



[Back](#) .

[Feedback](#)



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[Data publication](#) [Data standards](#) [Academic Research](#) [Cultural Heritage Institutions](#) [data-quality](#) [europeanatech research](#)



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Europeana and the FAIR principles for research data

What are the 'FAIR' principles used by the research community? Why do they matter for Europeana? And how do our data and services comply with them?

Feedback



The [FAIR Guiding Principles for scientific data management and stewardship \(https://doi.org/10.1038/sdata.2016.18\)](https://doi.org/10.1038/sdata.2016.18) are intended to improve the infrastructure for and services around scholarly data. These principles, as presented on the [GO FAIR website that hosts them \(https://www.go-fair.org/fair-principles/\)](https://www.go-fair.org/fair-principles/), are intended as 'guidelines to improve the findability, accessibility, interoperability, and reuse of digital assets'. They now guide the design and implementation of major initiatives such as the European Open Science Cloud (EOSC (<https://www.eosc-portal.eu/>)) as illustrated by the recently launched FAIRsFAIR (<https://www.fairsfair.eu>) project.

Europeana Collections (<https://www.europeana.eu/>) and its APIs make digitised cultural heritage from over 3,700 providers (galleries, libraries, museums and archives) available in all European languages. Europeana Research (<https://pro.europeana.eu/what-we-do/academic-research>) wants more people to make use of this material in academic research, especially in the humanities.

We are exploring possibilities to liaise with the EOSC, which also caters to research needs in the social sciences and humanities. In this context, how do Europeana services comply with the FAIR principles and how can we play a role in the wider adoption of these principles in the cultural heritage sector?

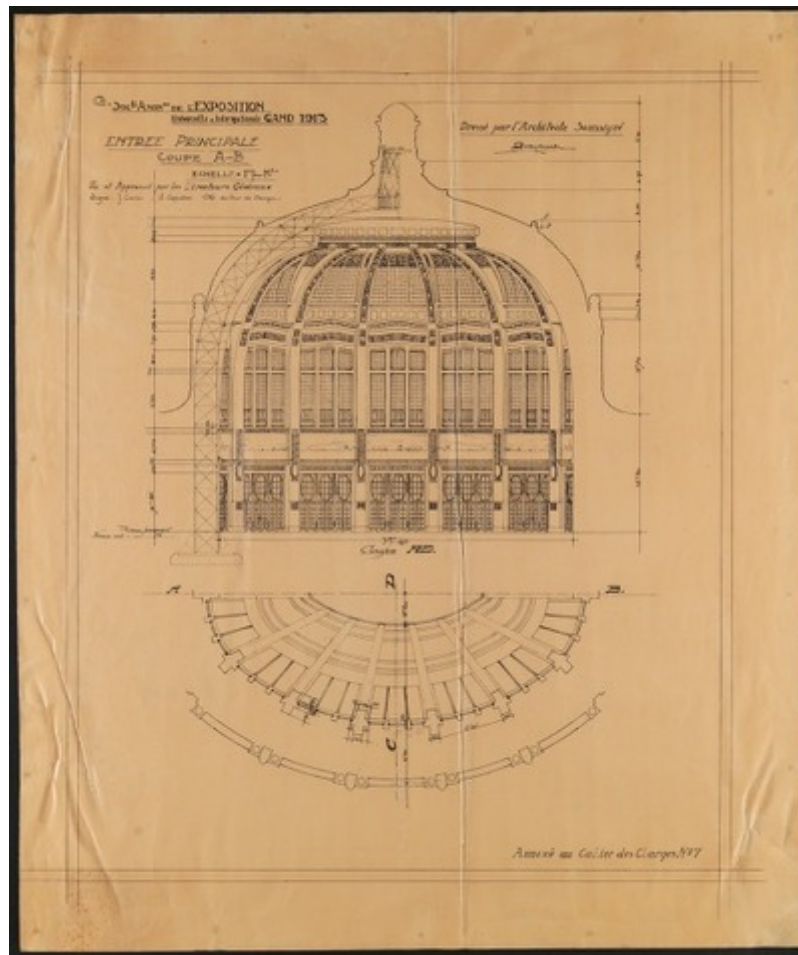
How do the FAIR principles align with Europeana's?

Feedback



There is much resonance between the FAIR principles and Europeana's values and objectives, as embodied in its [strategy \(http://strategy2020.europeana.eu/\)](http://strategy2020.europeana.eu/). Our principles 'Usable, Mutual, Reliable' and the way we have implemented them in the past ten years align with FAIR's own 'Findable, Accessible, Interoperable, Re-usable' principles. We have been involved in the development of technology that has great potential for enhancing the FAIRness of data, such as open web APIs, Linked Data and the International Image Interoperability Framework (IIIF), implementing it for ourselves as well as encouraging everyone in our sector to adopt it.

Europeana and its wide [network \(https://pro.europeana.eu/network-association\)](https://pro.europeana.eu/network-association) of partners have developed a Licensing [Framework \(https://pro.europeana.eu/resources/standardization-tools/europeana-licensing-framework\)](https://pro.europeana.eu/resources/standardization-tools/europeana-licensing-framework) enabling fully open metadata and the mandatory labelling of content with standardised and interoperable [rights statements \(https://pro.europeana.eu/page/available-rights-statements\)](https://pro.europeana.eu/page/available-rights-statements) which make the reuse possibilities for each item clear. We have also been advocating for the adoption of better [copyright policies \(https://pro.europeana.eu/post/copyright-reform-passed-by-european-parliament\)](https://pro.europeana.eu/post/copyright-reform-passed-by-european-parliament) that make it easier to openly share cultural data across the board. Finally, the large network of Europeana's data partners has worked on improving the quality of the data provided in an effort to make our vastly diverse data more usable across domains and languages.

 Feedback

[Ontwerp:] *S[ociété] A[nony]me de l'Exposition universelle et internationale de Gand 1913. Entrée principale. Coupe A-B* (https://www.europeana.eu/portal/en/record/9200139/BibliographicResource_3000135565690.html),

Oscar Henricus Van de Voorde, 1913, Ghent University Library, CC BY-SA

How do Europeana's data and services meet the FAIR requirements?

Europeana aggregates metadata records about cultural heritage objects. These records provide links to digitised content that is accessible on the websites of Europeana's partners and fuels a search service that facilitates the discovery of cultural material for a wide variety of audiences. Both data and services are presented via a web platform and a series of APIs. There are, therefore, several levels to consider when assessing the FAIRness of Europeana's offer.

F- To be Findable

The digitised content that Europeana provides access to is described by metadata, the aggregation of which constitutes the backbone of Europeana's services. The scale and diversity of Europeana's metadata sets imply that their richness varies greatly.

(<https://www.slideshare.net/antoineisaac/data-scale-and-diversity-issues-at-europeana>). But Europeana has equipped itself with a data model (see below) that follows the linked data principles which give, besides flexibility, the possibility for our partners - or Europeana itself - to enrich metadata (<https://pro.europeana.eu/page/europeana-semantic-enrichment>) with links to (multilingual) semantic resources that also describe the 'context' of cultural objects, making them easier to find.

As mentioned earlier, we index the Europeana dataset and make it searchable online ourselves. In addition, the dataset is findable through the European research infrastructures CLARIN (<https://www.clarin.eu/>) and EUDAT (<https://eudat.eu/>).

Europeana and our partners promote the persistent identification of both cultural heritage objects' metadata and digital versions. A persistent identifier is added to every record. Europeana identifiers are URIs and are included in the data records in all formats in which the dataset is available. In a context of aggregation where data is passed and processed across different partners, we cannot (and for provenance concerns do not want to) enforce global uniqueness, i.e. there can be several identifiers for several versions of a resource. But we do try to maintain links across all these versions so that consumers of our services can always find what they search for.

A - To be Accessible

Europeana identifiers are resolvable (HTTP) URIs, which orient users and data-consuming services towards pages on our website or data from our APIs. Europeana also tries to resolve URIs that are obsolete and have been updated for technical reasons, by using HTTP redirection.

Europeana's dataset is accessible through Web APIs (<https://pro.europeana.eu/resources/apis>) that implement open, standard protocols, such as the Linked Data protocols and practices (including SPARQL (<https://www.w3.org/TR/rdf-sparql-query/>)), OpenSearch (<https://github.com/dewitt/opensearch/blob/master/opensearch-1-1-draft-6.md>), OAI-PMH (<https://www.openarchives.org/pmh/>).

Access to the dataset's records via their URIs is free and no authentication is required. Some APIs (such as the [Annotations API \(https://pro.europeana.eu/resources/apis/annotations\)](https://pro.europeana.eu/resources/apis/annotations)) and parts of our platform (such as [Europeana 1914-1918 \(https://www.europeana.eu/portal/en/collections/world-war-i/contribute?action=contributor\)](https://www.europeana.eu/portal/en/collections/world-war-i/contribute?action=contributor)) require authentication, as they allow the modification of our data.

I - To be Interoperable

Europeana uses the [Europeana Data Model \(https://pro.europeana.eu/resources/standardization-tools/edm-documentation\)](https://pro.europeana.eu/resources/standardization-tools/edm-documentation) (EDM) for data exchange with data providers, for its internal information system, and also for third-party use. EDM is a collaborative, community-based model, developed in consultation with representatives from all the domains represented in Europeana. It is under continuous improvement. EDM is based on the Resource Description Framework (RDF), which allows us to create a model for our metadata that mostly reuses existing (Linked Data) standard vocabularies, such as Dublin Core, SKOS, and FOAF.

Europeana supports its data partners to use vocabularies for referring to concepts, places, persons and organisations. The most prominent vocabularies in use within the dataset are [DBpedia \(http://dbpedia.org\)](http://dbpedia.org) and [Geonames \(http://www.geonames.org/\)](http://www.geonames.org/). Our use of external vocabularies for enrichment always follows the standard practices of Linked Open Data [and concerns such as quality and access \(https://pro.europeana.eu/files/Europeana_Professional/EuropeanaTech/EuropeanaTech_taskforce\)](https://pro.europeana.eu/files/Europeana_Professional/EuropeanaTech/EuropeanaTech_taskforce)

Note that in a couple of cases that are crucial for Europeana, we have embarked on making our own vocabularies, such as the one at [RightsStatements.org \(https://rightsstatements.org/en/\)](https://rightsstatements.org/en/) (see below) to complement existing standards. Again, this is community-driven and follows existing best practices (such as providing URIs).

R - To be Reusable

Facilitating the reuse of cultural heritage data is a key Europeana objective.

Any metadata provided to Europeana needs to be licensed under CC0, and Europeana makes the complete aggregated metadata set (including the outcomes of its own data improvements) openly available under CC0 as well.

The rights for using the content are stated in every record, using rights statements from either [Creative Commons \(https://creativecommons.org/\)](https://creativecommons.org/) or [RightsStatements.org \(https://rightsstatements.org\)](https://rightsstatements.org/), the latter being a vocabulary developed as a community initiative to improve the communication of the copyright and reuse status of digital objects by cultural heritage institutions, making it easier for users to 'see if and how online cultural heritage works can be reused'.

Provenance of the data is always stated, acknowledging the original data provider (e.g. a museum or library) and all intermediaries in the aggregation workflow in the metadata.

Finally, our metadata is made available with the use of data standards commonly used in the cultural heritage, education and research domains, such as [Schema.org \(https://schema.org/\)](https://schema.org/), [Dublin Core \(http://dublincore.org/\)](http://dublincore.org/), [SKOS \(https://www.w3.org/2004/02/skos/\)](https://www.w3.org/2004/02/skos/) and others (thanks partly to EDM following best practices for data modelling and being already based on these standards).

What will Europeana do in the near future?

To further encourage partners to provide richer data that makes digital cultural heritage more findable and more reusable, Europeana has ongoing [data quality efforts \(https://pro.europeana.eu/project/data-quality-committee\)](https://pro.europeana.eu/project/data-quality-committee) to share best practices and [report on the quality of content and metadata \(https://pro.europeana.eu/post/publishing-framework\)](https://pro.europeana.eu/post/publishing-framework) in a way that is helpful and motivating both for providers and users.

We have recently defined measures for metadata quality, identifying key data elements and values that enable rich user interfaces and better user experience. In the coming months, we are going to make these measurements accessible to our data reusers so that they can identify the material that is most useful to them.

With respect to accessibility of digitised content, Europeana is a founding member of the new International Image Interoperability Framework (IIIF). IIIF is a set of open APIs designed to help people publish digital content on the web in a way that is more interoperable, allows richer interaction with content across any repositories and keeps better track of provenance of content. Europeana recognises and exploits IIIF content that is provided to us and works hard on encouraging our data partners to adopt it.

Other developments that are relevant to FAIR metrics include the upcoming implementation of a 'single sign-on' authorisation mechanism across all our products, and the continuous effort to adapt our data model to new application and data-sharing needs, in a community-driven way (a recent example being an extension to represent and publish the full-text content of [newspapers \(https://www.europeana.eu/portal/en/collections/newspapers\)](https://www.europeana.eu/portal/en/collections/newspapers)).

Stay informed and join us

To stay informed about developments like those outlined in this post, join the [Europeana Research \(https://pro.europeana.eu/network-association/special-interest-groups/research-community\)](https://pro.europeana.eu/network-association/special-interest-groups/research-community) and/or the [EuropeanaTech \(https://pro.europeana.eu/network-association/special-interest-groups/europeanatech\)](https://pro.europeana.eu/network-association/special-interest-groups/europeanatech) communities of the Europeana Network Association, and follow us on Twitter ([@eurresearch \(https://twitter.com/eurresearch\)](https://twitter.com/eurresearch) and [@europeanatech \(https://twitter.com/europeanatech\)](https://twitter.com/europeanatech))

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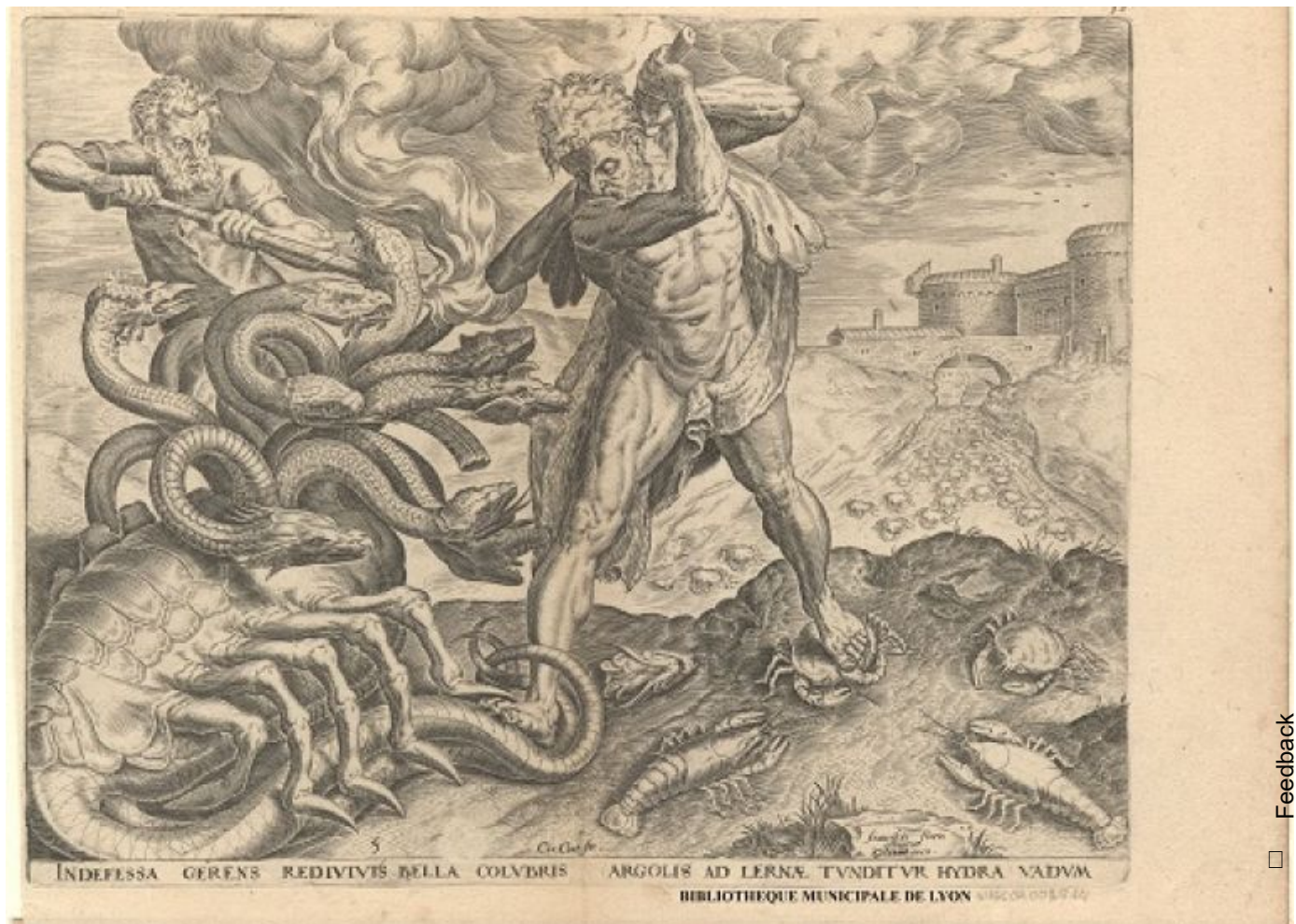
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Keeping digitised heritage accessible: the case of broken links

Ever find yourself frustrated by a link that doesn't take you to where you want to go? Is there anything worse than a 404 message that the page doesn't exist? Find out what we are doing at Europeana to combat this and boost SEO.

NEWS



And the quest for better metadata quality goes on: an update from the DQC

In March 2016 we announced the creation of a Europeana Data Quality Committee (DQC) to work on the various facets of data quality. The Data Quality subject is a Hydra ...

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