) that outlines activities and processes that can facilitate successful operation across the data space, and outlines a provisional roadmap for implementation in Y2. The model addresses actions that facilitate improved communication, collaboration and transparency between EF, ENA and EAF through actions such as regular governance meetings.

With areas of shared interest identified from the start of Y1, the development of the Data Governance Mechanism serves as an example of good cooperation, where EF, ENA and EAF are well-represented in the Data Governance Working Group. It provides effective two-way connections to the professionals, communities and aggregators. Another area further developed through Y1 and continuing into Y2 is the training programme utilising the knowledge and expertise held within the ecosystem.

These areas are complemented by a thematic agenda that provides an overview of activities being carried out within the Europeana Initiative for 2023 and beyond, highlighting thematic crossovers such as 3D, for which multiple strands of work are undertaken across the ecosystem. It also helps highlight areas for potential further collaboration such as multilingualism, and developing further content themes to stimulate reuse.

Working further to explore the impact of improved cooperation, EF, ENA and EAF established a common understanding of the way their operational collaboration delivers a rewarding experience for CHIs. Areas identified ranged from events and communities that facilitate opportunities to learn and make connections, to tools and knowledge-transfer activities that support the development of high-quality data and contribute to greater organisational reputation. Further, collaborative activities that guide professionals in the smooth navigation of the Europeana ecosystem are an area identified for more development.

Building on the shared aim to develop a positive experience for CHIs, we identified gaps in our knowledge, such as the need to better understand the roles of professionals, and the need to revisit and redevelop the models that shape how we work together, such as an impact model for the Europeana Initiative (planned for Y2), that can help to consistently create a shared vision and actions that achieve sustainable impact.

## EUROPEANA NETWORK ASSOCIATION (ENA)

 **4,300+**  
ENA members

 **630+**  
Increase

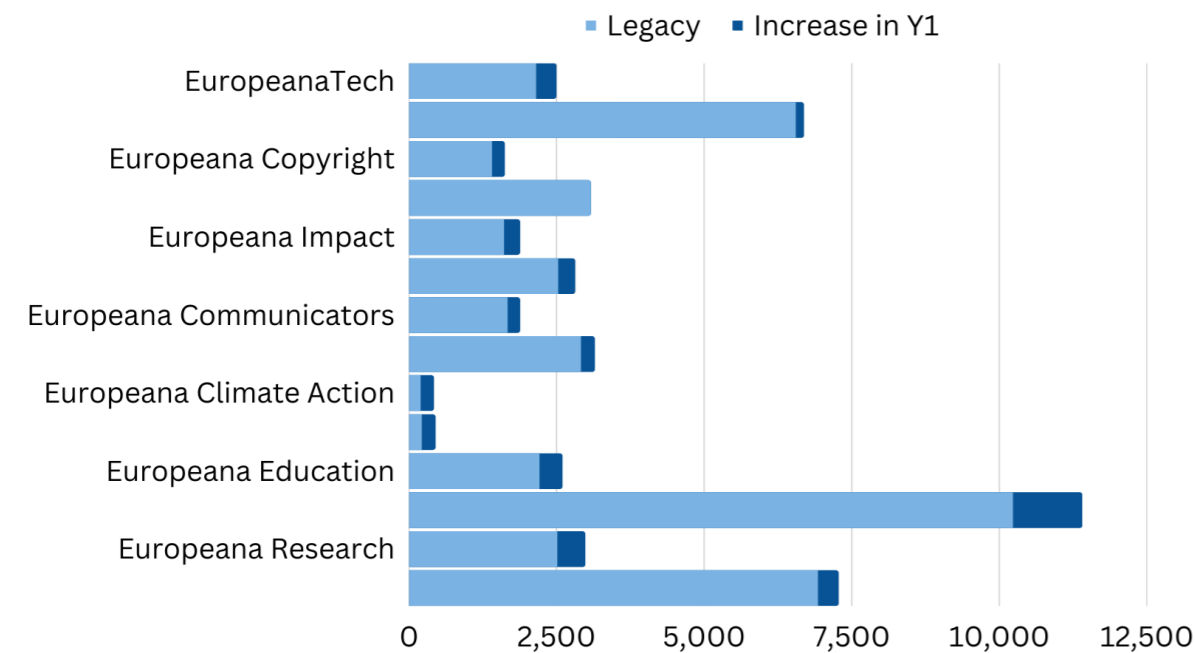
*ENA membership (Aug 2022 - Sep 2023). Europeana Foundation. August 2023. CC-BY-SA*

**Provide secretariat for EAF and ENA.** EF continued to provide secretariat functions and financial and administrative support for the Europeana Network Association (including Management Board and Members Council) and managed memberships of ENA (including community management, Task Forces, and Working Groups). The [ENA Annual Report 2022](#) offers information about activities over 2022. The ENA currently counts over 4,300 members, with 66.8% of them stating that they are 'satisfied' or 'completely satisfied' with the ENA (214 survey participants). Half of those responding identified themselves as cultural professionals (47%), 35% educators, and 30% researchers. Participants reported that their membership is important to them in some way (71%) with 31% of these indicating that their membership is either very important to them or absolutely essential.

Whilst growth of the ENA remains consistent, the Management Board aims to increase the impact and satisfaction of being a member of the ENA in the areas of learning and development. Through member surveys and regular consultation with the Members Council, they identify the need to take further actions to unlock the untapped potential of ENA members. Actions in Y2 such as facilitating a searchable open access repository of skills and expertise held by members are intended to provide reciprocal benefit by enabling members to share their knowledge and advance their professional reputation, as well as lowering barriers to accessing expertise when they need it.



## ENA COMMUNITIES



The graph shows for each community 1) the amount of ENA membership (top bar) and 2) the amount of people reached via dedicated communication channels (such as newsletters, social media channels, and discussion/ mailing lists) (bottom bar)

ENA communities membership and outreach (Aug 2022 - Sep 2023). Europeana Foundation. August 2023. CC-BY-SA

In Y1, the seven established ENA communities continued to grow in terms of membership and the number of people reached via community-specific communication channels (see graph). EF completed an outreach and engagement strategy which outlines established activities undertaken by the ENA and its communities, and the EAF. This information, along with data validating the impact of those activities, can help to advance outreach and engagement activities in Y2 and contribute to improved collaboration.

In Y1, EF supported seven Europeana Initiative-wide Task Forces (TFs) (four of which were newly launched in Y1) and nine Working Groups (WGs) (two new in Y1) on topics related to data quality, copyright, (data) governance, environmental practices, impact, and decentralised aggregation. 407 people contributed time and expertise to the Europeana Initiative (e.g. being active in TFs, WGs and governance or responding to calls to action to engage with other activities).

EF also supported the Europeana Aggregators' Forum (including EAF Steering Group and EAF meetings). The [EAF Activity Report 2022](#) offers information about activities over 2022. The deployment of the data space provides an opportunity to review the role and responsibilities of all those involved. In Y1, we explored new synergies and new ways of working within the EAF which will result in recommendations for an enhanced accreditation scheme in Y2 with the aim of further strengthening the role of accredited aggregators in the data space and to increase the reciprocity of the accreditation scheme.

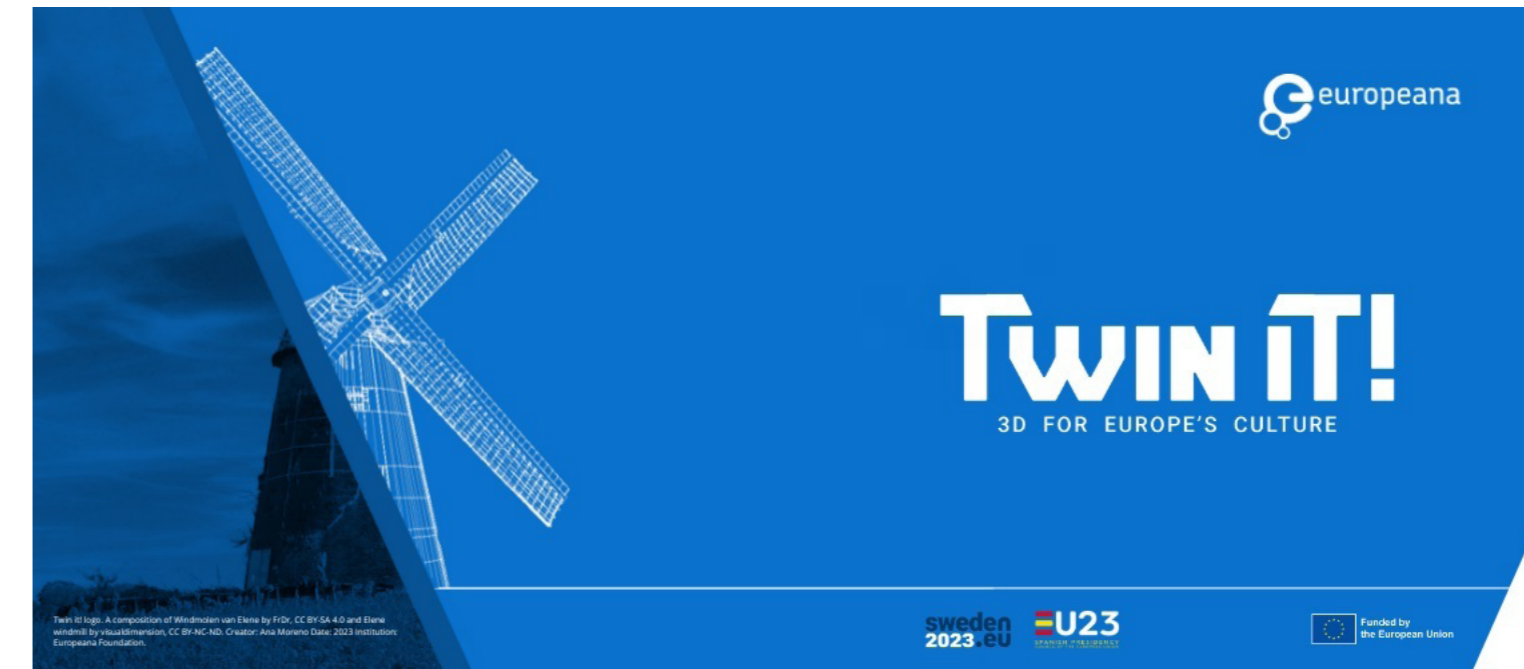
**Support national digital strategies to increase high-quality data.** EF, together with the Member State holding the rotating presidency of the Council of the EU, invited the [CEDCHE Expert Group members](#), relevant experts and policymakers to discuss important topics for the development of the data space. In the past year, we organised two events which saw a very high satisfaction rate with 87% of participants being 'satisfied' or 'completely satisfied' with the events.

In Nov 2022, EF held an online symposium on [Digital Transformation in the Data Space: Measurement and Assessment](#) under the auspices of the Czech Presidency of the Council of the EU exploring how data collection can evidence and further support digital transformation in the cultural heritage sector (~170 attendees). The [symposium report](#) reiterates the importance of good, open and interoperable data, particularly around reuse, how self-assessment can help us improve digital strategies and organisational practices, and how more holistic indicators might help us not only monitor progress but also design for more impact, e.g. helping heritage institutions to improve the lives and wellbeing of Europe's citizens.

In Apr 2023, EF and the Swedish National Heritage Board co-hosted the conference [Accelerating 3D in the common European data space for cultural heritage: Why 3D matters](#) under the Swedish Presidency of the Council of the EU (~400 attendees). The conference explored three-dimensional digitisation of cultural heritage as one of the main aspects of the data space. Topics covered included why 3D matters and how it is relevant to the cultural heritage sector, diversity of 3D content, its support mechanisms and instruments, and the needs and some of the challenges facing the sector around 3D digitisation, access, storage and preservation.

In Jun 2023, together with the European Commission and with the support of the Swedish and Spanish Presidencies of the Council of the EU, EF launched the [Twin it!](#) campaign which invites EU Member States to provide 3D-digitised heritage assets to the data space. The campaign will continue

under the Spanish Presidency (Oct 2023) and come to an end during the Belgian Presidency (2024). To support Member States' participation in Twin it!, we started a partnership with the [Competence Centre for the Conservation of Cultural Heritage \(4CH\)](#), which will deliver a series of workshops on 3D digitisation and a short user-friendly 'Playbook' on 3D basic principles and operational tips in Y2.



*Twin it! logo. A composition of Windmolen van Elene by FrDr, CC BY-SA 4.0 and Elene windmill by visualdimension, CC BY-NC-ND. Europeana Foundation. 2023*

## Identify needs of user groups

In the past year, we explored the needs of professional audiences in the cultural heritage sector as well as the needs of potential groups interested in reuse of cultural heritage data.

**Conduct user research among professional audiences.** To better understand professional audiences and to inform product and service development we ran several surveys in Y1. Our annual Europeana Pro user survey (338 respondents) showed that professional development is a priority for our audiences while respondents from the heritage sector and people whose organisation has digital content and want to do more with it have increased.

In addition, we supported various quantitative primary research gathering activities across the data space, supporting surveys on the topics of: persistent identifiers, environmental sustainability and digital preservation, satisfaction with the data space offering (from the perspective of CHIs and aggregators respectively), and the ENA survey. We also supported qualitative research projects regarding the community collaboration tool, the Welcome Pack, and around marketing data visualisation for CHIs.

In Y2, we aim to connect our research activities, including ENUMERATE (which we further developed in Y1), more closely with the impact framework focusing on data collection for product and service development and data acquisition, as well as making data available to Member States to inform policy making on a national and pan-European level. We plan to focus these efforts on 3D in particular.

**Perform user and market research to foster reuse.** In Y1, we identified user groups we currently reach with our activities in reuse communities and clarified that there are audiences we miss. More

specifically, we conducted interviews with participants in the GIF IT UP and Digital Storytelling Festivals and users of our APIs to understand their behaviours and needs. We also conducted a meta-analysis of the research conducted among the research and academic audiences to understand the behaviour and needs of this group in a post-pandemic teaching and research environment. Learnings will feed into our assessment of products and services that can be refined, as necessary, and offered to additional audiences.

## Awareness and engagement

EF built awareness and engagement of the activities in and around the data space among professional audiences, ensuring a strategic approach to marketing and communications.

**Ensure strategic approach to marketing and communications.** [Europeana Pro](#) is our primary communications platform for professionals and supports the cultural sector in the provision of interoperable digital cultural heritage. In Y1, Europeana Pro saw more than 320,000 visits, and 78% of users reported being 'satisfied' or 'completely satisfied' with the website.

We published regular posts through [Europeana Pro News](#), covering news and announcements from across the data space and cultural heritage sector. Monthly themes explored the data space, Europeana conferences, events and network activities, while others aligned with editorial published on the Europeana website. We amplified activities via newsletters, mailing lists and social media ([Twitter](#) - now called X, and [LinkedIn](#)) and via other relevant channels.

## EUROPEANA PRO



**320,400+**  
Visits to Europeana Pro



**2.2%**  
Increase



**78%**  
% of 'satisfied' and 'completely satisfied' Europeana Pro users

*Europeana Pro traffic and satisfaction (Aug 2022 - Sep 2023). Europeana Foundation. August 2023. CC-BY-SA*

We updated key branding and messages to position the data space more prominently in our service offering and ensure that it presents the Europeana Initiative as well as data space supporting initiatives. For example, we updated the [Europeana Essentials slide deck](#) and published a new [FAQ page](#) to answer frequently asked questions about the data space and the Europeana Initiative.

Where appropriate, our work was supported by the [Europeana Communicators Community](#), with communications news and best practice shared through their regular newsletter, and calls to action for collaboration resulting in, for example, the translation of the [Seven Tips for Digital Storytelling](#) into 13 languages.

**Engage professional audiences.** We explored stronger connections for collaboration between the members of the ENA, EAF and EF through the improvements of our CRM systems. In Y1, we explored opportunities for community collaboration by conducting interviews with the network, an activity

which was followed up through questions in the ENA impact and satisfaction survey. In Y2, we will pilot tools for increased community collaboration to enhance the cooperation between members of EAF and ENA. We approved Zoho as our primary CRM tool and replaced some of the tools we used in the past with Zoho apps (Zoho Campaigns, Zoho Survey, and Zoho Forms) to create consistent workflows. We also refined the administrative area of the Zoho CRM by adding validation rules and tooltips ensuring that the information is captured and structured correctly for future use cases.

The [Knowledge Base](#) saw a steady increase in use over the past year, resulting from more pages being added and increased awareness of the tool over time. In Y1, the Knowledge Base saw over 8,800 visits.

## EVENTS AND TRAINING

Events and training



**65**

Events and training held by Europeana DS consortium, EAF, and ENA

Reach



**6,300+**

People reached with events and training

Satisfaction



**84%**

% of 'satisfied' and 'completely satisfied' participants

*Events and training (Aug 2022 - Sep 2023). Europeana Foundation. August 2023. CC-BY-SA*



**Develop event and training programming.** In Y1, EF, EAF and ENA organised 65 [events](#) (including instructor-led training events), welcoming more than 6,300 participants. Events supported the various areas of work across the data space. The events were very successful with 84% of survey respondents being 'satisfied' and 'completely satisfied'. One highlight was the [Europeana 2022 annual event](#) (Nov 2022, 944 participants) focusing on themes of importance to the cultural heritage sector, from the data space for cultural heritage to storytelling and technology.

We continued to improve our in-person and online events programme, integrating hybrid meetings where possible, and updated the [Events toolkit](#) with our latest experiences with regard to hybrid. We coordinated activities of the international Events Manager Group to share good practices, as well as coordinating the timing of major conferences.

We also assessed current data collection and impact assessments to find learnings and recommendations for our event management. We understand the importance of maintaining the feedback loop with our audience - from the moment we started offering hybrid events, our reach grew enormously, achieving consistent high levels of satisfaction and participation for both ENA members and wider audiences.



*Europeana 2022 - making digital culture count. Europeana Foundation. 2022. CC BY*



## Capacity building as a service

We further developed capacity building tools and services and managed and developed mechanisms for the training programme.

**Develop capacity building tools and services and manage mechanisms for the training programme.** This year, we launched a [Capacity Building Working Group](#), including members of the Europeana Network Association (ENA) and the Europeana Aggregators' Forum (EAF), which works collaboratively on the design, development and delivery of capacity building activities across the Europeana Initiative, for the cultural heritage sector at large as well as for other data spaces.

We further refined core components and implementation support of the Europeana Capacity Building Framework (ECBF, V3) which harmonises capacity building methods, activities and evaluations undertaken for key Europeana products and services. For example, we developed a motivation and engagement model to provide ways to (1) motivate people to make use of and participate in training offered, and to (2) engage people to improve and/or add to training offers. This model is part of the ECBF and is closely related to the [Guidelines for training delivery and development](#).

In support of the ECBF, we also developed an impact pathway for users of our training services, providing a structured way to think about the impact of the training programme according to the Europeana Impact Playbook. It sets out intended learning outcomes for all training and emphasises the need for data collection and evaluation of training, as well as the need to consider when impact assessment is appropriate.

We gathered objectives and requirements of existing and planned training throughout the Europeana Initiative to act as a reference point from which we can develop or improve training offers. The collated objectives and requirements are intended to be applicable to all forms of training and are developed from five perspectives: content, legal, functional, technical and ethical.

We also developed a training programme (V1) - an overview of all existing and planned training offered by the Europeana Initiative. This includes resources for self-paced training and instructor-led training based on the documents 'Priorities and primary focus areas for the provision of high-quality data' and 'Requirements and objectives of a training programme'. The training programme was and will be used to plan the development and delivery of training resources.

A third cohort of 16 cultural heritage professionals, from leaders (directors) to change-makers (advisors), completed the DEN Leadership programme (Apr - Jun 2023). The programme provided participants with a strategic toolbox, peer group sharing and plenty of food for thought to equip them to lead digital transformation in a structured and impactful way, driven by the vision that digital transformation in the sector requires decisive leadership and dedicated action.

In support of the ECBF, we undertook market and user research to gain insights into different Learning Management Systems (LMS) and providers which will be piloted in Y2 to discover whether technical capabilities and workflows are suitable for the Europeana ecosystem. We introduced the [Learn with us](#) section on Europeana Pro which collates relevant capacity building and training resources developed across the Europeana Initiative. In Y2, we will investigate how to integrate this section with the LMS, and how to position user journeys between the two, and with the Europeana Knowledge Base.



We supported the [Europeana Impact Community](#), most notably holding our first [Impact Community Café](#) event (Jun 2023) and co-leading the [Impact Lite Task Force](#). The latter advised on the creation of learning resources to supplement the content in the Europeana Impact Playbook and strengthen the learning experience. It also advised on a streamlined and now complete alpha [online version of the Europeana Impact Playbook](#). Using this revised resource, a programme of training for data space supporting project participants as well as EF, ENA and EAF will be rolled out in Y2.

## Capacity building as a service

**Deliver training programme for aggregators and data partners.** We identified two focus areas for the training programme: 1) what training aggregators need from EF, and 2) training resources supplied by EF and used/adapted by aggregators to offer to their providing institutions. A learning pathway was developed for each focus area setting out learning processes and priorities. We also developed a roadmap for the development and delivery of the training resources dedicated to the provision of high-quality data, this included training for the Metis Sandbox (Dec 2022).

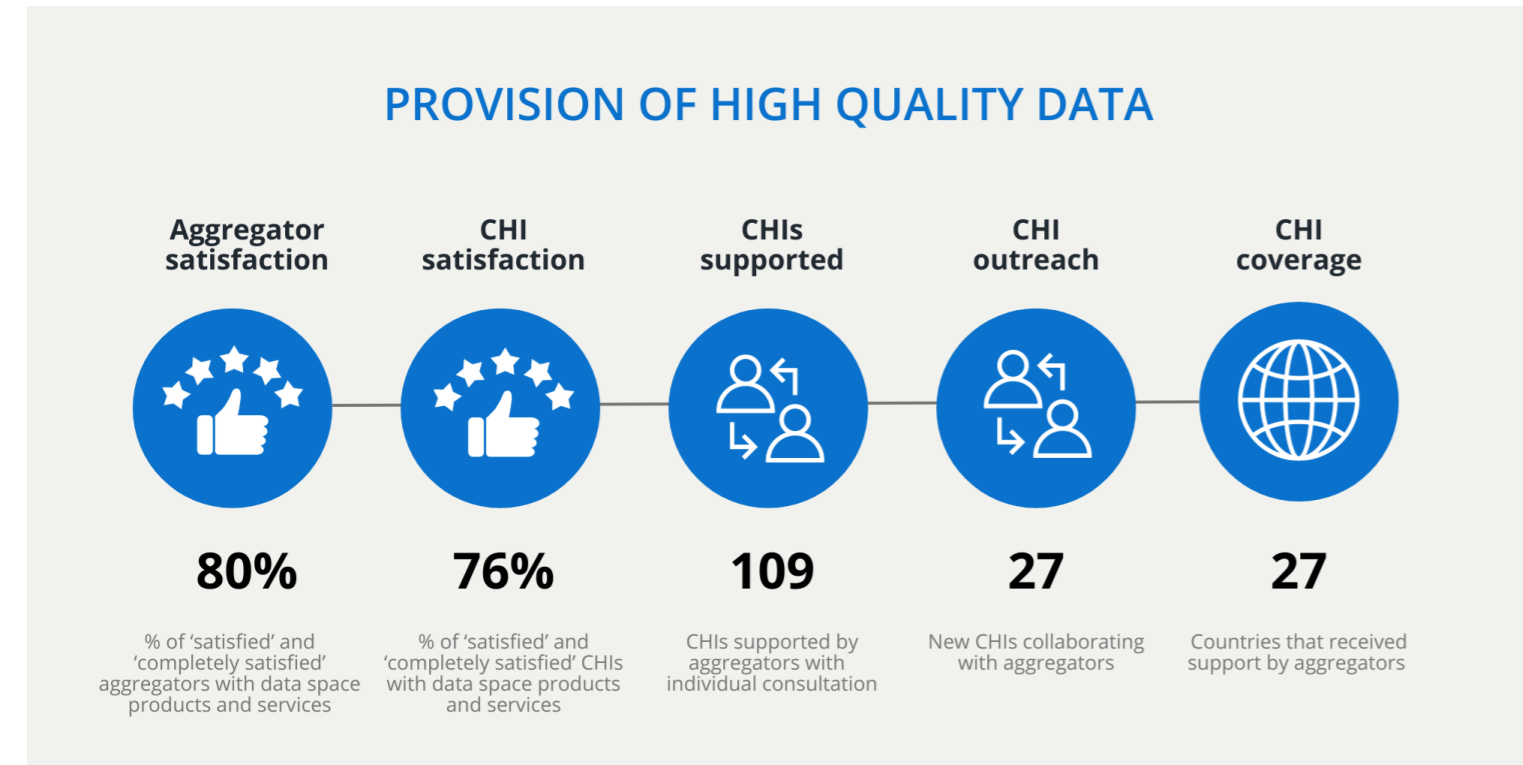
Using the various elements of the ECBF to guide and support the development and delivery of training, EF supported aggregators to develop training that contributes to the provision of high-quality data. Based on this, two aggregators started developing training on topics (including MINT and IIF) in which they are Subject Matter Experts (SMEs).



*A classroom with children sitting at long tables and a teacher standing with a book in her hand. Lithograph by J.B. Sonde. Wellcome Collection. CC BY*



DS AGG partners supported CHIs with one-to-one support and helpdesk activities. In Y1 of the data space, DS AGG supported 109 CHIs from 27 countries. For example, aggregators helped their partners to fix (broken) links, to work with IIF, and to improve or update mappings including adding vocabulary terms to enrich metadata. Beyond the technical and data-related support, aggregators also supported their partners in finding sustainable aggregation routes (for example, supporting CHIs involved in projects that have ended and now require a new way to share collections with Europeana). Europeana DS AGG partners also started to collaborate with 27 new CHIs.



*Aggregators' and CHIs' satisfaction and collaboration with the data space (Aug 2022 - Sep 2023). Europeana Foundation. August 2023. CC-BY-SA*

We completed a satisfaction survey with aggregators with a good satisfaction rate of 79.5% of respondents being 'satisfied' and 'completely satisfied'. We asked about satisfaction with support and feedback offered by EF during aggregation and the quality of related products and services as well as satisfaction with the network and capacity building activities provided by EF.

We also completed a survey that measured the satisfaction of CHIs with a good satisfaction rate of 76% of respondents being 'satisfied' and 'completely satisfied'. We asked about satisfaction with various products: Europeana website, Europeana Pro, Statistics dashboard, APIs, Metis Sandbox, events and training - responses were gathered only from participants who stated that they used our products.

**Support the transfer of knowledge between professionals.** The Europeana DS consortium, together with the ENA and EAF, supported peer-to-peer knowledge exchange with the aim of increasing the quality of data available for reuse. We organised large knowledge-transfer events, including the [Europeana 2022 conference](#) (Sep 2022), the [Czech Republic Presidency event](#) (Nov 2023), the [ENA AGM](#) (Nov 2022), the [Swedish Presidency event](#) (Apr 2023), the [Digital Storytelling Festival](#) (May 2023) and the EAF outreach events ([Dec 2022](#) and [Jun 2023](#)).

We offered knowledge-transfer activities such as the [copyright office hours](#) and community events such as the Europeana Cafés with topics focused on [impact assessment](#), [environmental practices](#), and [themes relevant for academia and research](#).

We created an overview of the activities that enable knowledge transfer through participation in the Europeana Initiative and beyond, such as through the [Data Space for Skills](#). Development of future enhanced models for supporting professionals sharing expertise will be dealt with further within the ECBF.



We strengthened our collaboration with the [European Students Association for Cultural Heritage](#) (ESACH) to enhance the support we provide to emerging professionals. For example, we established a [bursary scheme](#) which ran for the first time at the Europeana 2022 conference and which was to be continued at the 2023 EuropeanaTech conference.

Our work was supported by the [Europeana Climate Action Community](#). In Jan 2022, the community launched the [Environmental Sustainability Practice Task Force](#) to better understand environmentally sustainable practice in the cultural heritage sector. Through a [survey](#), the Task Force aims to understand more about environmental sustainability as part of the digital transformation of the sector. The community ran a series of [three workshops](#) in collaboration with [Ki Culture](#) (Apr/May/Jun 2023), which explored climate action and digital information management practices.



*Italian Landscape with Umbrella Pines. 1807. Rijksmuseum. Public Domain*



## Reuse of high-quality data

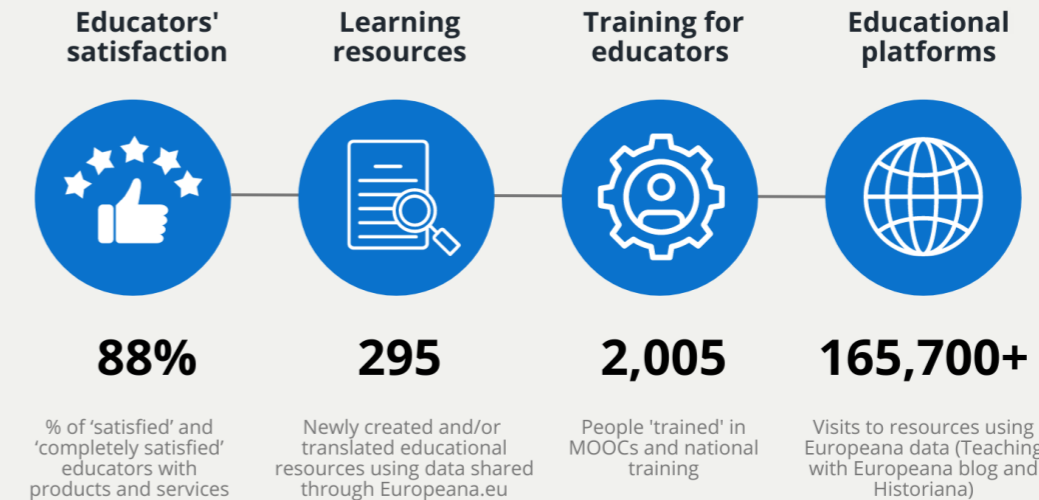
Based on user research done over the past years, we know there are audiences who consistently use and reuse digital cultural heritage. Targeted efforts were undertaken to engage with educational communities, academic and research communities, as well as developer communities and API customers. For other audiences (e.g. related to media, tourism, cultural/creative industries) we explored the potential for reuse cases.

**Engage with educational communities.** The future citizens of Europe, individuals, students and educators in primary and secondary institutions across Europe, can benefit from the cultural heritage materials offered in the data space. While the materials themselves can be useful, EF, together with EUN and EuroClio, worked to raise digital skills and capacity, and to foster the use and reuse of educational resources using data shared via the Europeana website.

Our work was supported by the [Europeana Education Community](#) whose activities, for example, contributed to the [European Year of Skills 2023](#) by organising a webinar series. One of these webinars titled [Digital Learning and Education in Museums](#) (Apr 2023) was embedded in our annual contribution to the [All Digital Week](#) in collaboration with [NEMO](#).

EF also contributed educational resources to the worldwide campaign [Open Education Week](#) (Mar 2023). Other highlights this year were the [Built with Bits 2](#) challenge (2022) inviting participants to design educational online spaces (resulting in nine new immersive spaces) and the Europeana [Low-Code Fest](#) (2022), an educational low-code hackathon (resulting in three prototypes of digital products integrating Europeana APIs).

## EDUCATION



EUN revamped the Europeana MOOC [Digital Education with Cultural Heritage](#) to make it more inclusive to different audiences and to run it in English and for the first time in Romanian. In total, 1,500+ people registered for the MOOCs, 935 attended, and 367 participants completed the MOOCs, meaning they designed a learning scenario and received a certificate. 97% of participants rated the overall value of the course as 'Good' or 'Very good' and 87% agreed that they will use the ideas and examples presented in the course. The satisfaction rate with Europeana resources was very high with 88% of users being 'satisfied' and 'completely satisfied'.

*Activities and impact related to educational communities (Sep 2022 - Aug 2023). Europeana Foundation. August 2023. CC-BY-SA*

In collaboration with the 2023 [STEM Discovery Campaign](#), EUN organised the [Europeana Education Competition](#) (Mar/Apr 2023) to encourage participants to use digital heritage in innovative ways in educational activities and to share stories of its implementation. As a result of the competition, 184 participants from 19 countries made a submission and from those entries, 119 were eligible 'Stories of Implementation', which will be published on the [Teaching with Europeana blog](#).

This year, we increased our national communities' outreach and, for the first time, Europeana Education Ambassadors conducted training courses at local and national levels. During these training courses, participants had the opportunity to learn more about the Europeana Initiative, and how to search and use educational content made available through the Europeana website and the Teaching with Europeana blog. In total, more than 60 training courses took place in Croatia, Greece, Italy, Latvia, Malta, Portugal, Romania, Spain and Turkey, engaging over 1,600 formal and non-formal educators.

EuroClio further developed their [partner pages](#) on Historiana to encourage CHIs to create a page that uses data shared via the Europeana website. A total of five new partner pages were created in Y1 and 58 new learning materials (including newly created and translated material) were published to existing and new partner pages. To build capacity among educators, EuroClio designed and piloted an online self-paced course and organised a [train-the-trainer event](#) (Mar 2023) bringing together teachers and cultural heritage professionals. The new EuroClio trainers will organise national training in 2024.

Activities resulted in 295 resources created with data shared through the Europeana website (including 261 newly created and 34 translated educational resources) which were or will be published on the Teaching with Europeana blog and Historiana. Educational resources published on the Teaching with Europeana blog or Historiana received over 165,700 visits in total in the past year.

Together with F&F, EF continued to foster participation via [Transcribathon](#) which offers users the possibility to interact with cultural heritage by transcribing a variety of historical documents. For example, we co-organised the ongoing '[Stories of the month](#)' run as well as Transcribathon events organised by the [Enrich Europeana Plus project](#). We also supported the technical development of the platform and maintained the connection between Transcribathon and the Europeana website.

**Engage with academic and research communities.** Academic and research communities represent a large portion of those who use the Europeana website and Europeana Pro. Relying on the new possibilities offered by the data space, we explored new ways to foster the reuse of digital cultural heritage for digitally enabled university teaching, learning and research. Inspired by the principles of the '[Collections as Data](#)' worldwide movement, we focused on the potential of datasets curated in order to facilitate the reuse of data with computational methods, and strengthened our connection to this movement by participating in the workshop [Paths to Participation - Collections as Data: State of the Field and Future Directions](#) (Apr 2023).

EF and DARIAH contributed to several (external) events designed for academic and research audiences, presenting the data space, the Europeana Initiative and APIs, for example at the [DH2023 | Collaboration as an Opportunity](#) - the main conference in digital humanities, and the [IFLA \(International Association of Library Associations and Institutions\) General Conference](#) - a major event in the world of libraries. The DARIAH Annual Event 2023 was entirely dedicated to [Cultural Heritage Data as Humanities Research Data](#) (Jun 2023) and saw 200 participants attend from 30 different countries, resulting in the main outreach effort towards academic and research communities in Y1.



EF and DARIAH also ensured Europeana's visibility on platforms designed for reuse in research, prioritising the SSH Open Marketplace as a gateway to the [European Open Science Cloud \(EOSC\)](#), now considered as the data space for science, research and innovation. In particular, we designed and published [A Workflow to publish Collections as Data](#), based on a checklist in 10 steps that, on one side, reflects the main requirements for reuse in academia and research and, on the other side, offers cultural heritage institutions a handy tool to meet these requirements. The checklist was tested within the [International GLAM Labs Community](#) and led to a series of case studies. In addition, EF reinforced its exchanges with LIBER, by contributing to the [LIBER Digital Scholarship and Digital Cultural Heritage Collections Working Group](#), which entered a new phase by prototyping a training hub for skills development at libraries.

EF continued supporting the [Europeana Research Community](#), which started experimenting with a new format for capacity building. The new format offers a lecture (open to everyone) and a workshop (limited participation) on relevant themes, starting with the [planning of crowdsourcing projects in cultural heritage](#) (Feb 2023). The community continued hosting its [cafés](#), in which a guest speaker introduces relevant themes and engages with the attendees in an informal setting, and also organised a round table on [AI tools in perspective: the potential for cultural heritage institutions, the responses of DH researchers](#) (May 2023). An app developed by a research team of community members was awarded a prize in the [EU Datathon open data competition](#), which EF joined as a partner (Oct 2022). Finally, the community set up an [expert group](#) (Jan 2023) to work on the definition of datasheets for cultural heritage, in collaboration with the [EuropeanaTech Community](#), fitting coherently into the ongoing overall effort to foster a 'Collections as Data' approach in the data space.



*[UNIOR NLP Research Group at the EU Datathon awards ceremony. From left to right: Gennaro Nolano, Johanna Monti, Maria Pia di Buono, Giulia Speranza. 20 October 2022](#)*  
Image used with permission of [data.europa.eu](#).

To better understand behaviours and needs of academics, researchers and university students when it comes to data and APIs, EF invested efforts on a quantitative and qualitative analysis of this area, benefitting from the input and support of the [Europeana Research Advisory Board](#), as well as DARIAH. Complementing this effort, EF launched a [public consultation](#) on the use of datasets both as a source of data and an outcome of reuse.

Finally, EF conducted research on digital cultural heritage as an emerging university subject. As a first step, we explored existing university courses specifically designed to train students as future cultural heritage professionals. This research will continue in Y2 and aims to the publication of the results.

**Engage with the developer communities and API customers.** In Y1, the Europeana REST API (which includes Europeana's main APIs allowing users to build applications with our collections) had an average of 165 users and over 17.1 million requests per month.

In the past year, we focused on improving the API documentation, we connected with the user community to understand their needs and new potential areas of reuse, and we developed resources to support capacity building. For example, we surveyed users on their use of the API documentation and tested new alpha functionalities such as the developer mode [debug feature](#).

To provide better support to existing and new API users, we started moving the [API documentation](#) from Europeana Pro to JIRA Confluence. The migration of API pages started with selected pages (e.g. [IIIF documentation](#)) and will conclude in Y2. We also established a new [PyEuropeana](#) library which can significantly improve the user experience when trying to connect to the Europeana APIs through a [Python interface](#).

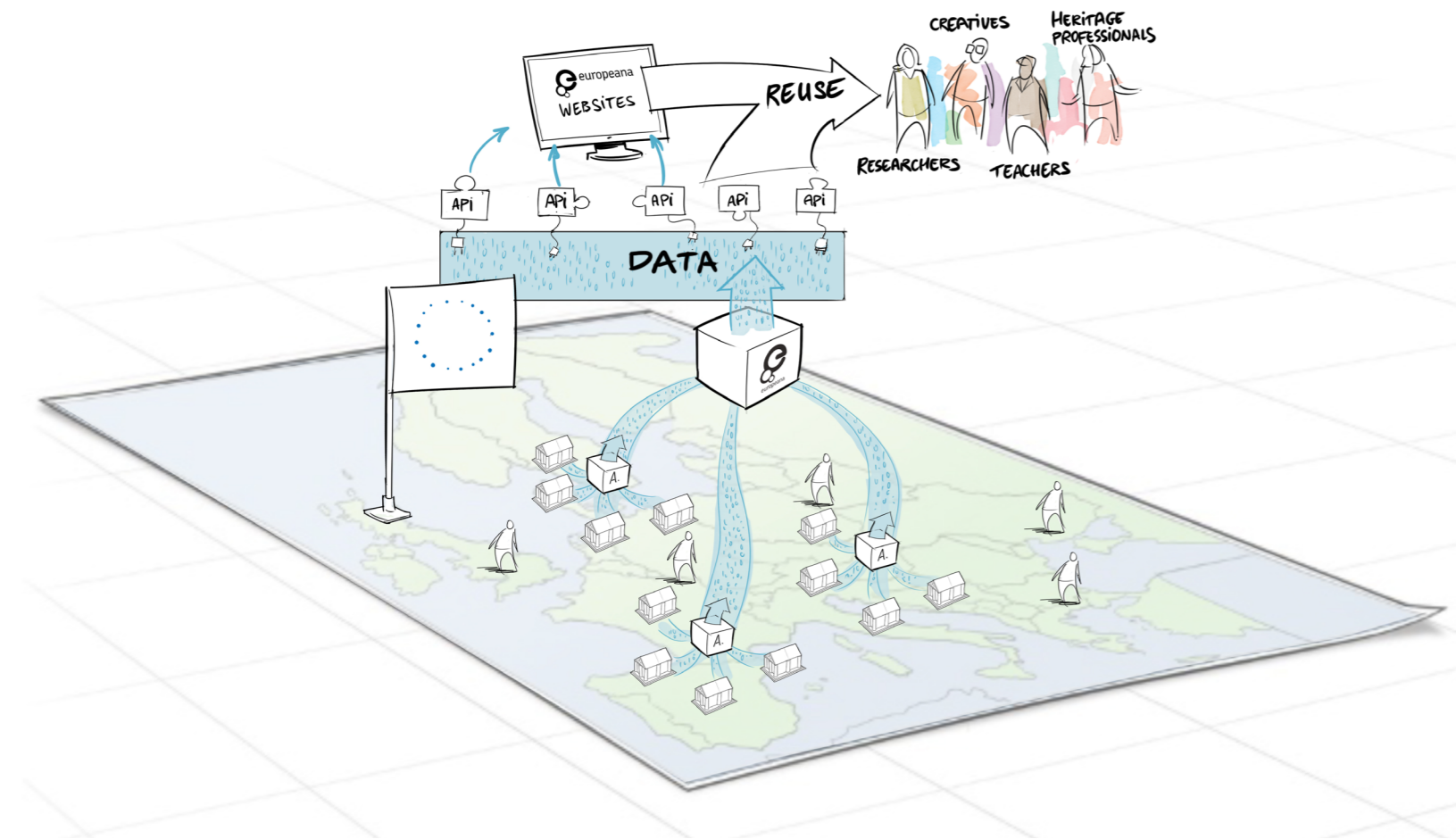
In tandem with improving the API documentation, we developed resources to support capacity building. More specifically, to help people get acquainted with the API, to support existing API customers to update their own integrations, and also to support the education and research communities to increase the uptake of Europeana APIs. For example, we developed a [Europeana API FAQ](#) on the Europeana Knowledge Base and [EDM API training](#).

EF offered personal technical support to new and existing users e.g. helping users to update their project and dealing with bugs and other issues. Personal mentoring was extended to teams and individual developers who participated in hackathons (e.g. at the [InnoAir & Europeana hackathon](#)) which resulted in new proofs of concept and Minimum Viable Products (MVPs) that can be expanded into new integrations and platforms that use an Europeana API.

We investigated which audiences offer the greatest opportunities for developing relationships for reuse of the Europeana API suite, connecting with other European projects like [Clust-ER Innovate](#) and with big tech players like Amazon Alexa.

We kept users up-to-date with recent developments in the Europeana API offer, mainly through [Github release notes](#), and promoted and disseminated reuse projects on Europeana Pro and social media, for example the reuse projects created as part of the [Europeana Low-Code Fest](#) or the work on [IIIF](#).

Finally, we marketed the Europeana API offer towards developer communities and potential new users. Europeana's API outreach focused on collaborating with other communities, such as education and research, to present capacity building resources at relevant events (e.g. [Europeana Low-Code Fest](#), the [Digital Education with Cultural Heritage MOOC](#), and the [InnoAir & Europeana Hackathon](#)).



Reuse. Sketchy Business. 2023. CC-BY-SA

# Digital services for the public

The well-established Europeana website is a main product of the common European data space for cultural heritage. We continued to optimise existing functionalities and explored additional features, with input and feedback from our audiences.

The consortium also engaged audiences with digital cultural heritage by expanding pan-European themes and perspectives, inspiring use, reuse and participation, and communicating activities to audiences.

## High-performing Europeana website

The [Europeana website](#) offers pan-European content to anyone with an interest in cultural heritage. In Y1, the website received over 5.7 million visits and 73% of users state they are 'satisfied' or 'completely satisfied' with the website. We ensured the website is easy to access and performs well i.e. is accessible at any time and loads quickly, functions well on all devices, and is ready to take advantage of 5G infrastructure as it continues to expand across Europe.

**Extend user participation features.** The Europeana website saw several improvements in Y1. Most notable was the release of the gallery publication feature which enables users to submit their gallery for publication on the [Galleries page](#) of the website (subject to an approval process). In Y1, user accounts increased to over 27,500 (45% increase in Y1), and the website currently has over 7,200 user-created galleries (43% increase), and over 31,700 liked items (48% increase).



**Optimise search experience, prioritising relevance and data quality.** The majority of visitors come to the website to search, and several improvements were made in different areas of search in the past year. For example, we included exhibitions, galleries and blog posts in search results, thus making editorial content more discoverable - and displayed alongside institutional collections - in the search experience.

To improve the search experience for everyone and especially our professional audiences who understand the data structure and therefore have advanced ways to find what they are looking for, we implemented an [advanced search](#). It allows people to search for keywords in specific EDM fields, making it easier to narrow the results with more precision than with the regular filters. It also enables people to create advanced search queries in which they can choose to include or exclude specific search terms from their query. In parallel, we extended the scope of the search functionality by allowing users to search for keywords within video subtitles, which is available as part of the [advanced search](#).

On the item page, we enhanced our media display by presenting text and images in the IIF 'Mirador' viewer which offers different display options and zoom, and we added a new 'search within transcriptions' functionality which allows people to search for keywords within the text of a transcribed document. We also emphasised the provenance of our items by highlighting the providing institution and making it easy to navigate to their website to view the item there.

We improved the search results ranking, based on online preference testing with our users. Most users preferred the search results when the search term appeared in the item title and we implemented a new field weight tuning, giving the title more weight than the other fields.



*Satisfaction and usage of the Europeana website (Aug 2022 - Sep 2023). Europeana Foundation. August 2023. CC-BY-SA*

Finally, we identified search performance metrics and requirements that enable us to log search-related user actions, to refine our evaluation of deployed search features, and to acquire data for developing future (AI-based) improvements. A first set of the required actions is now logged from the website.

**Optimise browse experience to improve content discovery.** To improve the browsing experience of users on the website, EF made finding and exploring items easier and more rewarding for visitors.

We expanded the design of the [Theme pages](#), introducing a hierarchical relationship between the themes and other entities such as topics and people, making it easier for people to narrow their search scope within a specific subject theme. Additionally, on these theme pages, we display stories (blog posts and exhibitions) and galleries which closely match the subject theme. Now people can dive into a theme and explore it from different perspectives (as an example, see the [art theme](#)).

We also released collection pages on the website relating to cities, so people can now browse content by city (for example, [Paris](#)). Additionally, a [hub page](#) shows all available cities.

Across the website we introduced tooltips to various functionalities to clarify what the functionality does, which should make it easier for people to interact with the website. The tooltips are labelled with an ‘i’ for information and are available in all languages of the website. We will continue to add tooltips to new functionalities that benefit from further clarification.

**Expand multilingual coverage to include all EU official languages.** EF improved multilingual access to the Europeana website, recognising that different components of the website require different approaches to localisation to ensure the best possible experience for the users.

**Multilingual (meta) data.** The first line of work regards the establishment of more multilingual (meta) data. Using the translation infrastructure refined in Y1, EF worked on providing more (automated) translations of the metadata, in addition to those obtained thanks to the work of Europeana’s partners augmenting their metadata with multilingual vocabularies. Thanks to the [Europeana Translate](#) project, we produced and ingested English translations of the metadata for 25 million items. On average, each entity is now supported in 9.78 languages, which is 0.21 points higher than one year ago.

**Multilingual search.** We enabled multilingual search and real-time translation of search queries and results in the context of the [Spanish pilot](#). We also collaborated with eTranslation, with early explorations of how the service can be integrated into the data space, for both on-the-fly and asynchronous translation.

**Multilingual access.** The Europeana website is available in 25 European languages (the 24 official EU languages and Basque). We continued to provide all static text in all EU languages and developed a new approach for translation of static text, involving a new translation service. To improve the accuracy of the translations, we also simplified and unified the English terms we use. We asked our aggregators to review and correct the translations of the most common terms we use on the website and updated the website accordingly.

We expanded multilingual access to editorial content by increasing the number of languages in which editorial content is available. In Y1, 38% of stories (blogs and exhibitions) were published in more than one language (45 stories), including 7% of stories which were published in all EU languages (eight stories). Additionally, EF curated six galleries in all 24 EU languages and 11 galleries in more



than one language. In Y1, we also refined our approach for prioritising translations of editorial, looking at use of the website and overall incidence of language use across Europe and we piloted a new approach to multilingual editorial which will be consolidated in Y2.

**Optimise user feedback mechanism.** EF improved the overall feedback mechanism to make it easier and more rewarding for users to provide feedback. We reviewed user feedback channels across the data space and consolidated the backend infrastructure which makes it easier to streamline the feedback requests. We also sped up the response time and on average people received an initial response in ~5.5 hours and user feedback requests were resolved on average in ~11.7 hours (excluding user feedback on issues for which the responsibility lies outside of the Europeana DS consortium).

EF created a page of [frequently asked questions](#) (FAQ), available in the 24 EU languages plus Basque, which people can use to find an answer to their question, quickly and independently. We also introduced informative error messages so people understand why they can't view a page or media file or download it and most importantly what actions they can take to bypass the issue and complete their task ([for example](#), click 'Download' to see the 'Download not working' error message).



*Aufnahme mit dem Porträt von Familie Wolf, Krämer vor seinem Gemälde stehend. Johann Victor Krämer um 1900.  
Albertina. Public Domain*



## Audiences engagement with digital cultural heritage

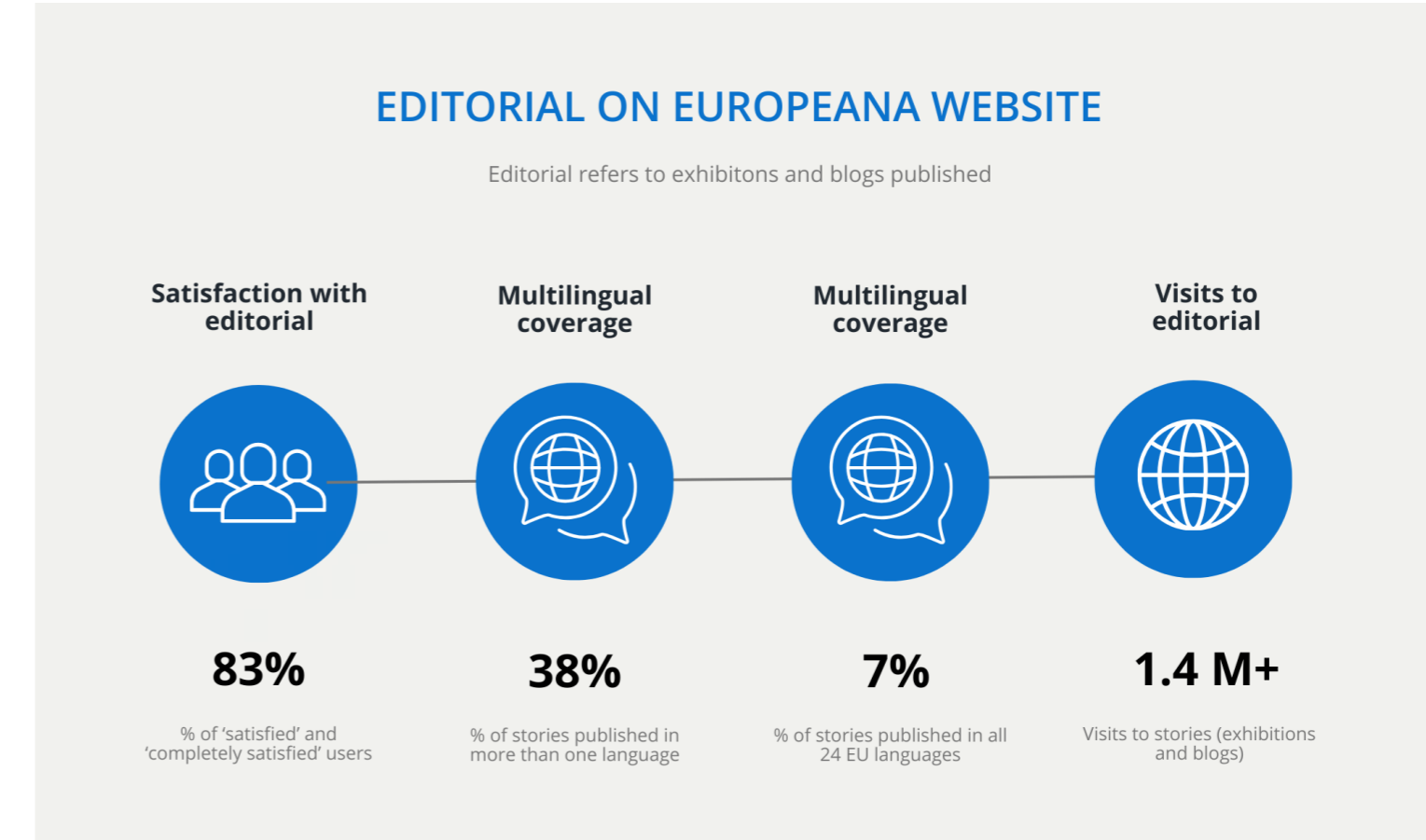
Under this task, EF provided opportunities for the public to engage with digital cultural heritage by offering curated content and editorial on pan-European themes and perspectives and by (co) organising participatory campaigns.

**Drive participation with cultural heritage and broaden impact of cultural heritage by expanding pan-European themes and perspectives.** EF worked with consortium members, CHIs and other partners to produce impactful editorial connecting history and culture across borders to contemporary themes and events, such as social issues, historical anniversaries and current events.

We published stories for [Black History](#) month (Oct 2022), [Womens' History](#) month (Mar 2023), [LGBTQ+ history](#) (Jun 2023), [histories of people with disabilities](#) (Jul 2023), and [editorial](#) curated by members of the European Students' Association for Cultural Heritage (ESACH) for the European Year of Youth 2022 (Dec 2022).

In total, 118 new editorials were published in Y1: 110 blogs (e.g. [Five buildings that have been both mosques and churches](#) and [Seven pioneering women authors from Spain](#)) and eight exhibitions (e.g. [Napoleon and botany](#) and [Humans of Crafts](#)). Editorials were created by 52 different organisations, in addition to EF, and individuals across Europe. In addition, nine data space supporting or Generic Services projects provided editorial content.

Overall, users were very satisfied with the stories (blogs and exhibitions) published, with 83% being 'satisfied' or 'completely satisfied'. In total, exhibitions and blogs published on the Europeana website received over 1.4 million visits in the past year.



Satisfaction, multilingual coverage, and visits to editorial on the Europeana website (Sep 2022 - Aug 2023). Europeana Foundation. August 2023. CC-BY-SA

EF organised worldwide campaigns to foster digital skills and participation with cultural heritage and to teach people how to find and use open access cultural heritage data. The [GIF IT UP](#) competition (Oct 2022) encouraged participants to create new GIFs from open access digital collections, with special categories for nature and crafts. There were 149 entries (88 eligible entries) from 19 different countries, with [10 winning entries](#). We held a [GIF-making workshop](#) (137 participants) for interested potential participants, and another workshop at the [EPALE Community Conference 2022](#). To support more multilingual experiences, this year we offered the GIF IT UP website in [French](#) for the first time.

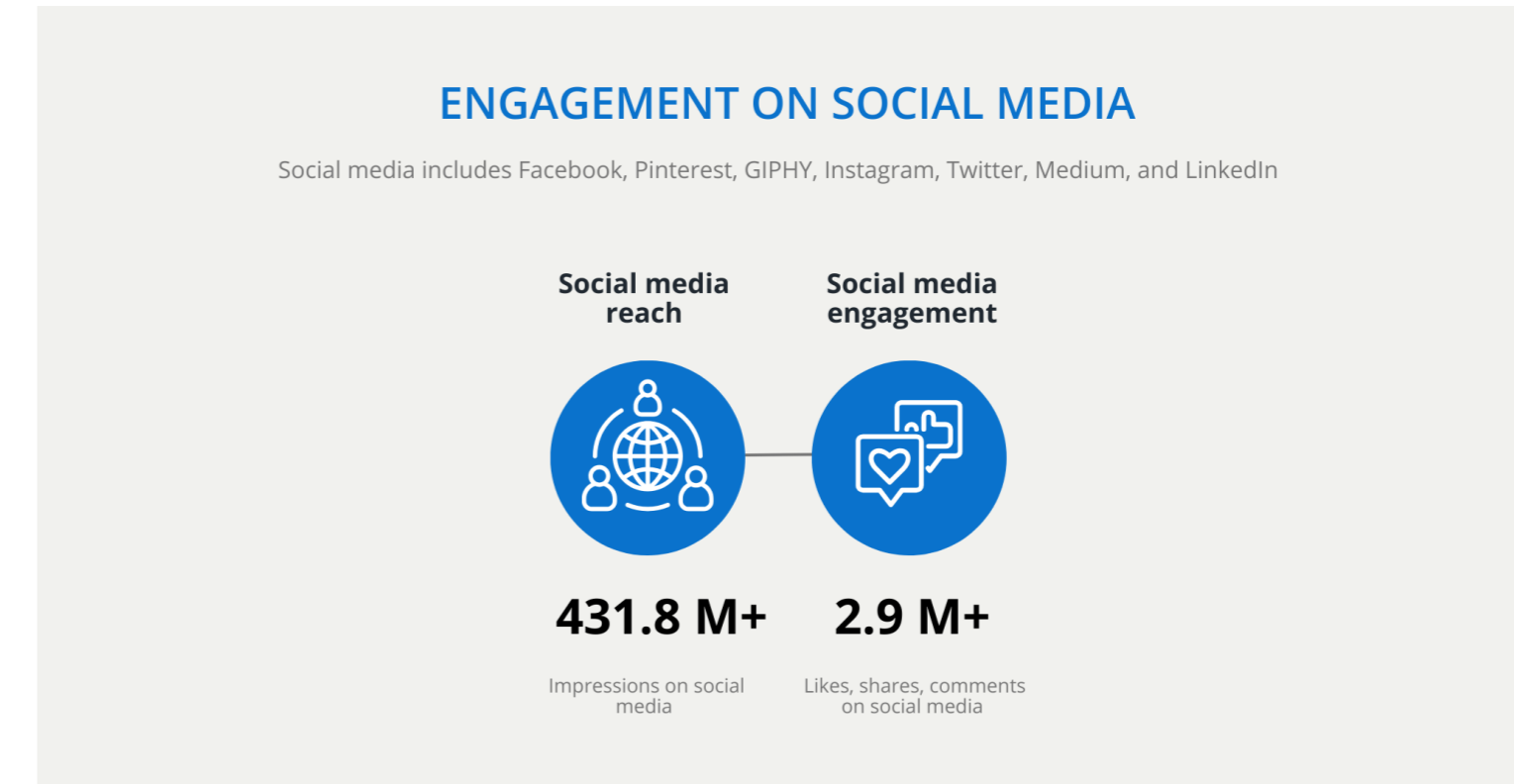
The [Digital Storytelling Festival](#) (May 2023) encouraged participants to boost their storytelling skills and tell stories exploring culture. This year's event attracted over 800 registrations from 51 countries (top countries being Greece and Romania), 440 unique participants joined in total, and 80% of them described being 'satisfied' and 'completely satisfied' with the event. Alongside the event, we organised the [Online Creative Residency](#) which enabled collaboration between new professionals and experts to produce content exploring LGBTQ+ stories and cultural heritage, which was promoted as part of [Pride month](#) (Jun 2023).

***'Being part of the queer narrative through a creative process made me feel part of queer culture, and doing so made me feel more comfortable with my queer identity and my sexuality. In the end, feeling you have a queer heritage is very important.'***

Aida Naasan Agha Spyridopoulou

We also contributed to the [World Festival of Cultural Diversity](#) (May 2023) - a global, synchronised celebration of cultural diversity - by sharing stories relating to diversity in European culture and a dedicated section on the [Europeana website](#).

**Communicate the data space for cultural heritage activities.** EF showcased and promoted inspiring examples of digital storytelling and content reuse and promoted the data space as a treasure trove of open access heritage data. We promoted high-quality open access data and editorial as well as the various functionalities of the Europeana website via social media channels, newsletters and on external platforms (most notably the account and the gallery functionality for which this [short video](#) invited users to create their own galleries). We also promoted 3D, in support of the [Twin it!](#) campaign, and shared Instagram stories illustrating the process of the digitisation.



*Engagement on social media (Sep 2022 - Aug 2023). Europeana Foundation. August 2023. CC-BY-SA*

This year, we supported the editorial translation efforts with increased multilingual promotion, for example with multilingual activities on social media targeting specific language speakers and inviting them to explore translated content on the Europeana website.

We continued posting on social media on a daily basis, promoting specific editorial as well as themes and a stories page as a general way to access curated content. We invited users to test their knowledge and interact with our content through participatory functionalities such as quizzes and polls (on topics like food, the history of tulips, and museum recommendations). We participated in major online campaigns, such as #ColorOurCollections and #MuseumWeek, and used trending events to showcase relevant content.

We currently reach audiences through various channels including: [Facebook](#), [Twitter](#) (now X), [Pinterest](#), [Instagram](#), [Medium](#), [LinkedIn](#), and [GIPHY](#). In Y1, we recorded over 431.8 million impressions on the channels and over 2.9 million engagements (likes, shares, comments).

We also promoted high-quality data on external platforms, for example at [Hatathon 4.0](#) with workshops on storytelling and how to curate a gallery. Artworks published on the Europeana website were featured in the DailyArt App (Jan/Feb 2023), celebrating [Albertina](#) putting their collection in the public domain.

# Generic Services projects

In Y1, EF integrated results from eight Generic Services (GS) projects into the data space. The projects were funded under the European Union CEF Telecom programme from various calls:

## **Europeana CEF-TC-2020-1:**

- [EnrichEuropeana+](#)
- [JHT - Jewish History Tours](#)
- [WEAVE - Widen European Access to cultural communities Via Europeana](#)
- [Europeana Subtitled](#)
- [Crafted - Enrich and promote traditional and contemporary crafts](#)

## **Public Open Data CEF-TC-2018-5:**

- [SGoAB - Saint George on a Bike](#)
- [eTranslation CEF-TC-2020-1\(Europeana Translate](#)

## **eArchiving CEF-TC-2020-2:**

- [J-Ark - European Jewish Community Archive](#)

EF supported the GS projects with ingestion of content and metadata, the implementation of relevant Europeana frameworks, policy and development guidelines, as well as on integrating tools into the Europeana website, and dissemination of project results.



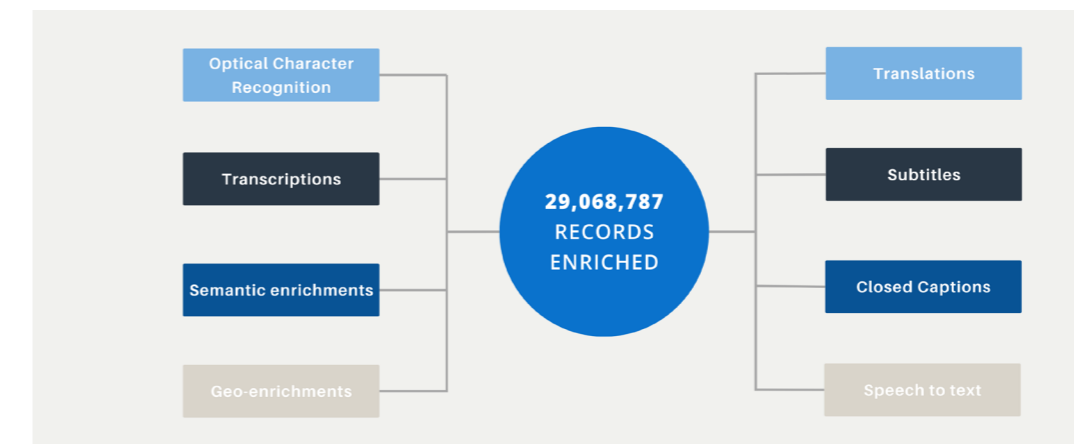
The GS projects contributed to improving the data space per specific area of data space deployment: data space infrastructure, integration of high-quality data, capacity building and fostering reuse, and digital services for the public. Below are highlights of all contributions of the GS projects running during Y1 by the end of August 2023.

**High-quality data.** This section elaborates on the delivery of high-quality records and enrichments done by GS projects. The projects delivered over 273,000 high-quality records to the data space, of which 74% are new high-quality records and 36% are upgraded records. The projects enriched the collections on the Europeana website with content on a wide range of topics, including Jewish and Roma heritage, photography, broadcasting videos, crafted heritage and more. The projects delivered more than 230 3D objects from cultural heritage monuments and buildings, daguerreotypes and Jewish history.

GS projects have contributed richer metadata to Europeana by delivering 29 million enrichments. There are two origins of enrichments: those contributed manually by humans through crowdsourcing campaigns and those contributed by automatic enrichment tools. For example, the Europeana Translated project provided multilingual access to more than 29 million cultural heritage records on Europeana by providing translations from 22 EU languages to English.

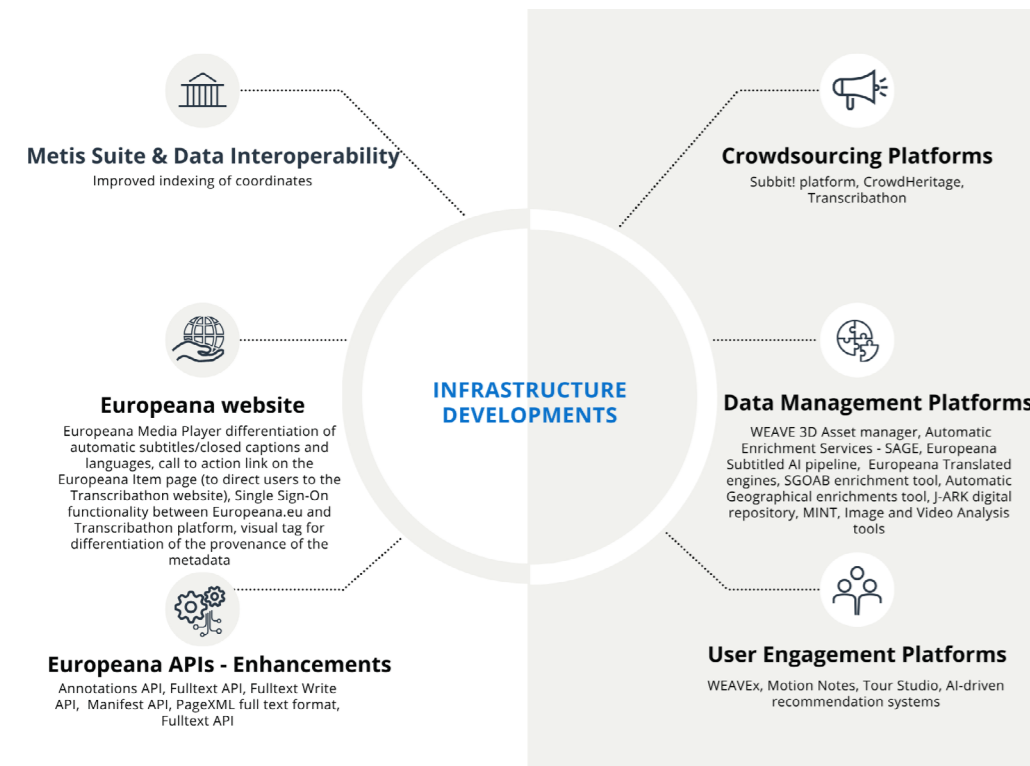


*Content delivered by Generic Services projects by August 2023. Europeana Foundation. August 2023. CC-BY-SA*



*Enrichments delivered by Generic Services projects by August 2023. Europeana Foundation. August 2023. CC-BY-SA*

**Data space infrastructure.** During this period, the GS projects enhanced existing standalone tools such as Transcribathon, WEAVEx and Crowdheritage so that they can better enrich cultural heritage items and validate new enrichments, as well as align them closely with the requirements of the data space. Furthermore, projects developed new standalone tools such as Subbit! and J-ARK (both [tools are featured on Europeana Pro](#)) for the benefit of the whole sector. Finally, other projects enhanced the Europeana infrastructure, for example the visual tag to facilitate clear differentiation between original metadata delivered by data providers and metadata generated as a result of the enrichment process done during the CRAFTED project.



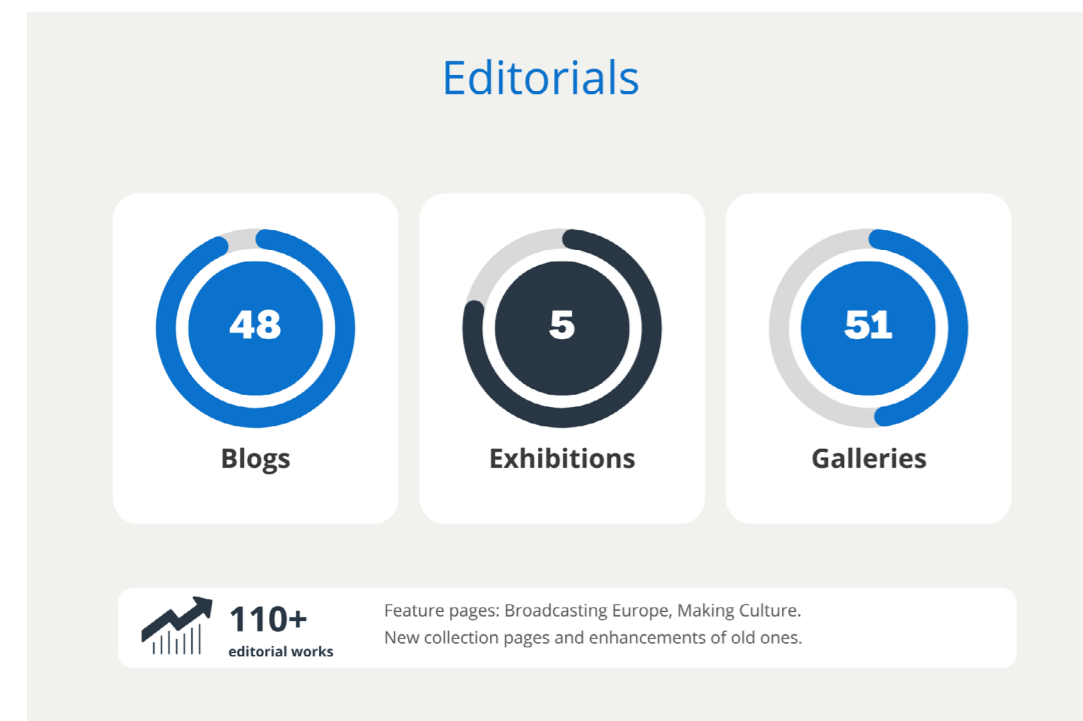
*Tools and software developed by Generic Services projects by August 2023. Europeana Foundation. August 2023. CC-BY-SA*

**Capacity building and fostering reuse.** Several projects made significant contributions towards capacity building in the sector on topics from aggregation, AI, and 3D to impact, diversity and inclusion, and tourism. For example, Jewish History Tours developed a set of [recommendations](#) for the Cultural Routes of Europe community and other senior stakeholders in cultural heritage and tourism organisations, projects and networks. The recommendations provide clear guidance on unlocking the full potential of data by sharing it through the Europeana website and leveraging heritage data and project innovations for high-quality tourism offerings.



*Capacity building actions done by Generic Services projects by August 2023. Europeana Foundation. August 2023. CC-BY-SA*

**Digital services for the public.** Finally, the projects raised awareness of the Europeana Initiative and its collections by creating more than 110 editorials on the Europeana website. The topics range from Roma culture, to broadcasting Europe in the 20th century and the intangible heritage of craftsmanship and craft artefacts.



*Editorials created by Generic Services projects by August 2023. Europeana Foundation. August 2023. CC-BY-SA*



*Utställningen på Tekniska museet. Rymden i mänsklighetens tjänst. Telstar satellit. Lars Bergkvist. 1963. Tekniska museet. Public Domain*



| Work packages & tasks  | Foreseen %   | Actual Aug 2023 |
|--|--------------|-----------------|
| <b>WP 1: Development and operation of the data space infrastructure</b>          | <b>25.4%</b> | <b>24.4%</b>    |
| Task 1.1 Provide reliable data space infrastructure and quality of services      | 22.7%        | 21.8%           |
| Task 1.2 Foster innovation, interoperability & compliance with other data spaces | 2.7%         | 2.6%            |
| <b>WP 2: Integration of high-quality data</b>                                    | <b>17.8%</b> | <b>19.5%</b>    |
| Task 2.1 Develop and manage data governance mechanisms                           | 3.6%         | 4.5%            |
| Task 2.2 Data acquisition and data improvements                                  | 10.9%        | 11.4%           |
| Task 2.3 Automated approaches towards data quality                               | 3.3%         | 3.6%            |
| <b>WP 3: Capacity building and fostering reuse</b>                               | <b>30.6%</b> | <b>31.1%</b>    |
| Task 3.1 Enhance cooperation throughout the data space                           | 4.4%         | 5.6%            |
| Task 3.2 Identify needs of user groups   | 1.7%         | 1.4%            |
| Task 3.3 Build awareness and engagement  | 6.9%         | 6.3%            |
| Task 3.4 Develop capacity building as a service                                  | 3.9%         | 3.7%            |
| Task 3.5 Facilitate the provision of high-quality data                           | 4.4%         | 5.2%            |
| Task 3.6 Facilitating the reuse of high-quality data                             | 9.3%         | 8.9%            |
| <b>WP 4: Digital services for the public</b>                                     | <b>18.7%</b> | <b>18.5%</b>    |
| Task 4.1 Deliver high-performing Europeana websites                              | 11.8%        | 10.6%           |
| Task 4.2 Engage audiences with digital cultural heritage                         | 6.9%         | 7.9%            |
| <b>WP 5: Programme management</b>  | <b>7.5%</b>  | <b>6.5%</b>     |
| Task 5.1 Ensure continuous progress monitoring and reporting                     | 6.0%         | 5.5%            |
| Task 5.2 Governance  | 0.6%         | 0.4%            |
| Task 5.3 Manage relations with other EU-funded projects                          | 0.7%         | 0.6%            |
| Task 5.4 Phasing-in and phasing-out periods                                      | 0.2%         | 0.04%           |
| <b>Total</b>   | <b>100%</b>  | <b>100%</b>     |

Balance of efforts with foreseen and actual percentages of resources allocated to each of the five work packages and its related tasks.

## Budget and realisation

The first year as a common European data space for cultural heritage was funded for €7.5 million, and distributed amongst 19 partners (period from 1 September 2022 to 31 August 2023). The work was performed in five separate work packages:

1. Development and operation of the data space infrastructure
2. Integration of high-quality data
3. Capacity building and fostering reuse
4. Digital services for the public
5. Programme management

The actual effort for the first year as a data space is very close to the planned division. The maximum difference is 1.7% (WP2) compared to what was planned. Underneath is a summary overview of the planned activities and actual activities on a work package level.

| Work packages  | Planned     | Actual Aug 2023 | Difference in % |
|--|-------------|-----------------|-----------------|
| WP 1: Development and operation of the data space infrastructure | 25.4%       | 24.4%           | - 1.0%          |
| WP 2: Integration of high-quality data                           | 17.8%       | 19.5%           | + 1.7%          |
| WP 3: Capacity building and fostering reuse                      | 30.6%       | 31.1%           | + 0.5%          |
| WP 4: Digital services for the public                            | 18.7%       | 18.5%           | - 0.2%          |
| WP 5: Programme management                                       | 7.5%        | 6.5%            | - 1.0%          |
| <b>Total</b>   | <b>100%</b> | <b>100%</b>     | <b>-</b>        |

The common European data space for cultural heritage is an initiative of the European Union, funded by the [European Union's Digital Europe Programme](#). It is deployed by a consortium led by the Europeana Foundation, under a service contract with the European Commission, contract number LC-01901432.

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