Europeana Strategy 2020-2025

Recommendations from the DCHE Sub-Group on the Europeana Strategy 2020-2025

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I. Introduction to the EUROPEANA Strategy recommendations

The new strategic plan for Europeana marks a point on the initiative's path where it will focus more than before on a single task: supporting the digital transformation of Europe's cultural heritage sector on top of being the common, multilingual access point to digital resources of Europe's heritage online.

While mindful that we need to safeguard the core components of the activities that have made Europeana an important agent of change over the past ten years, we see this shift in focus as an important pivot. One that recognizes the changing needs of citizens in relation to their heritage. Of the changing needs of cultural heritage institutions with regards to their digital transformation. Of the emergence of other players in the field. And of course, the fast-paced change in technology.

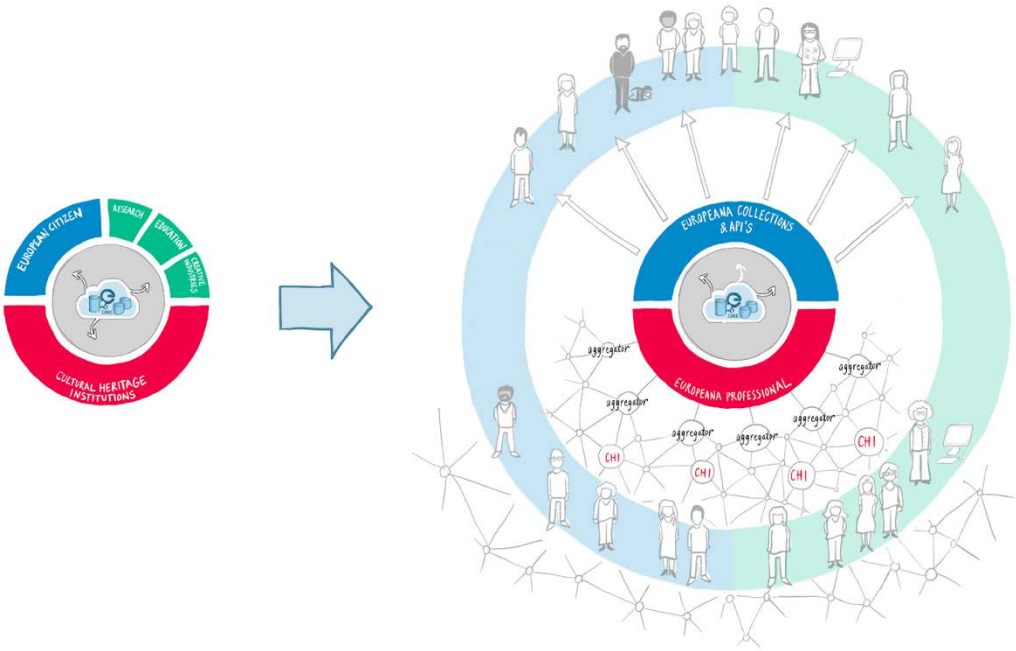
Cultural heritage plays a crucial role in the economic and social ambitions of Europe[1]. Key to this ambition is the digital transformation of the cultural heritage sector. This sector is large and diffuse and needs to be supported, and Europeana can play a pivotal role in making this happen. In order to succeed, Europeana must strive to become known in Europe and amongst cultural heritage institutions as an enabler of necessary digital transformation for the cultural heritage sector – an organisation and network that helps institutions fulfil their missions better in the 21st century.

These strategy recommendations see the Europeana Initiative strengthened, supported and reinvigorated as a strong networked organisation, driven to create impact. The recommendations are targeted

[1] Eurostat: the cultural and creative industries represent 5.3% of Europe's GDP and employs 8.7 million people. The EU has EUR 12.8 billion of trade surplus in cultural goods.

primarily at the operator of the Europeana core service. It outlines the responsibilities Europeana should take on in order to catalyse digital progress across Europe's cultural heritage sector in the next five years. However, Europeana can only achieve this through a concerted effort involving all stakeholders – cultural heritage institutions, aggregators, Member States and external partners.

II. New vision for EUROPEANA



Digital transformation is much more than a technical issue or about content and services generation with digital tools. It is a reality that is transforming all human activities including the core aims of cultural heritage institutions (understand, communicate, preserve and develop). Besides, it is also changing how end users consume culture and interact with heritage . In this context, the Commission report on the Europeana Evaluation[2] defined a new focus on the cultural heritage institutions, which the initiative should support and steer in their efforts towards achieving digital transformation.

Europeana's raison d'être is to provide an online public space for a common culture with quality aggregated content, which is interoperable and therefore more relevant for the users. Therefore, it is crucial to attach this digital transformation to the value system of Europeana and the European Commission around openness, inclusiveness, and mutuality.

Europeana promotes online accessibility and dissemination of European cultural heritage and ideally it should be balanced to represent cross-domain assets from all countries, comprehensive in time, and multilingual. Its most important outcomes have been to align digitisation of cultural heritage at a national and institutional level throughout Europe in compliance with common policies and taking into account the modernisation of the EU copyright framework. Interoperability and long-term preservation also make these efforts relevant.

2 https://ec.europa.eu/digital-single-market/en/news/ten-years-europeana-bringing-europes-cultural-heritage-digital-age

Cultural heritage institutions differ significantly, depending on the type of collections they manage, their domain, their funding, digital transformation uptake and their contribution via aggregators or directly to Europeana. The new strategy should take these factors into account.

Europeana is a powerful platform for storytelling, building narratives with a European perspective across cultural and national borders – also as a counterpart to the negative image of the EU in times of crisis.[3] Europeana should become a route to interact with intelligent and creatively visualised digital cultural heritage, enhanced by linked access to increasingly holistic data, making up memories and stories. It should engage and be useful to different types of audiences – focusing first on cultural heritage institutions – supporting in-depth (re)search and enabling contribution, while broadening and deepening Europe's cultural memory of people, places and events so as to enlighten the present. It should strive to be the EU 21st century multimedia Library (of Alexandria) and/or the EU encyclopedia on cultural heritage and science.

III. EUROPEANA's Mission

"Europeana supports the digital transformation of the cultural heritage sector"

What is digital transformation?
Digital transformation transcends the overall operations of CHIs. It is both about digital as technology and mindset. It is about digitisation of assets but also about people and skills, it is about values (embracing openness and participatory processes in all its forms from open licensing to crowdsourcing and leveraging citizen science), it is making people part of the curatorial process, and it is about digitisation of processes. It challenges CHIs' business models and communication strategies. It is changing the institutional culture – from being exclusive, introvert and authoritative to being open, inclusive, participatory, embracing change and experimentation.

An example of a digital transformation is found at SMK - Statens Museum for Kunst (the national gallery of Denmark). Inspired by the values of the Cultural Commons championed by Europeana, in 2012 the museum initiated a change to open licensing of their collection data and images. Open access to the digitised collection, however, was just the first step in a digital transformation which entailed changing the museum's organisation and perception of itself from an institution of experts to a facilitator of knowledge. Today, SMK works as a platform for participation, collaborating actively with users of their digitised assets – from educators and Wikipedians to creatives and start-ups. These achievements were facilitated by the museum's presence on Europeana Collections and its active engagement in the Europeana Network.

What is Europeana's role in it?
The Europeana Initiative brings together key actors from across the cultural heritage sector to ensure that the region's institutions fully realise their potential in driving the digital transformation of Europe.

Europeana can facilitate a digital transformation for the cultural heritage sector which for many individual institutions is difficult to achieve. Ideally, the digital transformation should arise from a

[3] See for instance the Europeana 1914-1918 and Europeana 1989 projects.

collaborative approach that involves the Europeana Network Association (ENA), the Europeana Aggregators Forum (EAF) and the Europeana Foundation (EF).

Europeana's ultimate goal is to increase the capacity of cultural heritage institutions to be relevant in the future. Europeana should focus on developing its digital offer that should include technological tools, technical know-how, consultancy and other services, policies, frameworks and capacity building methods that will make it easier for institutions to step into that space. Such digital offer must take into account the diversity of cultural heritage institutions, their different sizes, profiles and needs. Europeana should act as a catalyst and innovator for the sector.

IV. EUROPEANA's Values

Access to cultural heritage leads to positive social and economic change, and digital technology can support and accelerate that change. However, that does not simply mean applying technology, it means applying it with serious consideration to implementing core values.

Digital should mean 'Usable' in Europeana. One of Europeana's top priorities is to provide the impetus, expertise and tools to support cultural heritage institutions in harnessing digital to open up their collections - to make them available to be used in new ways. For that to happen, content and technology needs to be accessible. It needs to be easy-to-use and open, otherwise, the reach of any social or economic impact will be limited to the privileged few.

Europeana should work for 'Mutual' benefit. The Europeana Initiative is a networked organisation, a partnership of connected bodies and cultural heritage professionals. Europeana should continue to foster creative collaboration and teamwork, working towards common goals and for mutual benefit. As an initiative it can impact the digital transformation of the sector because collectively it is greater than the sum of its parts. In practice it means that technological innovation needs to be community-based and reciprocal, combining the best of sector knowledge and practices. The operator should continue to facilitate and coordinate this community exchange also supporting the EAN and EAF, and it should continue its leading role in developing and disseminating standards, best practices and open and usable technology.

The work of Europeana should be 'Reliable'. Europeana should continue to support the cultural heritage institutions that have safeguarded Europe's heritage for hundreds of years, who have organised it, structured it and made it accessible with great care and precision. Europeana should commit to ensuring that the digital data it works with is always authentic, trustworthy and robust, that it is easy to create with and that partners benefit from sharing it.

V. Strategic Positioning

A commons-based alternative to the global commercial players

From the beginning, Europeana was envisioned as an alternative to the global commercial players in digital culture, building on the principles of the Commons to the benefit of all European citizens. Therefore, it is crucial to attach this transformation to the value system of Europeana and the European Commission, based on openness, inclusiveness, and mutuality.

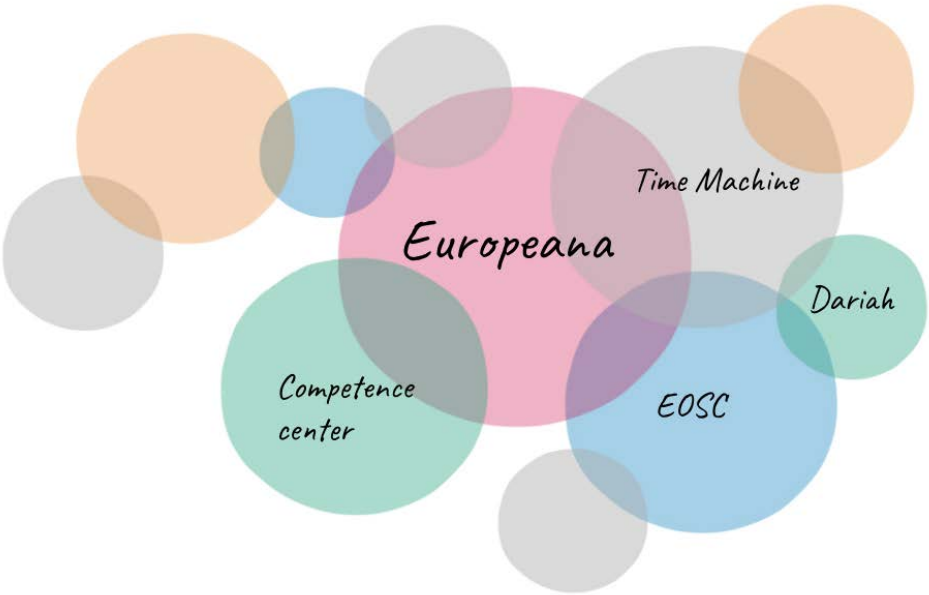
As one of the single bastions in contemporary society, cultural heritage institutions retain a high level of trust in the public opinion. The so-called Big 5 (Facebook, Google, Amazon, Microsoft and Apple) are met with growing scepticism as they have developed into platforms capable of monopolizing the value of public data and spreading false information at lightning speed. This poses a challenge to the level of public trust and knowledge-informed democratic debate that modern Europe rests on. Europeana has a unique role to play in helping infuse the contemporary media landscape with validated and certified data and knowledge from the trusted sources of Europe's cultural heritage institutions. By providing the cultural and historical records held in their collections as free and open access as possible, cultural heritage institutions can offer a Cultural Commons of reliable sources to the benefit of all institutions and citizens in information society.

One thing is the media landscape, another the technologies that shape our societies today. Also here, Europeana can act as an alternative to the commercial tech giants by developing and using cutting edge technologies such as Artificial Intelligence in ethical ways that support the basic humanistic values on which the European Union is founded. Europeana can help the cultural heritage sector to utilize technologies in ways that support the sector's mission, not the other way around, thereby creating a counterpoint to a one-sided commercial exploitation of the potentials inherent in digital technologies.

Different and unique approach to digital cultural heritage as a public service

The European Union's motto 'Unity in Diversity' is more relevant than ever before in a globalised society where multiple cultures live and work next to and with each other. Europeana offers a unique approach to contribute to this unity in diversity. This is achieved through sharing a platform of cultural heritage records from all types of cultural heritage institutions from all European countries and regions, and through maintaining and growing vibrant communities and networks of experts, practitioners and stakeholders in the cultural field – i.e. in ENA and EAF. The respect for cultural diversity reflected in Europeana is a core value proposition to our societies and political debates today.

In the last strategic period starting in 2015, Europeana was the single platform that coordinated efforts around digital cultural heritage in Europe on non-commercial conditions. In recent years, new actors have emerged in the field of digital transformation, such as Time Machine (TM) and the European Open Science Cloud (EOSC). This can be seen as a sign that the role and impact of digital cultural heritage is increasingly understood and appreciated. That calls for a clarification of Europeana's unique position in the field. Europeana's main contribution to the digital transformation of the cultural heritage sector lies in aggregating and linking cultural heritage data in meaningful ways, creating opportunities for the Education, Research and Creative industries as well as European citizens to access, use and enjoy them, in developing shared standards, services and tools that benefit the cultural heritage sector, and in facilitating capacity building through networks and communities that support the needs of Europe's cultural heritage institutions. The raw digitisation of cultural heritage is not among Europeana's tasks although it is acknowledged that a huge digitisation gap still remains to be filled. Therefore, Europeana should welcome that other actors take on this important task and pursues close coordination and partnership with actors like TM and EOSC in order to maximise the joint impact they can have on the digital transformation of Europe's cultural heritage sector. Europeana is in a fit position to take the lead in coordinating efforts with other actors in the field.



The important role that Europeana has to play in creating pan-European narratives
Europeana is – and should continue to develop as – a powerful platform for storytelling, building narratives with a European perspective across cultural and national borders; also as a reminder of a European sense of belonging in times of crises. Europeana has made great impact at both national and European level and succeeded in raising awareness with the Europeana 1914-1918 and Europeana 1989 projects.

In addition, the Europeana Initiative should relate itself to other public European cultural initiatives, as mentioned, TM, EOSC and the European Culture Cloud. Here, Europeana can serve as a stepping stone offering infrastructure, standards, and valuable data that others can use and adopt, as well as a network that can function as a multiplier. Vice versa, there will be other initiatives such as developments in E-translation, Artificial Intelligence and Machine Learning, which Europeana can use and build upon. This will anchor and position the Europeana Initiative as a key component in a larger distributed cultural sphere built on similar principles. Europeana should continue taking the leading position in digital transformation, not only by developing standards and rights, and giving visibility of aggregated EU material under one portal, but also by offering CHIs more digital tools that can support them in their digital transformation.

Advantages of a pan-European approach
Cultural heritage institutions today are approached by and work with commercial players, not only global players such as Google Arts & Culture, but also commercial image services, digital proprietary solutions etc. that are based in their own countries. However, the cultural heritage sector cannot rely on such commercial and national systems to have the same durability as the institutions they serve. The same goes for global commercial platforms (i.e. the Big 5) whose main purpose is to run profitable businesses, not to serve the common good.

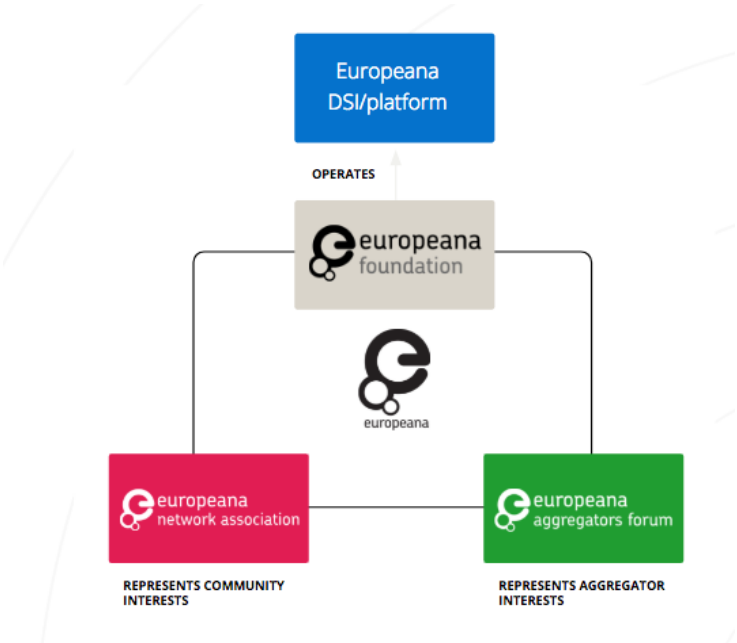
Europeana has acknowledged the difference and the coexistence of different national and global commercial players within the cultural heritage sector. But the Europeana Initiative also holds a unique

position given its relationship with EU policies and strategies: inclusiveness, online accessibility, reuse of public information, promotion of EU research, development and innovation for the European cultural heritage sector. In the next strategic cycle, Europeana should also work towards a greater harmony with national policies on digital cultural heritage.

An agenda that is affecting many cultural heritage institutions in the Western world today is the increasing global awareness of the origins of the heritage objects held in collections. The cultural heritage of Europe is inseparable from the colonial history of the continent, and institutions everywhere need to handle a growing demand to recognise different framings of the past than the traditional Western ones, and to repatriate heritage that was brought to Europe as part of colonial infrastructures. This also has implications for digitised cultural heritage.[4] Europeana can help cultural heritage institutions tackle the specific complexities of digitising and opening up collections that contain cultural heritage stemming from countries and cultures outside Europe with moral and ethical respect for the original creators and their communities.

VI. EUROPEANA's Ecosystem

The Europeana Initiative is financed by the European Commission and supported by the Member States. It is run by the operator of the Core Service (the EF with a consortium of partners in close relationship with EAF and ENA).



While the Core Service is responsible for running the core activities, the multiplier effect of the activities is achieved via the extended network of individuals and organisations that are part of ENA and EAF. In particular, ENA, with its community of over 2,600 cultural heritage professionals, is committed to promoting and strengthening the Europeana Initiative, disseminating its activities within professional networks across Europe, fostering innovation and cross-border and cross-domain collaboration between

[4] See for instance the 2018 Savoy-Sarr report on restitution of African heritage from French museums, and the critical response to it by professors Mathilde Pavis and Andrea Wallace https://zenodo.org/record/2620597#.XaWwTZIzaou

people from cultural heritage, creative, technology, education and research areas. The EAF, with its network of 37 Europeana accredited aggregators, represented by both the pan-European networks of domain and thematic aggregators and by the growing network of national aggregators, has been proven crucial for maximising the impact of the Europeana Initiative on the digital transformation of cultural heritage institutions across Europe, by supporting them in preparing and publishing high quality digital content and metadata on Europeana, and by disseminating and fostering the adoption of standards, best practices and new technologies.

This creates a balanced ecosystem where the Member States are supported in their efforts by the Europeana Initiative through building standards, technologies and capacities that can be adapted and adopted on a local level. This should secure maximum impact of the initiative.

The success of Europeana is therefore also dependent on the interplay of the Europeana Initiative and the activities on a national level. During this strategic plan, efforts should be developed by the European Commission and the Member States to secure the commitment of the Member States to Europeana and the digital transformation of the cultural heritage sector.

This strategic plan stresses the importance of the relation between Europeana and Member States in terms of clear responsibilities and roles for both parties. As a general approach to this, Europeana's initiatives should focus mainly on the issues that are faced on both local and national levels and which benefit from a European scale (such as copyright issues, standardisation, training sets for AI, etc.) On the other hand, Member States should maximize the impact of the activities mentioned above at a national level, providing alignment and working in close synergy with the Europeana Initiative. Therefore, it might be needed to envision new ways of working together in order to facilitate this alignment.

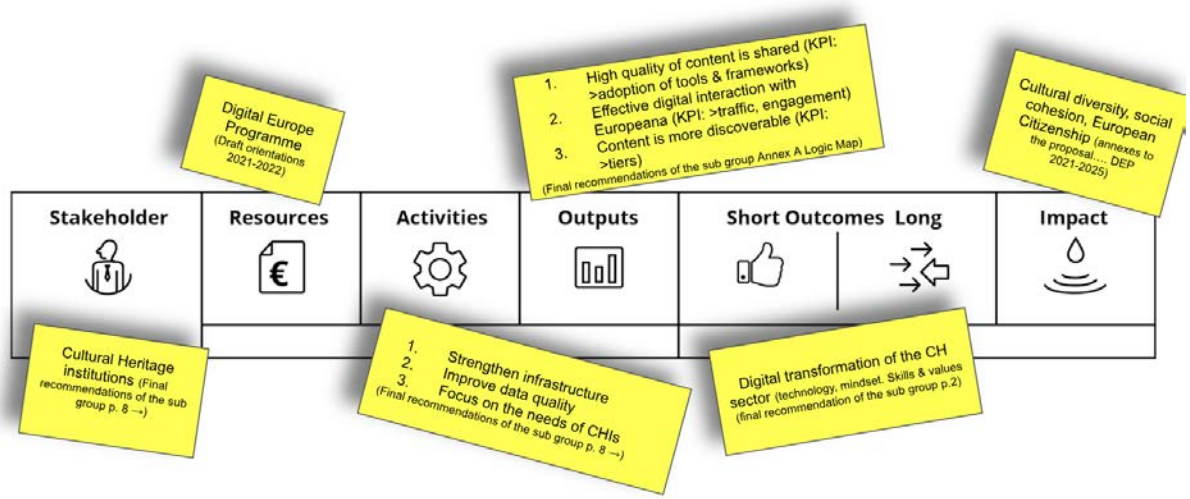
VII. Impact

The Europeana 2020+ strategy has three main priorities:

1) Strengthen the infrastructure and align it with technical advancements
2) Improve data quality
3) Focusing on the needs of CHIs

The high-level impacts recommended to focus on in this strategy are visualized in the Change Pathway below[5].

[5] This is a key tool in the Europeana Impact Framework. This framework is used as the proposed methodology to evaluate the implementation of the strategy.



Impact

Reading the pathway from right to left, the impact areas Europeana should aspire to contribute to during the 2020+ strategic period are: Cultural diversity through access to cultural heritage; social cohesion; and active cultural citizenship among Europeans. These are the areas explicitly listed in the Digital Europe Programme.

Outcomes

In order to achieve this, Europeana should foster digital transformation across the cultural heritage sector as the key outcome, in terms of adopting and implementing state of the art technologies, developing 21st century skills and values, and changing the organisational mindsets. The indicators for this could be that more cultural heritage institutions adopt common digital standards, more cultural heritage professionals engage in and contribute to ENA and EAF, and that they are able to collaborate with third party platforms enabled by Europeana's standards and tools (e.g. APIs).

Outputs

The outputs needed to accomplish this are that cultural heritage institutions share their high-quality content on the Europeana platform, that the content is made more discoverable, and that more – and more diverse – audiences interact with and reuse the content where they need it.

In order to demonstrate these outputs, the operator should track the adoption of Europeana's tools, standards and frameworks among European cultural heritage institutions – for instance the increase in open and reusable content made available in Europeana Collections – and the traffic and engagement across the platforms where Europeana's data are being accessed and used (Europeana Collections and third party platforms like Wikipedia) and also the effective use of the Europeana APIs.

Activities

To reach these outputs, Europeana should set in motion the following three clusters of activities that reflect the main priorities of the strategy:

The technical infrastructure and content discovery should be strengthened by

- Improving the quality of service for data providers and aggregators (shared aggregation infrastructure and services, statistical dashboard, APIs)
- Strengthening multilingualism

- Improving findability and interconnectivity of content and browsing features for end users

Data quality should be improved by

- Setting new targets for the share of tier 2, 3 and 4 content in Europeana
- Improving the Europeana Publishing Framework with a metadata component, hiding tier 0 content, eliminating broken links, and adopting automatic metadata enrichment tools
- Promoting high quality content in search and browse on Europeana Collections
- Investing in high quality curatorial thematic approach (in close collaboration with domain and thematic aggregators)
- Increasing the automation of tasks using AI, language processing, machine learning, regularly translated content, and more (in synergy also with the Generic Service projects)

The needs of cultural heritage institutions will be in focus through

- Facilitating digital transformation in the cultural heritage sector by exploring and knowledge sharing about cutting edge technologies such as AI, machine learning, big data and interactive technologies
- Offering such technological tools, technical know-how, consultancy services
- Raising the profiles of cultural heritage institutions contributing to Europeana and maximising their outreach to users
- Supporting capacity building for cultural heritage institutions in digital best practices, data standards, organisational development, knowledge transfer, etc.
- Enabling content sharing and reuse on markets and services with higher potential impact for cultural heritage institutions, for instance education and research.

Resources

The resources for Europeana 2020+ comes primarily from the Digital Europe Programme, along with support from Member States, which can be co-funding and/or be engaged in the Europeana Network and communities, and the Europeana Aggregators Forum.

Stakeholders

The main stakeholder for the 2020+ strategy period is Europe's cultural heritage sector. Other stakeholders include the Member States and the European Commission whose involvement in leveraging the Europeana Initiative is crucial. In addition, the markets and services that will benefit from access to Europeana's content – such as the Education and Research markets, and other digital knowledge platforms like TM, EOSC, and Wikipedia – are important stakeholders to form partnerships with.

Quantitative KPIs for the strategy could be formulated after consultation with the DCHE on the strategy recommendations.

VIII. Strategic priorities and specific objectives and instruments

As stated in the independent evaluation report, for the Europeana platform operator "it is necessary to narrow down the focus of efforts and concentrate resources on those tools, services and activities of the DSI (digital service infrastructure) that are most valuable and demanded by cultural heritage institutions (CHIs) across Europe. This refocusing of efforts would help to ensure highest quality of services and maximum impact."
Reinforcing the focus on CHIs becomes more scalable and effective using the multiplier effect of the accredited aggregators that already maintain direct contacts and offer support to thousands of CHIs across Europe.
There are several actions that could be done on the technical side to make the provision of digital cultural content easier and more rewarding for CHIs and aggregators.
Below we outlined three main lines of action which aim to reach several objectives that are listed in order of priority. Some of these objectives can be reached in the short term (before the end of the Europeana DSI-4), some others should be considered for the mid-long term (DSI-5 and beyond).

1. **Strengthen the technical infrastructure and align it with technical advancements**
   According to the new strategic focus on CHIs, one of the main actions on the short term should be to invest more resources, in the framework of the core service activities, to improve services aimed at aggregators and CHIs, in order to address one of the main pain points outlined in the Europeana strategy 2020: that it's still not easy or rewarding enough to share content with Europeana. Achieving both a fully functional core service infrastructure and an ambitious innovation program (see also objectives 2c, d, e), which is needed for Europeana to remain a key knowledge hub for digital transformation in the CH sector, depends on a sufficient and clear allocation of the available funding going forward. It should therefore be taken into account, along with the DSI core service funding, additional dedicated and sufficiently sized funding programs, such as the CEF Generic Services, or also coming from other programmes, like Horizon Europe, that can support this kind of innovation activities in order to keep the infrastructure always aligned with state-of-the-art technologies.

   Specific objectives

   a. *More efficient aggregation infrastructure*

      Improving the aggregation services and the Europeana aggregation infrastructure should become the first priority of the Core Service platform that can significantly simplify the process of making content and metadata available through Europeana.
      The release of an efficient ingestion platform (Metis) has been long awaited by aggregators in order to speed up and streamline the aggregation process, and it should be prioritised since this is a crucial element for "making it easy and rewarding for CHIs to share high-quality content" in Europeana. The development process of the ingestion platform and the related services should primarily involve national, regional and domain/thematic aggregators in the requirements gathering and in the subsequent testing phase.
      The objective should be to release a platform that can be used directly by aggregators and later on also by CHIs for the ingestion, check and publication of cultural heritage content in the Europeana Collections portal, in order to overcome the actual bottlenecks in the publication workflow created by a centralised ingestion office that should constantly ingest, check, give feedback (eventually re-ingest) and then publish metadata coming from several aggregators and CHIs.
      This platform, as originally planned, should also offer services open to third-party aggregation platforms (eg. MINT) that allow validation and preview of metadata records in order to optimise the publication process coming from external aggregation infrastructures.
      This platform should also make it easier for content providers (CHIS and aggregators) to update the content already published through Europeana.

b. *Better services for data providers and aggregators*

Offering to cultural heritage institutions and aggregators a fully working and efficient set of APIs (for interacting with stored metadata, annotations, etc.) is crucial to allow them to support reuse and engagement of different stakeholders (Creative Industries, Research, Education).
In the Core service framework, the actual set of APIs (Search, Annotation and Entity APIs) should be improved, well documented and made available in order to foster reuse and valorisation of the content published in Europeana also in the different markets. In particular, the Annotation API should allow storing, indexing and presentation of annotation directly in the Collections portal. These APIs should be promoted and released with an extensive set of documentation to facilitate and make their use and application by third parties more effective.
Content providers and aggregators also need tools to measure the use and the impact of their content in Europeana. For this purpose, it is recommended to revive the development of the statistical dashboard for data providers. This dashboard should be made available first for aggregators and later also for CHIs and should offer basic information, like how many records/objects a data provider has available, of which type and in which Tier, as well as insights on the access and usage statistics of content on the Europeana Collections portal for each data provider or aggregator in order to analyse the impact of the published collections (eg. most viewed items, visitors per country, top referral sites, distribution of published content by type, country, etc.).

c. *Improve findability of content/browsing features*

A good search engine offered by Europeana, and most of all a good indexing mechanism of all its content to enable other general search engines like Google to spread this information further, as well as multilingual access based on Linked Open Data standards, will be a basic requirement to make it beneficial for CHIs to contribute their data to Europeana. For this reason, it is recommended to look further into Search Engine Optimisation (eg. fully exploiting Schema.org).
The browsability of content on Europeana Collections should also be improved, allowing the possibility to contextualise, compare and interlink content. In this context, the recent work on the browsing of content through the semantic entities should be prioritised.
A long-awaited user management system on the Europeana Collections portal should be implemented in order to allow authenticated users to create, organise and save collections of relevant items for research, reference and later reuse.
The curatorial thematic approach has proven effective in terms of user engagement, so it should be encouraged. New overarching themes should be proposed, and editorial content (exhibitions, blog posts, etc.) should be localised in multiple languages to make it widely accessible, also with the support of domain and thematic aggregators already involved in the DSI core service initiative. Support of and synergy with thematic oriented GS projects is recommended in order to better scale in the editorial production. In this context, it is suggested to carefully evaluate and plan these synergies before awarding this kind of projects.

d. *Evaluate and integrate the technical outcomes from CEF GS projects*

Currently, Europeana Foundation has been funded through CEF to build and maintain, as the initiative's operator, the Core service infrastructure that includes the portal, the aggregation infrastructure and the APIs. Along with the Core Service funding, the CEF programme is also providing the Generic Services calls that are funding consortia (mainly composed by aggregators, CHIs and technology providers) to build, among other things, innovative tools that reuse Europeana content or enhance it. A number of interesting and valuable tools and services have already been built, and more will be built in the coming calls, which are tackling very important issues, like automatic or semi-automatic metadata enrichment and validation, that can eventually be reused to enhance the core infrastructure and bring concrete benefits to all the data providers. The Europeana operator should carefully evaluate the technical outcomes of these projects and provide a plan on how and which of these tools/services will eventually integrate in its core infrastructure (taking also into account that the Europeana Foundation, as actual operator, is often directly involved in these proposals).

2. **Data quality over quantity**

Data Quality is among Europeana's top priorities for its 2020 Strategy and one of the main activities in the Europeana DSI core service procurement. The lack of structured and rich descriptive data highly affects the accessibility, visibility, and reusability of the available digital content thus limiting the user experience on the Europeana Collections portal, and the same applies for the lack of high-quality content. For this reason, it remains crucial to invest resources in activities related to metadata and content improvement in collaboration with aggregators and data providers, also using new technologies like machine learning algorithms to automatically or semi-automatically enrich metadata records in a faster and scalable way.

Specific objectives

a. *Increase high-quality content*

Providing high-quality content for various stakeholders is a goal that cannot be achieved if CHIs do not get actively involved in digitising and making available such content.
The Europeana operator can support CHIs in addressing digitisation challenges and raising competency levels on this topic, especially through the existing aggregators' networks, that can provide expert support by peers in different cultural heritage domains. In particular, the actual Publishing Framework (EPF) could be improved to better define quality tiers for audiovisual content (including also parameters like subtitles) and also for 3D content, setting also guidelines for 3D digitisation.
But the real incentive in providing new high-quality digital content can come from CEF Generic Services funding for domain and thematic aggregators and their CHI members and from Member States through specific funding and awareness actions towards their CHIs and their national and regional aggregators in order to provide high-quality content and set quality targets for content provision (the DCHE group could help on this).
A key element to this is also the development of an editorial strategy that envisions campaigns/seasons on relevant pan-European topics and involves aggregators and CHIs in their production. This editorial strategy can be supported by the GS funding targeting domain and thematic aggregators and the CHIs in their networks, and also as part of the Core service, but it should also count on the support of Members States through their national aggregators.
Improving the user experience on the Europeana Collections portal, and raising the quality of content, can also be achieved by hiding in the search results Tier 0 content,

which means practically hiding to users records with, for example, broken links to digital objects. It is important, anyway, to notify the responsible data provider or aggregator about the metadata records that have broken links or links to very low-res digital content, giving all the necessary information in order to allow them to take remedial actions and make them visible again.

b. *Increase high-quality metadata*

As mentioned above, metadata quality is key to enable discoverability, accessibility and reuse of digital content.
The Europeana operator should finalise and disseminate the new version of the EPF which contains also a metadata quality metrics to rank published records in order to stimulate data providers to improve their metadata accordingly.
Resources in the core service should be allocated to allow metadata quality improvements by domain and thematic aggregators with clear targets specifically set using the newly defined metadata component of the EPF.
With the same criteria, metadata quality targets should be set by the Member States and their respective national aggregation infrastructures.
In relation to metadata quality improvement also the following objectives (2c, d, e, f) should be implemented.

c. *Experiment semi-automatic metadata enrichment methods*

Manual metadata quality improvements often face a problem of scale, since improving the metadata quality of hundreds of thousands or even millions of records coming from different sources often requires a huge amount of time and resources that aggregators and CHIs unfortunately cannot afford. In this context, the application of Artificial Intelligence (AI) tools and in particular machine learning networks for automatic enrichment in combination with the employment of human knowledge provided by domain experts can offer a remarkable opportunity for improving the quality of metadata stored in Europeana. Machine learning algorithms can process high volumes of data and the outcome can be validated and/or corrected by the domain experts (using tools mentioned in 2e). Such algorithms have been successfully used in many domains (e.g. healthcare, fintech, marketing) to speed up manual processes with similar characteristics to metadata enrichment.
CEF Generic Services funding should be dedicated also to experiment with tools for semi-automatic metadata quality improvement and the Europeana operator should evaluate the outcomes of these experimentations and eventually integrate and deploy these tools into the core service (as recommended in 1d).

d. Strengthen metadata multilingualism via cross-DSI collaboration

Although there has been considerable effort to define and propose solutions towards multilingualism, this effort has been limited in producing reports and white papers as a result of the multilingual task force set up by Europeana. Additionally, the focus has been given on how to achieve multilinguality on the basis of metadata enrichment (either manual or semi-automatic) and the use of multilingual vocabularies. This work on metadata enrichment is in the right direction, however the Europeana operator should also look into alternative/complementary approaches. One complementary approach is the use of the eTranslation service. eTranslation is a Connecting Europe Facility (CEF) building block. Its main goal is to help European and national

organisations exchange information overcoming language barriers in the EU, by providing machine translation capabilities that will enable potentially all Digital Service Infrastructures (DSIs) to be multilingual.
The actual reuse and fine tuning of the eTranslation service and its application to cultural heritage metadata, can be - once again - experimented and tested also in the forthcoming CEF Generic Services calls, and the Europeana operator should get the chance to closely evaluate the results without the need to invest directly particular resources from the Core service budget.

e. *Validate and improve metadata enrichment through crowdsourcing*

Crowdsourcing is a methodology that can reduce costs and improve the speed and scalability of a process that is applied to a high volume of content, such as in the case of the Europeana repository. Machine learning techniques for metadata enrichment (e.g. feature extraction from digital content or named entity recognition from metadata) have proved to be effective and they can be applied efficiently to large volumes of data, under certain circumstances (availability of training datasets). However, the final results may not always be very accurate as the metadata enrichment in cultural heritage is very much context dependent. The recent advances in Artificial Intelligence have shown that whenever the accuracy of the results depend on the context of a use case, the combination of human and machine intelligence can bring optimal results. Many studies and research papers in literature propose methodologies that place humans-in-the-loop to validate the results in order to improve accuracy and better train the machine learning networks. These technologies should be embraced by Europeana. It should start with the low-hanging-fruits, which are the integration and use of platforms that have been developed in the community (mainly in GS projects, like EnrichEuropeana and Crowdheritage) and promote the benefits and the adoption of crowdsourcing among aggregators and CHIs in order to actively contribute in the validation of automatic enrichments or directly involving users in manual enrichments of published metadata. Crowdsourcing platforms, in fact, can also be used to manually enrich the metadata in dedicated campaigns that can exploit the contribution of the “crowd” also through the gamification of these processes. To make these platforms and their workflows effective, Europeana operator should finalise and deploy the Annotation API in order to properly aggregate, store, index and present the enrichments created/validated by the users and also deploy a user management service on the Collection portal.

f. *Set up a cultural heritage training repository for machine learning networks*

The recent advances in the area of Artificial Intelligence and in particular in machine learning has (digitally) transformed the world and it is the main vehicle of the so called 4th industrial revolution. Europeana should participate in and exploit these technologies, as mentioned above. Machine learning has proved to be a mature technology for automatic metadata enrichment. It can be used to extract entities from text (e.g. using NLP), translate metadata in many languages using machine translation, extract features (e.g. person names or objects) from images, video and sound. It can even be used to facilitate more reliable aggregation services by providing ways to automatically map and transform from one metadata standard to another, or automatically create thematic collections of items in Europeana based on specific concepts defined by a user and extracted using these technologies. There can be many other areas in which such technologies can bring faster and scalable results for Europeana and CHIs.

As these networks require a considerable amount of data (and metadata) to be trained, Europeana should work towards setting up a space where aggregators and CHIs can provide and share annotated datasets that will enable training for and evaluation of these algorithms. The next step would be to invite universities, research institutes and private companies to use these training datasets in order to propose and develop innovative solutions that will automate several tasks (from metadata mapping to their enrichment) contributing to the digital transformation of the whole cultural heritage sector.
The Europeana operator should delegate the work of establishing such training repository for machine learning networks to research institutes that have the relevant scientific expertise and are already collaborating in the Europeana initiative, both in the Core and in the Generic service.

3. **Focus on the needs of CHI's**

Europeana as a crossdomain platform can support CHIs by showcasing and proving the importance and added value of digitisation, adoption of standards, interoperability and networked projects to make quality content useful for a global online audience and foster innovation. A particular attention should be devoted to small and medium CHI's that do not have the internal skills and capacity to face alone the digital transformation challenges. Organisationally, Europeana can support institutions on a practical side by providing guidelines, sharing best practices and results in order to help CHIs in their digital transformation. Europeana has already made significant strides in a sustainable direction by providing rights standards, data models, publishing frameworks, etc. An important addition in the future strategy is to develop Data and Statistics frameworks in order to encourage quality contributions, i.e. data visualisation tools to display statistics for different target audiences about distribution of content by domain, institution, country or content type (see also 1b). Development of collaboration and synergies with Member States in supporting CHIs in their digital transformation should also be a priority.

Specific objectives

a. *Promote a semantic interoperability framework*

Europeana has invested many resources in adopting and building standards and infrastructure that ensure semantic interoperability. The definition of EDM, the use of vocabularies and the development of the APIs provide a good level of semantic interoperability. However, there has been given limited effort on promoting semantic interoperability across Europe, which would be a step towards digitally transforming the CHIs. EF has followed a centralised approach, which on the one hand helped in setting up the infrastructure faster and more organised, on the other hand Europana became a (central) point for semantic interoperability across the world. CHIs remain behind the wall of Europeana.eu and have made very little steps in modernising their infrastructures and being semantically interoperable with other CHIs and international initiatives. Europeana should promote the benefits of using well-described data and sharing them through a common API with a common query language. The willingness to use the Resource Description Framework (RDF) to describe data, to publish data through SPARQL endpoints and to interconnect to other systems using Linked Data APIs is present, in general, in CHIs and in Europe in particular. However, linked data is not yet the common standard among CHIs. This can be explained mainly for two reasons: a) the availability of useful linked data sources is limited and b) finding solution providers with the necessary Linked Data skills or an interest to invest in linked data technologies is difficult. Therefore, there is a need to showcase the value

of linked data and inspire CHIs to get started in building their Linked Data environment.

b. *Facilitate the digital transformation of CHIs*

The Europeana operator should continue to offer guidelines covering various topics of digital transformation – such as digitisation, metadata enrichment, semantic interoperability, content creation, licensing, reuse, business models, innovation – and promote them on the Europeana Pro website that should be revised to make it more usable for CHIs. The website should also showcase articles that illustrate experiences and best practices from the Europeana Network and the Europeana Aggregators Forum, also in relation to the most innovative experimentation carried on in the Generic Services projects. Along with the EuropeanaTech conference, regular training workshops (on the model "train the trainers") should be organised in the framework of the Europeana Aggregators Forum on relevant topics like IIIF, semantic enrichment, AI tools and techniques for automatic and semi-automatic metadata enrichment, etc. The Europeana operator should encourage and facilitate, also through the EAF, the use of tools and techniques developed in the Generic Service projects that can concretely support CHIs in their digital transformations. As mentioned above, collaboration with Member States in these activities should be fostered.

c. *Raise the profiles and maximize the impact of CHIs activities and outreach*

Europeana should be a showcase of how technology can create added value services for cultural institutions in a way that is affordable, scalable, measurable, useful, and an effort that should be preserved. The implementation of the new strategy will have to be evaluated and feedback will inform what CHIs in the first instance, and end users in the second, use Europeana services for and what they gain from it. Therefore, more emphasis should be put on the partner institutions on Europeana Collections. The strategy should include working closely with Europeana aggregators (national, domain & thematic), exploiting the existing communities and the connected expert hubs that they actively maintain and ensuring that the aggregators' contributions and results are visible, so as to encourage CHIs to participate. On a national level, the Europeana Initiative needs to comply with national policies and rely on strong national infrastructures in order to reach the CHIs appropriately and connect with the local situations, in this context a closer collaboration and alignment with Member States is required. ENA is also a crucial place for raising awareness and building partnerships, i.e. towards the stakeholders CHIs want to reach. The new strategy should make sure the ENA is supported and its work well structured. The same applies to the EAF and the network of domain and thematic aggregators that can provide a multiplier effect in supporting CHIs in developing partnerships and reaching out to the Research, Education and Creative communities. This is a way to support these stakeholders while maintaining the CHIs as the primary target group of Europeana. More efficient communication on the Europeana Initiative – its efforts, results, channels, networks and impact – is needed to reach both the primary target group of CHIs all over Europe, and ultimately to make Europeana known as a unique and reliable resource of cultural heritage knowledge, services, and experiences for the European citizens. A crucial effort lies in convincing CHI managements to invest resources in contributing their collections to Europeana. What is the reward for them? Individual CHIs need good arguments to contribute, and the uneven distribution of national aggregators across European member states needs to be tackled.

d. *Capacity building - both at 'hands on' and management levels*

CHIs require skills and training for capacity building and working peer-to-peer through networks/communities. Information specialists working within and with CHIs are key players in the new strategy. In particular the existing and active domain communities of professionals and practitioners established by the Europeana Aggregators and involved in digital cultural heritage expert hubs are a crucial asset in fostering the capacity building and raising the competency levels of CHIs. It would be beneficial to the sector if Europeana would also develop as a knowledge center to brace CHIs organisationally for the digital transformation, providing advice on which skill sets to include in staff and how to set optimal teams.
Europeana's international profile is leading in Europe. The strategy should include scaling with partners to foster deeper involvement from CHIs, for instance by contacting, attending conferences or lobbying with organisations (EU National Information professional associations, international associations related to heritage, and other national initiatives beyond Europe and other fields such as IPR, digital content such as audiovisual, etc.), as they can prove very useful in capacity building, raising awareness of digital transformation and to complete formal education of future professionals.
Since CHIs already have access to various professional associations and these associations can act as an important catalyst within the different countries, Europeana might appeal to CHIs to act as ambassadors within these associations.
Scaling with partners in activities like training, support and capacity building can be more efficiently and easily achieved moving from a centralised 'one-size-fits-all' approach to a decentralised model exploiting the existing offer of specialist support on different digital cultural heritage issues available in the ENA and the EAF expert hubs.
In the new strategy, more resources should be invested for CHIs training and support in a more scalable way, through such existing expert hubs, mainly developed and maintained by domain and thematic aggregators.

e. *Focus on markets and services with higher potential impact*

Europeana should enable CHIs to produce educational resources in ongoing initiatives such as Historiana. CHIs are not sufficiently aware of these partnerships, but they would profit from them when generating educational content. Europeana should also give CHIs the possibility to package their content for learning platforms, supporting the export of content in e-learning standard formats and allowing the embedding of content in educational platforms, also through the use of properly developed APIs.