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D5.1 Assessment of the different aggregating platforms and their aggregation requirements

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Statement of originality:

This deliverable contains original unpublished work except where clearly indicated otherwise. Acknowledgement of previously published material and of the work of others has been made through appropriate citation, quotation or both.

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Executive Summary

This document gives an overview of the results of research and a first assessment of European platforms that could act as aggregators for the Digitising Contemporary Art (DCA) project's content partners and ingest the content digitised within the DCA project to the Europeana portal.

The assessment was done in terms of:

- The aggregators' attractiveness as a dissemination platform for contemporary art institutions;

- The user-friendliness, sustainability and services they offer;

- The aggregators' technical requirements for ingestion to their platform and aggregation to Europeana.

1. Introduction

One of the key objectives of the DCA project is to deliver to Europeana links to newly created digital reproductions of contemporary artworks and contextual documents from the content partners' repositories, together with related metadata and a thumbnail (preview) version of the visual material.

Europeana defines the concept of 'aggregator' in its *Aggregators' Handbook*, as follows:

> *"[...] an organisation that collects metadata from a group of content providers and transmits them to Europeana. Aggregators gather material from individual organisations, standardise the file formats and metadata, and channel the latter into Europeana according to the Europeana guidelines and procedures. Aggregators also support the content providers with administration, operations and training."* [1]

DCA does not intend to build an online contemporary art portal or to offer the services of a dedicated long-term aggregator for ingestion of new content to Europeana beyond the project lifetime.

Within the project, the mapping tool for harvesting and ingesting content into Europeana developed by the DCA partner NTUA (National Technical University of Athens) is available to all project partners. This tool has already proved very successful in other European cultural heritage projects[2] and will also act within the DCA project as a dark aggregation platform for those partners for whom a suitable aggregator cannot be identified. However, the whole range of possibilities and offers for harvesting content for Europeana with the respective benefits and requirements needs to be researched and assessed. Aggregation to Europeana may entail various issues outside enhanced technical performance and dedicated tools. Co-operations with dedicated portals would guarantee a certain degree of sustainability and continuous update of the flow of information from the partner to the Europeana portal. Yet, aggregating through a visible portal instead of using the NTUA tool might also bear some additional actions and decision-making issues, such as concluding IPR agreements and costs of membership or maintenance.

Acting as a facilitator for the transmission of digital content to Europeana, is in most cases only one of the goals of an aggregator. Using an aggregator may also have benefits that are not directly linked with Europeana. For this reason, the identified aggregators were not only assessed in relation to Europeana; the assessment also took into account additional considerations that might affect the decision-making process within the partner institution. These include: dissemination, knowledge sharing, and networking. The research and assessment results presented in this deliverable will help content partners to decide on the best option, based on their institution's goals and ambitions.

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[1] Europeana Aggregators' Handbook, version October 2011, p.8. Available online
http://europeana.acc.componence.com/documents/694736/720608/Aggregators+Handbook
[2] Such as ATHENA – Access to Cultural Heritage Networks across Europe, EUscreen - Providing online access to Europe`s television heritage, CARARE - Connecting Archaeology and Architecture in Europeana, ECLAP - European Collected Library of Artistic Performance and Judaica Europeana.

2. Methodology

DCA's content partners are based in 12 countries.[3] Therefore we looked for aggregators that are based in each of these countries or for aggregators that operate beyond national boundaries. It was not the intention to create an exhaustive overview of existing aggregators in Europe, but only to investigate those that ingest to Europeana and include either contemporary art or the national cultural heritage of a country represented by a DCA content provider. The list of identified suitable aggregators can be found in Annex I.

In July 2009 Europeana and ATHENA undertook a joint survey of aggregators with the aim of giving an overview of the aggregation landscape in Europe. Based on the findings of this survey, a preliminary list of aggregators that could fit the DCA partners' profiles was created. This list was broadened by means of desk research. After the initial contact with the aggregators this was narrowed down again to those aggregators who would be willing to take on board a DCA content partner and his digital content.

The research was carried out following these four steps:

1. We inquired about the type of aggregator they are and if Europeana aggregates their metadata;
2. We asked for information on sustainability of the supporting body or organisation behind the aggregator, and the costs for aggregation (e.g., membership fee);
3. If an aggregator showed interest in including a DCA partner's collection, we asked them to send us their technical requirements for providing content to them;
4. We performed desk research on: functionality, services, focus, presentation of the collections on the online portal, accessibility, and IPR issues.

The results reported in the following chapters are grouped according to individual aspects in order to avoid redundancy of information. Throughout the text, aggregators are referred to by their short name (e.g., GAMA instead of 'Gateway to Archives of Media Art'). A list of abbreviations can be found in Annex I.

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[3] These countries are Austria, Belgium, Croatia, Iceland, Latvia, Portugal, Greece, the Netherlands, Poland, Slovenia, Spain and Germany.

3. Role of an aggregator

In relation to Europeana an aggregator is often seen as a body that collects, sometimes even transforms, stores and transmits metadata and links to digital content to Europeana. Aggregators are therefor also considered as facilitators of data distribution towards Europeana. Instead of joining Europeana on the grounds of a one-to-one relationship, individual content providers join an aggregator that subsequently delivers their data to Europeana.
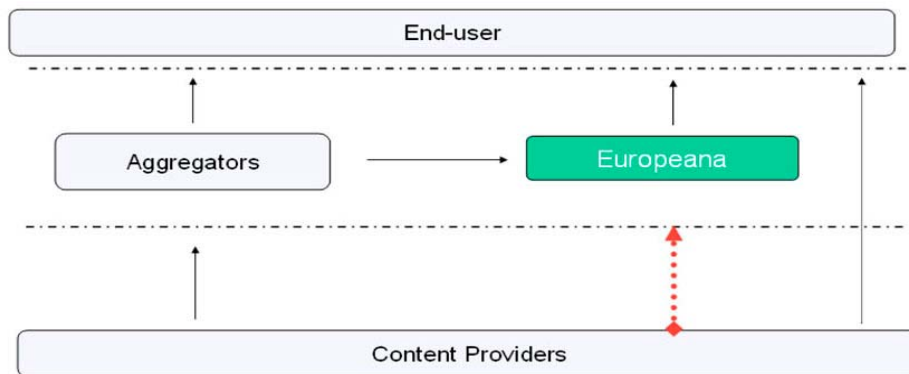
Data distribution channels around Europeana[4]

But in most cases aggregators do not solely transmit the information they collect to Europeana. Europeana also defines other roles in its Aggregators Handbook:

- Disseminating the vision and objectives of Europeana to their network of institutions in order to increase support for and involvement with Europeana;

- Providing valuable feedback about the issues and discussions from their field;

- Promoting and implementing standards farther along the content provision chain;

- Providing domain-specific expertise and skills to institutions and Europeana.[5]

For cultural heritage organisations, joining an aggregator certainly necessitates careful consideration of the benefits and extra efforts it entails. For instance, the partners joining an aggregator are more likely to participate in topical discussions on similar issues they encounter in their field. Aggregators form a long-term professional network of expertise and skill and can share knowledge with content providers. The supporting team behind an aggregator (e.g., technical and dissemination) gives them a voice in the European ecosystem of projects and other aggregators (e.g., take position in the current discussion about Europeana's Data Exchange Agreement (DEA), issue a joint statement as reaction to new European political decisions related cultural heritage). Joining a particular (e.g., national) aggregator might also result in political advantages such as an increase of state funding for your institution, or eligibility in new funding programmes.

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[4] Europeana Aggregators' Handbook, version October 2011, p.11. Available online
http://europeana.acc.componence.com/documents/694736/720608/Aggregators+Handbook
[5] Europeana Aggregators' Handbook, version October 2011, p.8. Available online
http://europeana.acc.componence.com/documents/694736/720608/Aggregators+Handbook

4. Aggregator types and scope of the platforms

In the context of Europeana and online collections the term "aggregator" thus refers to a software tool often in combination with an Internet portal that collates digital data from multiple online repositories.
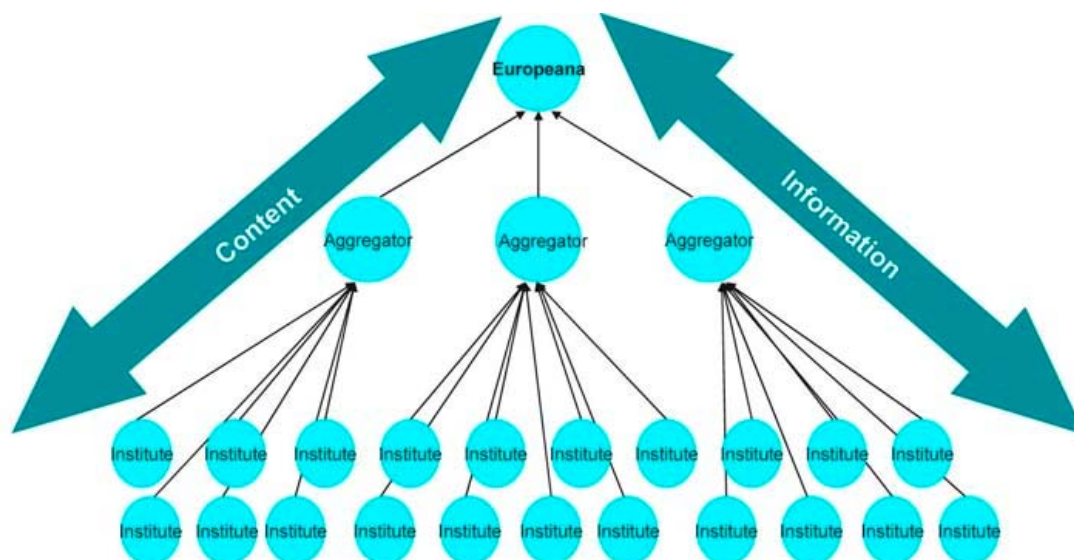
Aggregators in the Europeana organisational model[6]

Europeana itself writes: "The route to delivering content to Europeana is determined by four main criteria:

    a. Country

    b. Sector

    c. Scope

    d. Geographic level"[7]

Europeana defines these criteria in the following way:

a. Country

National institutions/portals representing several sectors are the preferred first contact point for Europeana. A new content provider is, therefore, first directed to the national aggregator, if this one is established. However, in some countries these national institutions/portals are not yet established, and another routing will then be suggested.

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[6] Europeana Aggregators' Handbook, version May 2010, p.3. Available online
http://group.europeana.eu/c/document_library/get_file?uuid=94bcddbf-3625-4e6d-8135-c7375d6bbc62&groupId=10602
[7] Europeana Aggregators' Handbook, version October 2011, p.11. Available online
http://europeana.acc.componence.com/documents/694736/720608/Aggregators+Handbook

b. Sector
In the current option the organisation selects the sector it is representing based on the sector-specific activities: Museum/Gallery, Library, Archive, Audio Visual, Research & Education, Portal, Publisher, Private, Others.

c. Scope
The criterion relates to the scope of the material for which you will be collecting data, whether as an aggregator defined by three domains, or as an individual organisation:

> * Single aggregator: organisations representing and collecting data from one sector only, such as a museum, a library or an archive (e.g., a national/regional/local museum, national/regional/local library, national/regional archive),

> * Cross-domain aggregator: organisations working across several sectors and collecting material from museums, libraries and archives (e.g., national portals and Europeana),

> * Thematic aggregator: organisations bringing together content on a specific theme from one or several sectors (e.g., Judaica that collects material from multiple sectors about the Jewish urban culture),

> * Individual organisation: the organisation is submitting data only from its own holdings and is not acting as an aggregator.
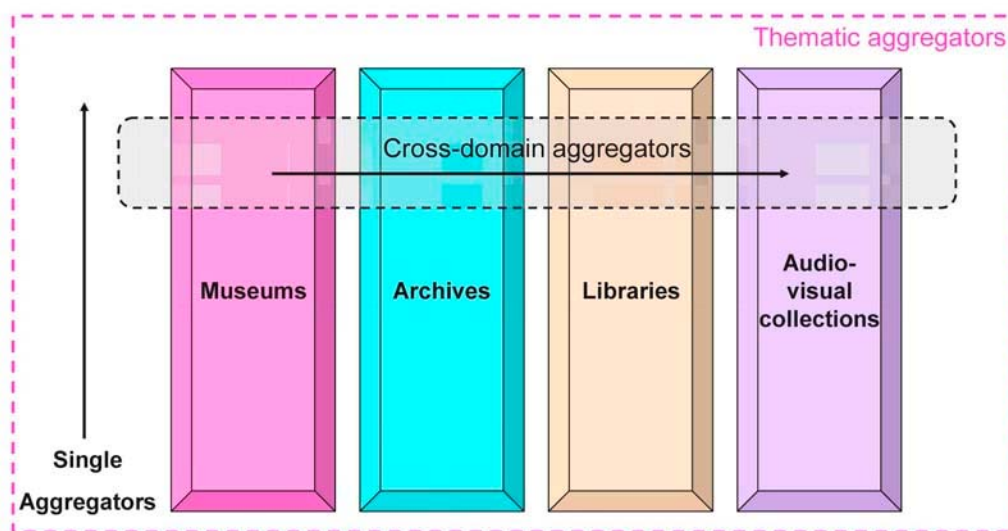
Aggregator types as defined by Europeana[8]

d. Geographic
Geographic levels refer to the level at which an organisation operates in terms of the data it is collecting. Are the sources regional, European or worldwide? An example of an organisation operating at a European geographic level is The European Library.[9]

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[8] Europeana Aggregators' Handbook, version May 2010, p.8. Available online
http://group.europeana.eu/c/document_library/get_file?uuid=94bcddbf-3625-4e6d-8135-c7375d6bbc62&groupId=10602
[9] Europeana Aggregators' Handbook, version May 2010, p.7-8. Available online
http://group.europeana.eu/c/document_library/get_file?uuid=94bcddbf-3625-4e6d-8135-c7375d6bbc62&groupId=10602

The distinction between Europeana's criteria is often confusing: isn't 'Country' a sub-criterion of 'Geographic'? Isn't 'Single-domain aggregator' clearer than 'Single aggregator' to avoid confusing with 'individual organisation'? Can't a thematic aggregator be a "single-domain aggregator" or "cross-domain aggregator"?...

The classification of types of aggregators requires further discussion and analyses than could be undertaken within the framework of this deliverable D5.1. For the sake of practicability, we have decided not to strictly follow Europeana's confusing criteria and to use our own. To be able to distinguish different types of aggregators, we identified for the context of DCA following sets of criteria that can variably be combined:

- Visibility level: dark | visible aggregators

- Scope level: single-domain | cross-domain aggregators

- Thematic level: thematic aggregators

- Geographic level: regional | national | transnational | worldwide aggregators

Visibility level

Dark aggregators

A dark aggregator employs a dedicated tool that harvests the repositories' selected content directly to Europeana, or stores it temporarily in order to perform research on the collected data (e.g., the Linked Heritage project). A dark aggregator mainly has technical requirements to comply with the ingestion specifications, in our case the Europeana portal.

NTUA has developed a mapping tool for harvesting and ingesting content that is also a dark aggregator in the strict sense of the term, since it can act independently and can be employed by different domains, portals and projects. It has no link to a specific online portal website. It is also used in the Linked Heritage project. As a result this project is not publicly showcasing the content that has been ingested to the Linked Heritage repository through the NTUA tool. If DCA partners would choose to aggregate their content via this NTUA module, they will join a dark aggregator (since there will be no dedicated DCA portal website launched). DCA partners can use the NTUA module through joining the Linked Heritage project or by using it in its role of aggregation platform provided by NTUA for the DCA project.

For Greece, the Hellenic aggregator for Europeana, Libver, also acts as a dark aggregator. The German project aggregator EuropeanaLocal DE also belongs in this category although it has a dedicated project website. But the content aggregated through the project is not presented on the portal. The Austrian EuropeanaLocal AT does present a website with the aggregated content, but acts as a dark aggregator depending on the institution that is submitting the content. If the content provider wishes only to be shown on Europeana and not on the EuropeanaLocal.at website, the project functions as a dark aggregator.

The Gateway to Archives of Media Art portal (GAMA) also offers to function in some aspects as a dark aggregator. GAMA operates differently than Europeana, in particular in its treatment of thumbnails. On the GAMA portal a thumbnail is exclusively linked to a video or video excerpts, not to a still image. In order to comply with the Europeana requirements, the GAMA aggregator also harvest thumbnails for still images and ingest these only to Europeana, but does not make them

visible on the GAMA portal. Although that they are ingested by GAMA, the thumbnails for still images are only made visible on Europeana and the partner website.

Visible aggregators

A visible aggregator might well have other specifications or requirements for joining the portal such as a separate agreement covering the online display (and/or use) of metadata and preview(s), requirements for the minimum required metadata set, beyond the specifications set by Europeana, and specifications regarding setting of a preview image. While in case of a dark aggregator the delivered content is only visible on the provider's own website and on Europeana, with a visible aggregator the content is also visible online on a third platform (i.e. the aggregator's online web portal). This is beneficial to the partners joining this aggregator since it might, just like Europeana's modus operandi, be another opportunity for visibility and driving traffic to the partner's own website where the digital content can be found in its original context.

Scope level

Next there is the criterion of "scope" which refers to the types of organisations brought together by one aggregator. For Europeana the criterion "scope" relates to the scope of the material for which you will be collecting data, whether as an aggregator "defined by three domains, or as an individual organisation." For Europeana "single aggregators" are "organisations representing and collecting data from one sector only, such as a museum, a library or an archive (e.g., a national/regional/local museum, national/regional/local library, national/regional archive)," It defines "cross-domain aggregators" as "organisations working across several sectors and collecting material from museums, libraries and archives (e.g., national portals and Europeana)," On the same level it also distinguishes "thematic aggregators". This is confusing. In our view a thematic aggregators do not belong on the scope level, but on the thematic level. A thematic aggregator (for instance focussed on Jewish heritage) can be a "cross-domain aggregator" (thus aggregating content from more than one domain or sector) or what we call "single domain aggregator" (thus aggregating content from one domain or sector). .

Europeana has based the categorisation for "domain" and "sectors" on "sector-specific activities". It determines the following domains: "Museum/Gallery, Library, Archive, Audio Visual, Research & Education, Portal, Publisher, Private, Others". The rationale behind this seems to rely on the assumption that institutions that operate similarly and pursue common goals (e.g., museums generally share the mission of collecting and exhibiting) also follow similar strategies for cataloguing their collections. However, this is not unproblematic.

The list of domain/sector examples in Europeana's handbook might create a conflict for the DCA content partners: contemporary art certainly shares many features with the "traditional museum collections" where photographs, drawings, sculptures and paintings for example are common works with comparable cataloguing demands. However, what about audio-visual contemporary art that is for instance part of a museum collection? This kind of content might have cataloguing demands that are more comparable with those used in "audio-visual archive collections" than those used in "traditional museum collections". The category "audio-visual" as used by Europeana as a "domain/sector" is ambiguous since "audio-visual" is normally rather used to denote a type of collection rather than a type of organisation. And what about the contextual documents about contemporary art that the DCA partners will digitise and provide to Europeana? This type of content might have cataloguing demands that are more comparable with those used in "archive collections" or "library collections" than those used in "traditional museum collections." In fact, to facilitate the

aggregation it is not the domain that is important (nor the type of content) but the way that the content is catalogued.

Also the classification of domains requires further discussion and analyses than could be undertaken here. For the sake of practicability, we identify following domains for DCA content partners and the researched aggregators (Annex I). These types of institutions differ in their orientation and are likely to have different foci in their cataloguing strategies and practices:

- Museums and exhibiting and collecting art institutions;

- Art festivals;

- Centres for art, artistic research and cultural communication;

- Libraries (e.g., national libraries);

- Archives (e.g., state archives, university archives).

We are aware that also this classification remains in some way ambiguous. Should institutions as ARS Electronica and WRO be classified as "art festivals" or as "centres for art, artistic research and cultural communication"? Should institutions as Argos and NIMk be classified as "exhibiting and collecting art institutions" or as centres for art, artistic research and cultural communication?... As stated earlier, the employed cataloguing methods are the main thing and not the domain or sector itself.

Single-domain aggregators

A clear example of a single-domain aggregator within the definition of "domain" as given above, would be the Dutch portal Digitale Museale Collectie Nederland 'DiMCoN', where exclusively museums and exhibiting-collecting institutions are represented with a large amount of visual material and digitised artworks.

The Latvian National Digital Library 'Letonica' portal also fits the classification of "single-domain aggregator" as currently only libraries are represented. However, from their mission statement it sounds as if they endeavour to include cross-domain collections in the future.

Those portals are all visible aggregators. An example for a "dark single-domain" aggregator would be ATHENA, aggregating museums only.

Cross-domain aggregators

Most aggregators researched seem to fall into this category. There are platforms presenting collections from for instance libraries and archives such as EuropeanaLocal AT. Although they hold print material only, they are still classified as cross-domain since they combine different types of organisations.

Portals such as Kultura.hr for the Croatian cultural heritage include a wide range of different organisations with various topics and material, encompassing a wide field from art works to print works, from areas such as science, health to archaeology and architecture. The Spanish portal Hispana networks 156 repositories from various types of organisations, from libraries to museum archives, and a range of different subject areas from music, to manuscripts, and subcategories of the same domain, such as scientific archives or regional and municipal libraries.

Although the Austrian portal Kulturpool caters largely for museums, like the Dutch portal, covering different subject areas like theatre, medieval culture, technical museums, they also include some

national and municipal libraries, and therefore are to be classified as "cross-domain". The German BAM (Bibliotheken, Archive, Museen) portal offers a mix of different organisation types (museum, libraries, archives and others), covering subject areas from numismatics to historical and film archives. However, no art museum or art institution outside the film archive is participating in this portal.

Thematic level

Another criterion for distinguishing types of aggregators is the "thematic focus". Thematic aggregators focus on collections sharing the same topic, like for instance World War I.

Judaica Europeana is a good example of a dark, cross-domain and thematic aggregator: "*Judaica Europeana works with cultural institutions to identify and provide access online to content which documents the Jewish presence and heritage in the cities of Europe.*"[10]

In the context of DCA, we were looking for thematic portals that include or specialise in contemporary art. However, we found that the existing ones such as Artcyclopedia (http://www.artcyclopedia.com), Artchive (http://artchive.com/ftp_site.htm), Web Gallery of Art (http://www.wga.hu/), or Artproject (http://www.googleartproject.com/) do not yet deliver to Europeana. The only platform that covers an important part of contemporary art and aggregates for Europeana is GAMA, a European portal to media art. GAMA would classify as "visible, cross-domain and thematic" aggregator.

However, the fact that GAMA's content partners differ in type, but share the same subject and comparable archive strategies and structures, shows how difficult a clear conception of "domain" is. The Europeana list[11] reflects this by defining domains that seem to be determine by "same type of collection" (audio-visual) or "same type of content" (research/education). Where would in this classification a "university archive" belong, under "archive" or "research/education"? Or where would the media library of an academic film institute belong, under "audio-visual" or "research/education"?

Geographic level

Another distinctive feature of aggregators is the geographical level on which they operate. Do they aggregate sources on a regional, national, European or worldwide level? Examples of aggregators operating at a European geographic level are all content providing projects listed under the Europeana group[12], such as The European Library (TEL), APEnet, EUscreen, ATHENA, HOPE, but also the GAMA portal.

The geographic level of an aggregator can also refer to the institutional geographic level, which refers to the organisation (and also funding bodies). For instance, the term 'national' aggregator is often used to refer to an aggregator collecting content only from the partners in their national region. This type of aggregator is often funded by a national governmental body. 'National' hereby refers both to targeted content and the organisational support. An analogy can be made to the concepts of 'regional' or 'municipal' or 'international'.

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[10] See http://www.judaica-europeana.eu/
[11] „Museum/Gallery, Library, Archive, Audio Visual, Research & Education, Portal, Publisher, Private, Others", in Europeana Aggregators' Handbook, version October 2011, p.7. Available online http://europeana.acc.componence.com/documents/694736/720608/Aggregators+Handbook
[12] See http://group.europeana.eu/web/guest/home

In the DCA context, we are specifically looking at aggregators ingesting content for Europeana. Only two categories within the "geographical aggregators" meet this criterion: aggregators operating on a European level like the NTUA aggregator and GAMA, or national aggregators from European countries or countries associated with the ICT-PSP programme[13] covering the countries of the DCA content providers.

Only Kulturpool explicitly mention that they are a national cross-domain aggregator. They aim to represent a cross-section of the Austrian digital heritage. Other aggregators like DiMCoN, Hispana, Kultura.hr and Letonica are not explicitly labelled as 'national', but do take on that role and portray themselves as 'the' national portal of their respective country. The BAM-portal and EuropeanaLocal DE are both awaiting the launch of the German national aggregator DDB – Deutsche Digitale Bibliothek[14]. This initiative is technically and organisationally ready to launch, but the implementation is still a work-in-progress.

The research shows that most aggregators where the inclusion of art-related repositories would make sense are harvesting the data from national sources.

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[13] For countries currently associated to the ICT PSP programme, see:
http://ec.europa.eu/information_society/activities/ict_psp/about/who_can_participate/index_en.htm
[14] For information on the Deutsche Digitale Bibliothek initiative, see: http://www.deutsche-digitale-bibliothek.de/projekt.htm

Table 1: Overview of categories of assessed aggregators

Aggregator	Visibility: dark	Visibility: visible	Scope level: cross-domain	Scope level: single –domain	Thematic level	Geographic level
BAM		X	X			national: Germany
EuropeanaLocal (DE)	X		X			national: Germany
GAMA	(X)[15]	X	X		theme: media art	transnational: Europe
EuropeanaLocal (AT)	(X)[15]	X	X			national: Austria
Kulturpool		X	X			national: Austria
Kultura.hr		X	X			national: Croatia
Dlib.si		X	X			national: Slovenia
DLF		X	X			national: Poland
Linked Heritage	X		X			transnational: Europe
NTUA aggregator	X		X			transnational: Europe
DiMCoN		X		X		national: the Netherlands
Hispana		X	X			national: Spain
Libver	X		X			national: Greece
Letonica		X		X		national: Latvia

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[15] These could act as dark aggregators upon partner request.

5. Technical requirements and implications

The current section describes the aggregators' technical requirements as they were gathered through communication with the technical staff of each aggregating body. The gathered information is grouped in terms of different aspects of the aggregation process (e.g., metadata model and data delivery format) while Table 2 summarises the collected information. Lack of information in respective fields does not necessarily mean that the respective service/protocol/model is not supported.

According to Europeana's Aggregators Handbook an aggregator is responsible for making the following data available:

- "Highest possible quality metadata describing a digital object[16]. The metadata must be mapped to the latest Europeana Semantic Elements version available.

- A link to the object for Europeana to generate images for use in the portal.

- Persistent identifiers (URLs) – active and stable links to the described digital object on the provider's site or the portal's site.

- One persistent, unique identifier per record, within the metadata, such as catalogue number as dc:identifier, or the URL of the object if the relationship is 1 to 1."[17]

The preferred adopted metadata format is the ESE schema (developed for the prototype version of Europeana, November 2008). It is an application profile based on Dublin Core (DC) providing a generic set of DC elements and some locally coined terms. Aggregators are advised to map their metadata to ESE according to the 'Metadata Mapping and Normalisation Guidelines'[18]. Within the mapping framework, requirements are set either regarding the metadata structure (e.g., mandatory metadata elements) or respective information to be recorded in the metadata elements (response to "who, what, where and when" queries).

On thumbnails:

"*Europeana strongly recommends the submission of a representative thumbnail image of each digital object in order to enhance the display of objects in the gallery of results. Ideally, an aggregator will be able to provide the URL of an existing thumbnail for each digital object. If there is no such thumbnail, Europeana can generate one using the link to the object provided in the <europeana:isShownBy> element.*"[19]

Technical restrictions to image formats and other aspects are also enforced by Europeana.

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[16] In the context of this deliverable, a 'digital object' might refer to a digital-born object (= digital original object) or digital object that is the result of digitisation (= digital representation of the analogue object).
[17] Europeana Aggregators' Handbook, version October 2011, p.13. Available online
http://europeana.acc.componence.com/documents/694736/720608/Aggregators+Handbook
[18] Europeana Metadata Mapping and Normalisation Guidelines, version March 2011. Available online
http://www.version1.europeana.eu/c/document_library/get_file?uuid=b3cfcf47-da0a-4c6b-b1d7-9b08e162643e&groupId=10128
[19] Europeana Aggregators' Handbook, version May 2010, p.13-14. Available online
http://group.europeana.eu/c/document_library/get_file?uuid=94bcddbf-3625-4e6d-8135-c7375d6bbc62&groupId=10602

Data delivery format

Regarding the representation format of metadata records, the (ESE XML schema, highly recommended in the *Europeana Aggregators Handbook* is adopted by all the aggregators. Some aggregators also handle other formats, such as Comma-Separated Values (CSV) or spreadsheet exports (e.g., created in Windows Excel) in order to facilitate contribution from providers without technical expertise on the issue. For example, Kulturpool and the Polish DLF support CSV and Excel exports for providers that were able to provide only this format. Interestingly, the team behind the DLF (Digital Libraries Team in Poznan Supercomputing and Networking Center) have a agent-based harvesting engine under development, to be deployed within the next few months, which is able to harvest and store metadata in any format (not only XML-based).

Data delivery protocol

The Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH) approach is a popular protocol for data delivery amongst the identified aggregators. Other protocols are also in use, such as HTTP, FTP and SMTP (e-mail)[20], either complementary to or replacing OAI-PMH. This is for example the case in Dlib.si. EuropeanaLocal AT, GAMA, the NTUA aggregator and Kulturpool support FTP for uploading new or updated dataset. Many aggregators (GAMA, Dlib.si, DLF, Kulturpool, NTUA aggregator) support HTTP. Additionally, Kulturpool describes an interconnection with the provider's database via Java Database Connectivity (JDBC) whereas DLF has extracted, within the framework of an ingestion project, metadata parsing the provider's website due to technical restrictions on the content provider's side.

Metadata model

Concerning metadata models, the majority of aggregators support ESE. The choice for a specific metadata model will facilitate a harmonisation of field structuring among the different aggregator content providers, since one common scheme is in place. BAM operates on a per provider basis, supporting either museum.dat[21] or LIDO[22] for museums, Encoded Archival Description (EAD) for archives and Maschinenlesbares Austauschformat für Bibliotheken (MAB) or MAchine-Readable Cataloging (MARC) for libraries. The Dutch DiMCoN also supports additional, fields, with reference to ESE, used for research purposes while Kulturpool has a special metadata specification, which is aligned to Europeana ESE, supporting in parallel (for the time being) all formats. GAMA supports basic gama.xml although assuming that only a minimal set of metadata is sent to Europeana, due to the new contract, makes ESE and LIDO possible, the latter with the restriction of full set of metadata with references. Polish DLF is harvesting only DC metadata and exposing ESE for Europeana.

Metadata and terminology requirements

Each aggregator might apply additional conditions on top of the compliance with a preferred metadata model. They might for example request to provide a selected set of mandatory fields. Conformance with ESE requirements, regarding metadata mandatory fields, is usually the case,

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[20] The Hypertext Transfer Protocol (HTTP) and File Transfer Protocol (FTP) are network protocols, used to transfer files from one host to another host over networks such as the Internet. Simple Mail Transfer Protocol (SMTP) is an Internet standard for electronic mail (e-mail) transmission.
[21] museum.dat is a harvesting format optimised for retrieval and publication, meant to deliver automatically core data to museum portals. More information on museumdat can be found online on http://www.museumdat.org/
[22] LIDO – Lightweight Information Describing Objects is an XML harvesting schema. The schema is intended for delivering metadata, for use in a variety of online services, from an organisation's online collections database to portals of aggregated resources, as well as exposing, sharing and connecting data on the web. More information on LIDO can be found online on http://network.icom.museum/cidoc/working-groups/data-harvesting-and-interchange/what-is-lido.html

e.g., in DLF, Dlib.si and Libver. BAM applies requirements according to the respective domain models whereas Kulturpool adopts a metadata specification model described in detail on http://www.kulturpool.at/pages/viewpage.action?pageId=12025873. GAMA follows a 'collection' structure allowing the content provider to provide different collections to the GAMA portal and to the respective dark provider. The NTUA aggregator will implement ESE/LIDO custom requirements regarding mandatory metadata fields.

Digital resources

Regarding support for digital resources ingestion (e.g., a thumbnail), either by ingestion or by reference (link, URL), very few aggregators support this feature (at the moment only Libver). BAM supports only images, while GAMA treats digital resources enhancements per content type. The providers should provide thumbnails, if they store the video at Hochschule für Gestaltung Karlsruhe, but if an artwork or documentation has no video, it only appears with metadata on GAMA. For Europeana ingestion the minimal requirement is the 30 seconds excerpt, which means that there will be a video, which can be shown in the GAMA portal providing a thumbnail to Europeana by its link[23]. EuropeanaLocal AT supports small institutions with an upload facility for their digital content.

Supported mappings

Mappings, either arbitrary (per provider) or formalised, between metadata formats are not always supported and thus if the provider does not follow ESE he will not be able to use the aggregator. BAM, EuropeanaLocal AT, Libver and Kultura.hr map from standard formats (e.g., Dublin Core and MARC21) to ESE according to the '*Metadata Mapping & Normalisation Guidelines*' for ESE. Other mappings are also available but require support from the provider's side. For example, this will be the case when DCA partners make use of the aggregation platform provided by NTUA. The Polish DLF is harvesting only Dublin Core metadata and performs the mapping according to a procedure discussed with the data provider. Finally, GAMA's mapping requirements depend on whether dark aggregator or portal is used, being a prerequisite for the former and a recommendation for the latter.

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[23] E-mail from Jürgen Enge, HfG (Member of GAMA Technical Management Group), 07/11/2011.

Table 2: Overview of technical requirements of assessed aggregators[24]

Aggregator	Delivery format	Delivery protocol	Metadata model	Metadata requirements[25]	Digital resources	Supported mappings	Additional services
BAM	XML		LIDO	conditional	yes	to ESE	portal
DiMCoN	XML	OAI-PMH	ESE				
EuropeanaLocal AT	XML, CSV, XLS, SQL	OAI-PMH, FTP, mail	ESE	ESE schema + unique ID	thumbnail creation	MARC21, DC, ESE, etc EDM (future)	Europeana preview and mandatory fields Digital archive integration
GAMA	XML	FTP, HTTP	GAMA	yes	conditional, thumbnail creation for portal objects	GAMA to ESE, EDM (future)	dark aggregator and portal, Europeana preview
DLF	XML, CSV	OAI-PMH, HTML parsing	DC	ESE schema		from DC	
Kultura.hr	XML		ESE			to ESE	
Dlib.si	XML	HTTP	ESE				
NTUA aggregator & Linked Heritage[26]	XML, CSV	OAI-PMH, FTP, HTTP	LIDO	custom (ESE, LIDO)	no	on request	
Kulturpool	XML, CSV, XLS	OAI-PMH, FTP, HTTP, mail, JDBC	ESE aligned				
Libver		OAI-PMH / DEiXTo	DC, ESE	ESE schema	thumbnails	DC to/from ESE, HTML to ESE	

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[24] Out of all identified suitable aggregators, three are missing in this overview: Hispania, Letonica and EuropeanaLocal DE. They did not provide information about their technical requirements for aggregation.

[25] Whereas the column about the metadata model defines the preferred metadata scheme of the aggregator, the column about the metadata requirements informs about whether an aggregator requires additional conditions on top of the compliance with a preferred metadata model (for example to provide a selected set of mandatory fields).

[26] Since the aggregation platform provided by NTUA for the DCA project and the aggregation in the Linked Heritage project both run on the same technical service (the MINT platform Metadata Interoperability Services http://mint.image.ece.ntua.gr), the technical requirements for aggregation are the same for both aggregation options.

6. Assessment of the non-technical aspects of the platforms

For a content provider to cooperate with an aggregator, technical requirements are only one part of the issues to be considered. Basically, there will also be issues such as agreements to be signed, expected sustainability and incurring costs that will create the ground for determining the right aggregator.

A visible aggregator offers additional aspects that will have an influence on the decision-making. A website portal allows for additional visibility of the content of the collection and thus constitutes a dissemination factor. With contemporary artworks the question of the framework in which these works are presented needs careful consideration. They are particularly sensitive to IPR issues and need a sound contextualisation that as yet has not a long historical foundation,

Although some of the values assessed here are 'soft values' and cannot be objectively validated in the framework of this deliverable, we have attempted a first investigation into appeal, focus and user-friendliness.

The non-technical aspects that we have assessed are:

- Presentation of the strategic focus of the framework;
- License agreement;
- Cost and sustainability;
- Partner presentation;
- Embedment of the collection in the website structure;
- Presentation of content;
- Search functionalities;
- English or multilingual versions;
- Accessibility and other features.

Presentation of the strategic focus of the framework

A key aspect and incentive with regard to joining a portal with archival material will be the appeal to users and the quality of the presentation of the portal's content and the network. Questions that will play a major role for the respective institution in determining if it would benefit from joining the portal are

- Does the content fit the focus presented?
- How prominent are the partners and their collections placed on the site?
- How clear is the objective of the portal?
- What target group is being addressed?

If an institution wants to join an aggregator portal website in order to disseminate its content and create awareness for itself, it would not join a portal where a user would not expect it. If, for example, a portal is known to be mostly geographical and mostly scientific, then people might not go to such a portal and look for works of contemporary art. If on the other hand a lot of 'artistic' fields are included and it is a good mix, then the institution might want to join, even if it is the first, because

it belongs in the bigger sphere of art. From the point of view of a contemporary art institution, there would thus have to be at least one of three aspects prevailing in order to incite them to join such a portal:

- The domain or domains covered by a portal should include visual art collections or museums;

- A national portal should cover a large range of cultural fields (e.g., dance, music, theatre, literature, visual arts, history, research, and science);

- A thematic portal should include contemporary art or parts of it.

The portals that clearly meet one of these criteria are Hispana, DiMCoN, GAMA, Kulturpool and BAM.

Other sites state that they present collections, are cross-domain, and target the interested public. However at closer inspection, they do not meet the expectations created. Kultura.hr seems to connect a lot of collections. The different terms and drop-down menus on the portal website lead to a seemingly well-structured sub-categorisation for browsing or filtering (themes, time period, type of material, regions). However, once the user follows these leads he gets results in numbers of collections that show that not many collections are involved yet in the portal. And if the user clicks on the collection, he retrieves only one digitised item, not a whole collection. So either the translations are wrong or the texts and references are misleading. The aim of the portal would in principle be of interest to an art institution. However, this institution would then be one of the pioneers of the portal network. This might be of interest if the institution intends to commit to supporting the dissemination of the national cultural heritage. As a pioneer, it might have an influence on the general architecture and mission of the portal.

The DLF portal states on its '*about DLF - General information*' page that *"These resources are created by many institutions like universities, libraries, museums, archives or research institutions."*[27] The Polish network is well represented with many digital items, although visual art is underrepresented. Again, here an institution might decide to take the initiative to ensure a well-balanced representation of Polish cultural heritage. Other visual art institutions may then follow their example.

EuropeanaLocal AT, which presents collections directly on its website, seem to represent mostly historical and university archives. There is one art museum present in the partner consortium. However, it shows only a small number of digitised artworks. Mostly the results show a very basic metadata reference.

Dlib.si shows a mix between different types of material, from photographs to print work, amongst them digital reproductions of 728 paintings and sculptures. However, it is not clear who the providing institutions are. It seems that currently there are small contributors. But clearly the portal is open to cross-domain collections as partners in their network. So here again, the Slovenian DCA partner will need to decide if they want to join as pioneers of the network.

Letonica networks on a single-domain level different collections. Most of these collections seem to be collections of the national library itself. However, they state that they welcome partners with own collections to join the platform. The type of content shown covers many fields, from music to postcards, maps to manuscripts, but no fine art or audio-visual art is represented. Here again, the

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[27] See http://www.fbc.pionier.net.pl/owoc/about?id=about-fbc

Latvian DCA partner would act as a forerunner, introducing artworks into the portal.

License agreement

When content providers join an aggregator, they deliver metadata and mostly also a thumbnail or preview and the link to an online digital reproduction to the aggregator. The use of this delivered information is often governed in an agreement between the content provider and the aggregator. In general, aggregators with a portal website direct users (visitors to the portal) to the content provider's website in order to see the digitised object in detail. This makes it possible for these content providers to license the digitised content under their own terms and conditions.

In the ATHENA/Europeana aggregator survey, held in 2009, the participating aggregators showed that the Creative Commons standard licences are the most used as basis for such agreement.[28] Some respondents of that survey also informed that they modelled their agreements on the then valid *Europeana Data Provider* and *Data Aggregator Agreements*.

Because of the recent evolution in the regulatory framework of Europeana with the release of the *Data Exchange Agreement* (DEA), we need to look at two aspects of licensing: concluding an agreement with an aggregator, and subsequently agreeing to the *Data Exchange Agreement* with Europeana.

One could think that concluding a cooperation agreement between an aggregator and a content provider is only necessary when it concerns a 'visible' aggregator, i.e. including an online web portal. When joining a dark aggregator, however, a cooperation agreement might also be desired. In such an agreement the aggregator would then e.g., specify what their intended use of the data is, or in which context and to what extent the data are ingested and eventually stored by the dark aggregator. This is for example the case with the Linked Heritage aggregation. In an agreement with a visible aggregator, you do not only speak of what can be done with the data offline, but one will also specify what can be done with the data when it is presented on the online aggregator platform.

Most visible aggregators make the delivered content available on their aggregator platform for non-commercial uses only. For example on the Kultura.hr portal a warning is given to users of the data: *"You ought to take due account of the rights of utilisation which may differ from one collection to another. Check the utilisation rules of the institution holding the material, especially if you want to publish something or use it for commercial purposes."* The portal refers to the terms of use that are connected to the collection of the content provider, mostly also published on Kultura.hr itself (e.g., some collections are labelled as 'free access'). On the GAMA portal website, the users are directed to the terms of use of the content, which say the following: *"Contents of the site must not be used for any purpose other than educational, informational and non-commercial viewing. All programmes are copyrighted and remain the property of the artist and content provider."*[29]

EuropeanaLocal AT is by far the most facilitating aggregator in terms of allowing what a content provider feels most comfortable with. If an institution does not want to make their information public on the EuropeanaLocal AT website, then it acts as a dark aggregator and only displays the information on Europeana. If an institution feels uncomfortable showing its digital visual material on the EuropeanaLocal AT website, it can deliver only metadata to be shown on the portal. A feature is embedded in the website as a 'ask for IPR information' button which directs your request to the content provider, whom you may then ask for specific uses of the digitised content (or just to have a look at it). For some institutions, acting as a dark aggregator like EuropeanaLocal AT does, is a good solution if in your agreements with, for example an artist you have only made an explicit arrangement for the display of for instance a thumbnail or other digitised content on Europeana, and not on another aggregator website.

Most aggregators that were surveyed acted on the basis of a cooperation agreement between themselves and a content provider, but the degree of formality in these agreements vary significantly. For instance, the Polish DLF does not have a formal agreement. They accept partners on the basis of an approval via e-mail. With the appearance of the DEA, however, they felt that there is a need to create formal cooperation agreements in the future. Participation in Hispana is even possible without signing any agreement.

In the case where an aggregator originated from a project, such as GAMA, EuropeanaLocal or Linked Heritage, most partners have never signed an individual cooperation agreement but are covered by documents such as a 'Description of Work', or foundation statutes. The cooperation agreement in Linked Heritage only governs the membership of participants that want to join after the DoW had been issued. In GAMA, the foundation statutes ruling the non-profit orientation of the site are agreed to by the partner when becoming a member of the foundation.

Then there is the question of how institutions deal with the DEA. EuropeanaLocal AT has at this point in time already signed the DEA in its role as aggregator. The institution behind DiMCoN, the Netherlands cultural heritage agency, also signed the DEA. A formal agreement between the content provider and DiMCoN is still being drafted, and might deviate from what is agreed upon in the DEA (i.e. providers might be able to provide data to DiMCoN under different conditions than what the DEA stipulates). For Hispana, the Spanish Ministry of Culture has already signed the DEA and institutions contributing to Europeana through Hispana will sign it with the Ministry of Culture as aggregator by the end of December 2011.

Due to the very recent publication of the DEA, the majority of aggregators still had no clear communication on how they would deal with the document.

Cost and sustainability

In many cases the cost of joining an aggregator (e.g., membership fee or cost for a technical maintenance service provided for by the aggregator) is linked to the way it is funded or sustained – for this reason the two factors (cost and sustainability) are dealt with together in this section.

The aggregators identified in this report are mostly funded from public sources, such as ministries of culture, education or regional official instances. Sometimes this national funding is combined with other budgets like funds coming from European support programmes like CIP-ICT or eContentPlus.

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cleared with the respective content provider (archive) where indicated and directly with GAMA for all displayed material where no archive or right holder is indicated." Available online from http://www.gama-gateway.eu/index.php?id=62

In the realm of DCA, two aggregators can even be identified as currently being solely funded on the basis of European programmes: Linked Heritage and the aggregation platform provided by NTUA for DCA. The two EuropeanaLocal initiatives (in Germany and Austria) and GAMA were constructed using European funds, but are now looking for other ways to be sustained outside these funding programmes.

Some identified aggregators benefit from a funding that is secured on a reasonable long term basis through state support. This is the case for Austrian Kulturpool (supported by the Austrian Bundesministerien), Dlib.si (supported by the Slovenian national university library), DiMCoN (supported by the Dutch ministry of education, culture and science) and Kultura.hr (supported by the Croatian ministry of culture, museum documentation centre, state archives and the national library). The Polish DLF is financed on the basis of its foundation's funds[30] – similar to GAMA that also operates on the basis of a non-profit foundation (the GAMA foundation).

In some cases the funding of the aggregator and its services is partly provided for by a membership fee that is paid by the content partners. This is the case for GAMA and EuropeanaLocal AT – both projects that are transitioning from EC-funded basis to a more sustainable funding. In GAMA, a membership fee is paid to support dissemination activities, the board meetings and the technical maintenance. For DCA partners who would want to join, the first year of joining the network no membership fee will be charged. The new partners will be considered as honorary members. If they wish to remain members of the foundation, they will then need to choose a form of membership and pay a respective fee. EuropeanaLocal AT plans to charge an annual fee that will be based on the amount of content the institution delivers. The Dutch aggregator DiMCoN does not charge any fee at the moment, but this might change in the future to paying a contribution in the costs for the hosting of the platform and the services.

Some aggregators do not charge any fee for partners wanting to join. Mostly this is due to their public nature. If the aggregator is completely or to a great extent funded by public authorities, then the participation to the aggregator is most often free of charge. This is the case for BAM, Kultura.hr, DLF, Dlib.si and at the moment also the DiMCoN.

Hispana is a special case. The participation is free of charge and on a voluntary basis, except for projects and institutions funded by the Spanish Ministry of Culture. In that case it is mandatory to implement an OAI-PMH compliant repository (ESE from 2011, EDM from 2012) that must be harvested by Hispana – so it is a technical prerequisite for free participation.

Project-based aggregators like Linked Heritage and the aggregation platform provided by NTUA for DCA (both using the MINT platform Metadata Interoperability Services http://mint.image.ece.ntua.gr) are also free of charge, but there the sustainability of the service is related to the individual project strategy. Typically, the technical infrastructure, deployed and maintained at the National Technical University of Athens (NTUA) remains available for new content providers interested in joining the network; the harvesting scheme for the delivery of content to Europeana is kept updated by the NTUA, in order to be aligned with the new requirements and standards defined by Europeana.

In terms of sustainability, a national aggregator is among the 'safest' options. For that reason both aggregators BAM and EuropeanaLocal DE are looking at the national initiative to emerge in Germany, the DDB or German Digital Library. EuropeanaLocal DE was an EC-funded project and finds itself now in a transitional phase in terms of staff and daily operations. Although the creation of

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[30] PSNC Foundation, Poznan Supercomputing and Networking Center.

the DDB as a national aggregator is still in the development phase, they await evolution in that field and do not take on new partners in the EuropeanaLocal DE aggregator. On the website of the DDB project, one can find the following information about their future funding: "*For the implementation of the infrastructure of the German Digital Library, the Federal Republic of Germany has made available 8 million Euro, and for the operation of the service the federal, state and local authorities have from 2011 on secured 2.6 million Euro annually for the course of five years.*"[31]

Partner presentation

In order to constitute a good dissemination platform for the content providers, the question of how the partner institutions are presented on the portal will also be a factor in deciding whether to join the portal or not.

There are portals that offer a partner description directly on their site, mostly with a link to the partner site and often with a logo of the partner institution. These are: Kulturpool, GAMA, BAM, Kultura.hr, Letonica and EuropeanaLocal AT. The latter's description is not easy to detect, since it works by moving the cursor over a little frame with the short name of the institution to activate a pop-up window. The most extensive partner descriptions are offered on the Polish DLF: statistics of publications, thumbnails, indication of online status, and text description (in Polish), location on a map of related institutions.

Others like DiMCoN and EuropeanaLocal DE only list the names of content providers. With DiMCoN, clicking on the name leads to their online content shown on the portal. On EuropeanaLocal.de there is a link to the partner website.

The remaining portals, such as Hispana and Dlib.si, do not clearly list the contributing institutions.

Embedment of the collection in the website structure

One can detect three types of platforms:

- Platforms that parade the platform as network of digital archives;
- Platforms that draw attention to the platform as search engine ('door to access');
- Platforms where the digital collection is presented as part of an overall institutional presentation.

Some platforms direct the user prominently to the 'search' field, the most outstanding example being the Polish DLF, but also Dlib.si, Kulturpool and Hispana.

Other platforms draw the attention to the fact that they are a network of collections and a platform for interested users (with news and events placed prominently on the homepage), e.g., Kultura.hr, but also the two EuropeanaLocal platforms, GAMA and DiMCoN.

And some digital collections are only presented within the larger framework of the supporting institution's website like Letonica where the online database is one tab ('E-Library') amongst others on the website of the Latvian national library.

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[31] *"Für den Aufbau der Infrastruktur der Deutschen Digitalen Bibliothek hat der Bund 8 Millionen Euro zur Verfügung gestellt, für den Betrieb haben Bund, Länder und Kommunen ab 2011 für fünf Jahre 2,6 Millionen Euro jährlich zugesichert."* Source: http://www.deutsche-digitale-bibliothek.de/projekt.htm

Presentation of content

The presentation of the visual material and the metadata constitutes a major factor in dealing with IPR issues. There are again different options that will prove relevant to licence negotiations with the artists and metadata authors:

- Is metadata shown on the portal itself?

- What are the mandatory metadata elements to be provided for exposure on the portal?

- Are thumbnails shown on the portal? Are they mandatory?

- Are enlarged pictures or previews shown on the portal or is there a link to content provider's website?

With the exception Kultura.hr that collocates on its portal only information on the collections themselves[32] and do not hold metadata or visual digital objects from these collections, all other portals offer result lists for queried items.

Some show metadata only. Hispana offers a not very clearly structured query list, or results with and without digital image (the latter being the majority) such as EuropeanaLocal.at. The reason for only showing metadata might also have to do with IPR restrictions (see below "Licence agreement").

One very attractive search engine for non-expert users is offered by DiMCoN. Here you click on the museum name or enter a query in the search field. You will be directed to two rows of thumbnails with title and artist. Thumbnail leads to an enlarged 'thumbnail' (a preview) and more metadata and a row of small thumbnail as 'related content'. Text documents show an orange square like on the first version of the Europeana.eu portal.

Kulturpool offers a similar user-friendly search tool. With a prominently set frame of tags, the non-expert user can browse through the collections. There is a clear list with small thumbnails and basic metadata. From there, the user can move to a larger preview and more metadata, and even click on that preview to enlarge further the image itself in another frame. There is also a list of related objects. However, this is not as visible as with DiMCoN, since one has to scroll down to see it.

BAM's result lists are also very well structured and show another feature beside metadata (more metadata than DiMCoN and Kulturpool) and a thumbnail: the coloured large letters B, A, M and N show the source types – B = Bibliothek (Library), A = Archive, M = Museum, N = other. The user can also filter by these types. BAM offers all kinds of options: metadata with or without thumbnail. The thumbnail leads to an enlarged image in a new pop-up window which is either provided by BAM or leads to the website of the provider. Sometimes there is just a grey field that leads to an image on the provider's site. The user can filter for results showing digital images on the portal.

GAMA shows similar features, although this portal focuses on video material. Thus, the result lists show either metadata only or metadata with a thumbnail. The thumbnail leads to either a 30 seconds video excerpt or a full-length video, both being shown in a small window. No thumbnails for stills only. From the list one can access either the video frame, or further information (metadata) and related content. When there is a video, a range of video stills is offered for visual similarity search.

The Polish DLF portal offers as pop-up frame large images that appear as soon as one clicks on an

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[32] In doing so, the Croatian website can be compared to MICHAEL – Multilingual Inventory of Cultural Heritage in Europe. It offers a catalogue of digital cultural materials from (typically) museums, libraries and archives, all described on collection instead of item/object level. The online catalogue of MICHAEL can be found on http://www.michael-culture.org/

item in the result list. Behind this frame a new tab with the original context of the provider website is opened.

Dlib.si also shows: well structured result lists with a thumbnail; basic information; and several buttons for further functionalities, like playing, viewing, link to the remote source, further information, social networks, print, and email. Moving with the cursor over the thumbnail gives a preview and leads to further metadata if you click on the thumbnail. Where possible sound and video can be activated.

The Letonica search leads from the thumbnails of the collections to a description of the collection and a link to "show all digitised objects" which directs to rows of thumbnails with minimal metadata. These thumbnails lead to a preview image with more metadata. It is very user-friendly for non-expert users who have no determined search objective. However, the whole search functionality and query results exist in Latvian only.

Search functionalities

Some portals present themselves as a search tool and place the search functions prominently on their page. The Polish DLF portal has taken the most radical approach: its homepage shows a search field in the centre of the page as its major feature. Their browse feature, however, shows their clear focus on scanned documents. Hispana gives a similar importance to the search field: beneath the aggregator logo in the centre of the homepage, a search field is present.

Some homepages follow closely the style and functionality of the search engine of Europeana.eu with tabs for different categories. This is obviously the case for EuropeanaLocal AT, but also for Dlib.si where the layout of the search with tabs gives a clear structure and also helps to browse.

Less prominent, but still well placed and easily detectable search engines can be found with, e.g., Kulturpool, DiMCoN, GAMA, and BAM. All homepages are heavy with text (e.g., portal description, and news sections), but the search field, with an option for extended search, is placed centrally above or to one side of the texts. Then, there are offers for browsing, such as 'latest entries', tags or examples. Their results all show well compiled and laid-out lists with easy navigation structures, thumbnails and further functions.

The search function on Letonica is not strongly advertised. In fact the site seems not to offer itself a search tool. One clicks on 'collections' that are represented with thumbnails, from there the user accesses the respective collection (mostly departments of the National Latvian Library) and their different search engines. Some of these collections and departments do not offer a search function at all. The portal has a main search function that searches the whole site, not specifically the digitised content.

The Kultura.hr portal explains the use of the subcategories or keywords, like 'time period' or 'theme' of the collection. A search field is not prominently placed on the homepage. One is more tempted to click on the subcategories and go from there. The special characteristic of this website is that the user does not search the content of collections, but the general information about the collections themselves. For instance, the user is looking for collections of maps. The result list is clearly structured with a thumbnail and basic information, then a link to further information about the collection or collecting institution. To view the items of a collection, another link opens a window/tab to the collection's own website. From there it depends on what the collection offers in terms of search and online presentation.

Search on EuropeanaLocal AT is not prominently advertised. However once the search engine is

activated, it gives simple and advanced search, search by collection and browsing facilities.

English or multilingual versions

Another aspect in the context of a European project is of course the question of European international visibility. Since English is considered as the international language 'par excellence', this implies at least a representation and search of the platform in English. The amount of explanatory texts and further information in English varies considerably from platform to platform. Naturally a European thematic platform such as GAMA addresses its users in English, and most metadata exist in English and the native language of the respective archive.

A few portals are well equipped with English translation of both the general texts and the metadata, thus allowing for a search in English: Kultura.hr, Hispana and Kulturpool.

Others have only translated chosen text parts, but not the metadata. Hence no search in English is available: BAM, DLF and Dlib.si. The German and Austrian EuropeanaLocal sites have no translation at all and DiMCoN has not yet a translation which might be explained through the fact that they have very recently been established, namely in 2010.

Hispana offers in addition to Spanish and English a range of regional languages spoken in Spain (Catalan, Basque, Galician, Valencian). The BAM portal offers texts in French and Italian as well as the German and English versions. Within the Polish DLF many collections offer the choice of metadata in German and English in addition to Polish.

Accessibility and other features

Although accessibility[33] for visually impaired people and other people with disabilities may not be of primary concern to many institutions yet, it might prove an important feature in the near future with currently a growing number of initiatives calling for ensuring that visually and auditory impaired users can use the portals.

Of all portals only the following offer visual accessibility features: GAMA, DLF and Hispana.

Other features and services that can be found on most portals are links to, e.g., Facebook and Twitter, bookmarking, tags, and RSS. Some offer customised services like smartworks, tagging, blogs, user profile (Kulturpool), search history and basket/bookshelf (Kulturpool, BAM, Dlib.si), guided tours (GAMA).

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[33] See Web Content Accessibility Guidelines (WCAG) 2.0 of the Web Accessibility Initiative WAI and their recommendations W3C, availabe on http://www.w3.org/TR/WCAG20/

Table 3: Overview of aggregator options per DCA content provider[34]

Partner \ Aggregator	BAM Europeana Local (DE)	GAMA	Europeana Local (AT) Kulturpool	Kultura.hr	Dlib.si	DiMCoN	Hispana	Letonica	DLF	Libver	Linked Heritage NTUA aggregator
Listasafn / RAM											X
MMSU				X							X
HfG	X										X
EMAF/ transmediale	X	X									X
MG					X						X
MMCA / Frissiras/ EPMAS										X	X
NIMk		X				X					X
WRO		X							X		X
MBVB						X					X
MRBAB / MAC/ Mu.ZEE										X	X
Serralves											X
argos		X									X
LCCA									X		X
FTapies								X			X
AE		X	X					X			X

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[34] Please check Table 1: Overview of categories of assessed aggregators in this deliverable for more information about the characteristics of the aggregators listed in this Table 3.

7. Conclusion

In this deliverable the current European aggregator landscape was investigated in order to find out which aggregators are most suitable for the DCA partners to transmit their digital content to Europeana. In order to get a complete picture of each aggregator, the identified aggregators were assessed in terms of type and scope, technical requirements and non-technical requirements (such as licensing framework, cost and sustainability, services offered by the portal…). As a result of this investigation one or more aggregation option can now be presented to each DCA partner.

It is up to the DCA partners to choose their optimal aggregation solution, based their own contexts and expectations. For each aspect of the decision-making process, information on the identified aggregators is given. For some partners the aggregation platform provided by NTUA for the DCA project appears to be the only possible solution. Other partners do have a broader choice. The assessment that is carried out in this deliverable (and the subsequent support by the Technical Management Group) will help those partners to decide which aggregator to join.

The non-existence of a thematic portal for (contemporary) art aggregating for Europeana shows that the (contemporary) art institutions are still at the beginning of networking and forming a community to represent their online needs and requirements.

ANNEX I

OVERVIEW OF AGGREGATOR INFORMATION

BAM: German Portal zu Bibliotheken, Archiven und Museen

DiMCoN: Digitale Museale Collectie Nederland

DLF: Polish Digital Libraries Federation

Dlib.si: Slovenian Digital Library

EuropeanaLocal AT: EuropeanaLocal Austria

EuropeanaLocal DE: EuropeanaLocal Germany

GAMA: Gateway to Archives of Media Art

Hispana: Spanish cultural heritage aggregator

Kultura.hr: Croatian Cultural Heritage Portal

Kulturpool: portal for digital Austrian cultural heritage

Letonica: Latvian National Digital Library

Libver: Hellenic aggregator for Europeana

LH: Linked Heritage

NTUA aggregator: aggregation platform provided by NTUA for the DCA project

BAM - Portal zu Bibliotheken, Archiven und Museen

URL:	http://www.bam-portal.de/
Owned/Supported by:	Bibliotheksservice-Zentrum Baden-Württemberg (BSZ), Konstanz University
Contact:	Dr. Werner Schweibenz Museen und Archive Bibliotheksservice-Zentrum Baden-Wuerttemberg (BSZ) 78457 Konstanz / Germany phone: +49 7531/88 4279 e-mail: werner.schweibenz@bsz-bw.de
Year of launch:	2002
No. of content partners:	over 70 collecting institutions (amongst them many very important ones) of which the majority are museums

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Type:	(national) cross-domain aggregator with public portal website.
Partner focus:	repositories from German archives, libraries and museums.
Content focus:	metadata, images and text scans.
DCA Partner relevance:	HfG, transmediale, EMAF.

Technical	the standard formats for delivering the metadata are museum.dat or LIDO for museums, EAD for archives and MAB or MARC for libraries.

Sustainability:	although they are currently well supported, BAM is awaiting the development of a German national aggregator, the DDB – Deutsche Digitale Bibliothek. More information about the DDB initiative can be found on http://www.deutsche-digitale-bibliothek.de/projekt.htm. Sustainability is therefore unclear.
Cost and agreement:	no cost involved. Partners sign a formal cooperation agreement with BAM.

Query result structure:	left: little tag for library/museum/archive/other – can be filtered by these categories; middle: minimum title and collection both with link to original context; right: optional with thumbnail linking to original context; search by 'digital object attached only' is possible.
Additional services:	search history, watch list/basket.
Remarks/other information:	BAM-search in Wikipedia has been implemented in 2007. Every Wikipedia editor can execute a direct BAM search via a template and thus create a direct link to digital objects from German cultural institutions. The template was used 1,024 times as of April 2009.

Dlib.si - Slovenian Digital Library

URL:	http://www.dlib.si
Owned/Supported by:	The National and University Library of Slovenia NUK (Ljubljana)
Contact:	Mr Matjaž Kragelj Head of Digital Library Infrastructure Services Narodna in univerzitetna knjižnica Turjaška 1, Ljubljana / Slovenia phone: +386 1 5861-369 e-mail: matjaz.kragelj@nuk.uni-lj.si
Year of launch:	2005
No. of content partners:	not specified

Type:	national cross-domain aggregator with public portal website.
Partner focus:	different collections of Slovenian cultural heritage: *"educational and research institutions, companies, publishers and users, such as the Slovenian Research Agency (ARRS), the National Education Institute, the Ljubljana University and many other libraries, institutes and societies."*
Content focus:	photographs and many scans (text, music score, postcards, maps) – art: mostly works on paper. Some audio (e.g., digitised vinyl records).
DCA Partner relevance:	Moderna galerija (MG).

Technical	to provide metadata of digital objects to Europeana, there are several ways, the easiest being construction of a single XML file and then to send the URL of this file. Dlib.si will then harvest and ingest the data in its aggregator and provide them to Europeana. XML restrictions apply according to Europeana schema.

Sustainability:	NUK's sustainability is good. The Slovenian Ministry of Culture has appointed it as national aggregator for cultural and scientific digital content.
Cost and agreement:	no cost involved if the institution is a public institution from the cultural and/or research field. No formal cooperation agreement is in place, but upon partners' request it is possible to write down both the obligations of both parties in a signed agreement.

Query result structure:	left: thumbnail leading to further information; right: title, contributor, provider linking to further information; further information: larger preview image, basic "bibliographic" metadata. Either files for download or link to original context (remote source); search by 'digital object attached only' is possible.

Additional services: different sets of icons e.g., for linking to remote source, location on a map, bookshelf, and to a whole range of social networks.

Remarks/other information: none.

DiMCoN - Digitale Museale Collectie Nederland

URL:	http://www.digitalecollectienederland.nl/
Owned/Supported by:	Rijksdienst voor het Cultureel Erfgoed (Cultural Heritage Agency), supported by the Dutch ministry for education, culture and science
Contact:	Mr. H.C.J. (Hans) Schraven Rijksdienst voor het Cultureel Erfgoed / Cultural Heritage Agency Smallepad 5 | 3811 MG | Amersfoort | kamernummer 2.32 Postbus 1600 / P.O. Box 1600 | 3800 BP | Amersfoort | The Netherlands phone: +31 33 421 72 57 e-mail: h.schraven@cultureelerfgoed.nl
Year of launch:	2010
No. of content partners:	21 museums

Type:	national single-domain aggregator with public portal website.
Partner focus:	different types of Dutch museums.
Content focus:	exhibits / cultural objects / artworks.
DCA Partner relevance:	MBVB, (NIMk is already a partner).

Technical:	the only requirement is that partners need to have an OAI gate on which harvesting of the ESE fields can be performed. Perhaps additional fields can be harvested for research purposes. There is also a possibility to have exported xml (utf-8) imported.

Sustainability:	solid support by the Dutch ministry of education, culture and science results in good sustainability.
Cost and agreement:	at the moment there is no cost involved, but this might change in the future to paying a contribution in the costs for the hosting of the platform and the services. A formal agreement between a content provider and DiMCoN is still being constructed.

Query result structure:	2 rows each structure with: left: thumbnail or "place holder icon" leading to further information; right: min. title and provider linking to further information; further information: larger preview image, basic "bibliographic" metadata + IPR info. Either files for download (registration necessary) or link to original context; search by 'digital object attached only' is possible.
Additional services:	at the bottom of the detailed result-page a row of thumbnails which link to related items is displayed.
Remarks/other information:	no English translation available.

DLF - Polish Digital Libraries Federation

URL:	http://fbc.pionier.net.pl
Owned/Supported by:	The PIONIER Network Digital Libraries Federation, supported by the Poznań Supercomputing and Networking Center (PSNC), a public R&D institution
Contact:	Marcin Werla PSNC Digital Libraries Team Leader Poznan Supercomputing and Networking Center Noskowskiego St. 12/14, 61-704 Poznań, POLAND phone: +48 61 858 21 80 e-mail: mwerla@man.poznan.pl
No. of content partners:	84 (only 79 themselves with own website)
Year of launch:	2008

Type:	national cross-domain aggregator with public portal website.
Partner focus:	Polish cultural heritage institutions (currently mostly libraries and university/regional archives).
Content focus:	scans of texts and documents (books, newspaper), less images of manuscripts and works on paper.
DCA Partner relevance:	WRO.

Technical:	OAI-PMH protocol is preferred, but they have had successful cooperation with content providers who provided only CSV file with metadata via the FTP server. HTML parsing is also supported. At the moment in production only Dublin Core metadata harvesting and ESE exposing for Europeana is supported. There is a novel agent-based harvesting engine which is able to harvest and store metadata in any format (not only XML-based). Requirements are identical as mandatory elements of the ESE schema. Mapping procedure has been applied previously but is always discussed with the content provider previously.

Sustainability:	the DFL is indirectly supported by governmental funds and has a good sustainability.
Cost and agreement:	no costs are involved and no strict agreement in place. Cooperation is agreed upon based on an e-mail agreement. In the advent of the DEA a more formal way of agreeing to cooperation will be created.

Query result structure:	left: an icon for image or text; middle: title and author, sometimes year; right: logo of provider; the icon and title lead to further information, mostly to the original content, with a large pop-up window to display the visual content or scanned material (e.g., browse through books).

Additional services: it provides accessibility for visually impaired people.

Remarks/other information: WRO would be a pioneer, since they do not seem to deal with video content. Unclear how that would work with the pop-up window mechanism on the portal website.

EuropeanaLocal AT – EuropeanaLocal Austria

URL:	http://www.europeana-local.at/
Owned/Supported by:	temporary project that was funded under the EU eContentPlus programme
Contact:	Gerda Koch Europeana Local Content Co-ordinator für Österreich AIT - Angewandte Informationstechnik Forschungsgesellschaft mbH Klosterwiesgasse 32/I; A-8010 Graz; Austria phone: +43 316 835359-73 e-mail: kochg@europeana-local.at
No. of content partners:	unknown
Year of launch:	2008

Type:	cross-domain aggregator without public portal website (dark aggregator).
Partner focus:	Austrian cultural heritage institutions.
Content focus:	unknown.
DCA Partner relevance:	Ars Electronica (AE).

Technical:	metadata delivery is possible in different ways (e.g., OAI-PMH, FTP > XML, and text files). Mapping from standard formats, such as Dublin Core and MARC21, follows automatically. In case of custom metadata formats, support from DCA is required. Preview-possibility is offered in order to see how the data look in the Europeana lay-out before they're released for ingestion by Europeana. An additional service is the integration of a digital archive (e.g., Fedora) through which the data is delivered. Updates can be performed manually (FTP upload) or OAI is adopted through harvesting at regular intervals.

Sustainability:	EuropeanaLocal AT started in June 2008 and ended in May 2011. They are currently looking for ways to keep the project running without the EU project funding. Sustainability is therefore unclear.
Cost and agreement:	they plan to charge an annual fee that will be determined based on the amount of content the institution wishes to deliver as partner. It is not known how an agreement with a new partner would be worked out. The current partners were automatically contracted by the EuropeanaLocal DoW.

Query result structure:	none (dark aggregator).
Additional services:	none.

Remarks/other information: AE would be a pioneer, since EuropeanaLocal AT do not seem to have any noteworthy art content, not to speak of audio-visual art.

EuropeanaLocal DE – EuropeanaLocal Germany

URL:	http://www.europeana-local.de/
Owned/Supported by:	temporary project that was funded under the EU eContentPlus programme. Operational support was given by the Zentral- und Landesbibliothek Berlin.
Contact:	Angela Koch Zentral- und Landesbibliothek Berlin / Haus Amerika Gedenkbibliothek IT-Abteilung Bluecherplatz 1 D-10961 Berlin phone: +4930 90226-195/194 e-mail: koch@zlb.de
No. of content partners:	31
Year of launch:	2010

Type:	cross-domain aggregator without public portal website.
Partner focus:	German libraries, educational archives.
Content focus:	text and audio-visual (educational) documentation.
DCA Partner relevance:	HfG, transmediale (TM), EMAF.

Technical:	unknown.

Sustainability:	EuropeanaLocal DE started in June 2008 and ended in May 2011. They find themselves now in a transitional phase in terms of staff and daily operations. Although the creation of the DDB as a national aggregator is still in the development phase, they await evolution in that field and currently do not take on new partners in the EuropeanaLocal DE aggregator. Sustainability is unclear.
Cost and agreement:	unknown.

Query result structure:	(dark aggregator).
Additional services:	none.
Remarks/other information:	none.

GAMA - Gateway to Archives of Media Art

URL:	http://www.gama-gateway.eu/
Owned/Supported by:	GAMA e.V. (foundation)
Contact:	Gaby Wijers Chair of the Board / GAMA Foundation c/o Hochschule Für Künste Prof. J.-F. Guiton Am Speicher XI Nr 8 28217 Bremen / Germany phone: +49 421 95 95 1223 e-mail: gaby@nimk.nl
No. of content partners:	8 media art archives
Year of launch:	2009

Type:	thematic cross-domain aggregator with public portal
Partner focus:	media art archives.
Content focus:	audio-visual material.
DCA Partner relevance:	AE, argos, transmediale (TM), EMAF, NIMk, WRO. Regarding the profile of GAMA not only as an aggregator or portal but also as an association, it is especially relevant for DCA partners with a majority of audio-visual material in their collection.

Technical:	ESE is the easiest to implement while LIDO requires definition of a full set of metadata with references. Only a minimal set of metadata is sent to Europeana due to the new contract. Thumbnail ingestion and automatic generation are supported but no guarantees are given on the latter. Specific mapping requirements depend on whether dark aggregator or portal is used. In the case of portal, GAMA vocabulary is a prerequisite, for dark aggregator it's a recommendation. HTTP and FTP are supported while mandatory fields according to GAMA XML schema exist.

Sustainability:	GAMA e.V. is a foundation under German law and has 21 paying members. This ensures the basic maintenance and updating of the site and results in a good sustainability (self-supporting).
Cost and agreement:	in GAMA, a membership fee is paid to support dissemination activities, the board meetings and the technical maintenance. For DCA partners who would want to join, the first year of joining the network no membership fee will be charged. The new partners will be considered as honorary members. If they wish to remain members of the foundation, they will then need to choose a form of membership and pay a respective fee. In GAMA, the foundation statutes rule the non-profit orientation of the site are agreed to by the partner when becoming a member of the foundation.

Query result structure: left: thumbnail if there is video (excerpt or full) leading to a video view pop-up window;
middle: title, name, type, year, start of descriptive text leading to further information;
right: short name of the provider with link to their website;
further information: metadata, often descriptive text, if video available with embedded video frame, film strips (automatically extracted still from the video).

Additional services: the portal website is accessible for visually impaired people; guided tours, visual similarity search, keyword list, glossary.

Remarks/other information: can also operate as dark aggregator (important for ingesting thumbnails to Europeana for stills, which will not be ingested into GAMA, since a thumbnail in GAMA represents "moving image").

Hispana – Spanish cultural heritage aggregator

URL: http://hispana.mcu.es/

Owned/Supported by: Spanish Ministry of Culture, specifically the Directorate General for Books, Archives and Libraries.

Contact: María Luisa Martínez-Conde
Jefe de Área de Proyectos
Subdirección General de Coordinación Bibliotecaria-Ministerio de Cultura
Plaza del Rey, 1 / 28004 Madrid / Spain
phone: +34 91 701 71 37
e-mail: martinez.conde@mcu.es

No. of content partners: 128 institutions (with 156 repositories)

Year of launch: unknown

Type: national cross-domain aggregator portal with public portal website.

Partner focus: Spanish cultural heritage collections.

Content focus: a balanced mix of all types including a lot of artworks.

DCA Partner relevance: FTapiès.

Technical: partners need to implement an OAI-PMH compliant repository (ESE from 2011, EDM from 2012) that is harvested by Hispana.

Sustainability: the direct funding by the Spanish ministry of culture provides good sustainability.

Cost and agreement: participation is free of charge and on a voluntary basis, except for projects and institutions funded by the Spanish ministry of culture. In that case it's mandatory to implement an OAI-PMH compliant repository (ESE from 2011, EDM from 2012) that must be harvested by Hispana – so you could speak of a technical prerequisite for free participation. Participation in Hispana is possible without signing any formal agreement.

Query result structure: a list of underlined lines of title, author, year leading to more metadata (like a library index card) with a link to the image on the partner website and a link to the thumbnail (opening a new window).

Additional services: the website is accessible for visually impaired people (W3C WAI).

Remarks/other information: to access as a museum the institution has to join CER.ES and share a unified documentation and management system for its collections (DOMUS)

Kultura.hr - Croatian Cultural Heritage portal

URL:	http://kultura.hr/
Owned/Supported by:	Croatian ministry of culture, museum documentation centre, state archives and the national library
Contact:	Jelena Rubić viša stručna savjetnica Odjel za digitalizaciju knjižnične, arhivske i muzejske građe / Ministarstvo kulture Republike Hrvatske Runjaninova 2, 10 000 Zagreb / Croatia phone: +385 1 4866 519 e-mail: jelena.rubic@min-kulture.hr
No. of content partners:	10 institutions (with 38 collections)
Year of launch:	2010

Type:	national cross-domain aggregator with public portal website.
Partner focus:	archives, libraries, but mainly museum collections.
Content focus:	no content directly presented.
DCA Partner relevance:	MMSU (are already listed, but as MMCA).

Technical:	all digitised material need to be delivered based on ESE Specification and Metadata Mapping & Normalisation guidelines.

Sustainability:	the direct funding by the Croatian ministry of culture provides good sustainability.
Cost and agreement:	no costs are involved. Agreement is unknown.

Query result structure:	basically they have pre-defined a lot of categories and subcategories. Unfortunately many are yet empty, only on the second search level they indicate whether the subcategory bears a result. Results are collections only, not single items. Left: logo of institution or representative thumbnail. Right: name, start of descriptive text leading to full text and a link to the collection.
Additional services:	none.
Remarks/other information:	the portal website represents Croatian digital heritage not on item (object) level, but on collection level.

Kulturpool - portal for digital Austrian cultural heritage

URL:	http://www.kulturpool.at
Owned/Supported by:	Federal Ministry of Education, Art and Culture, technically supported by IT-provider UMA
Contact:	Marko Göls project development uma information technology GmbH Zollergasse 9-11 / 1070 Vienna /Austria phone: +43 1 526 29 67 - 501 e-mail: marko.goels@uma.at
No. of content partners:	11 (state and federal) institutions
Year of launch:	2008

Type:	national cross-domain aggregator with public portal website.
Partner focus:	well-balanced mix, strong focus on museums and art in the broad sense (e.g., theatre and music).
Content focus:	images.
DCA Partner relevance:	Ars Electronica (AE).

Technical:	OAI-PMH, HTTP, FTP, mail and JDBC is supported for metadata delivery. XML, CSV and Excel-exports are supported and there is also flexibility for special metadata specification, which is aligned to Europeana ESE.

Sustainability:	the direct funding by the government provides for good sustainability. Technical provider UMA has over 10 years working relationship with the government.
Cost and agreement:	no costs are involved. There is a formal cooperation agreement in which also the transfer of data to Europeana is mentioned.

Query result structure:	left: thumbnail; right: title, author, provider; both leading to further information: preview with a link to a larger picture (on their website!), logo of provider with link to their website and basic metadata.
Additional services:	smartwork, tagging, related items.
Remarks/other information:	content quality assurance: a board of experts is currently setting up a criteria catalogue.

Letonica - Latvian National Digital Library

URL: http://www.lnb.lv/en/digital-library

Owned/Supported by: Latvian National Library, V/A "Kultūras informācijas sistēmas"
                            (http://www.kis.gov.lv/) and
                            Microsoft Latvija

Contact: Digitālās bibliotēkas nodaļa
                            Latvijas Nacionālā bibliotēka
                            K.Barona iela 14, Rīga
                            Latvija, LV-1423
                            phone: +37167439944
                            e-mail: info@lndb.lv

No. of content partners: unclear. 18 collections digitally available

Year of launch: unknown

Type: national single-domain aggregator with public portal website.

Partner focus: libraries, no museums so far.

Content focus: print works and urban-cultural objects (maps, postcards, music
                            scores).

DCA Partner relevance: LCCA.

Technical: unknown.

Sustainability: the direct government funding provides for good sustainability.

Cost and agreement: a partner needs to pay certain expenses that are related to handling
                            and digitising the data, or training of employees that work on the
                            project. There is a formal cooperation agreement, which declares, for
                            example, the legal responsibility of the collaborator and the use of
                            data. .

Query result structure: 6 rows of thumbnails per page.
                            Underneath thumbnail: title, year, author, type.
                            both leading to further information, a preview and images in different
                            sizes (a icon for JPEGs to open), also "more metadata" offered.

Additional services: different social network affiliations.

Remarks/other information: none.

Libver – Hellenic aggregator for Europeana

URL:	http://aggregator.libver.gr/
Owned/Supported by:	Veria Central Public Library (Northern Greece region)
Contact:	Vangelis Banos Veria Central Public Library phone: +3023310-24494 e-mail: info@libver.gr or vbanos@gmail.com
No. of content partners:	14 partners
Year of launch:	unknown

Type:	national cross-domain aggregator without a portal website (dark aggregator).
Partner focus:	libraries and archives, no museums.
Content focus:	unknown.
DCA Partner relevance:	EPMAS, Frissiras, MMCA.

Technical:	OAI-PMH is the main data delivery protocol but also legacy libraries are incorporated via DEiXTo (http://www.deixto.com) web data extraction tool. The core of metadata harvesting, storage and communication with Europeana is implemented by Open Archives Engine, while specific data extraction tasks are handled by DEiXTo software. DC and ESE models are supported while arbitrary mapping between them are performed. HTML to ESE is also supported.

Sustainability:	the supporting organisation behind Libver seems to be doing well. It is unclear however what priority the aggregator has in its long-term policy. Therefore sustainability is unclear at the moment.
Cost:	unknown.

Query result structure:	none since no portal website.
Additional services:	none.
Remarks/other information:	dark aggregator.

Linked Heritage

URL:	http://www.linkedheritage.org/
Owned/Supported by:	temporary EU project funded under the ICT Policy Support Programme (ICT PSP)
Contact:	Linked Heritage Project coordinator Ministero per i Beni e le Attività Culturali c/o ICCU Viale Castro Pretorio 105 00185 Roma, Italia phone: +39 06 49210427 e-mail: info@linkedheritage.org
No. of content partners:	at the time of writing +- 40, sometimes also acting as aggregator thus covering more single institutions
Year of launch:	project started in April 2011

Type:	cross-domain aggregator without a portal website (dark aggregator).
Partner focus:	majority of museums, but also content from ministries and responsible government agencies, aggregators, leading research centres, publishers and SMEs.
Content focus:	not specific.
DCA Partner relevance:	all DCA content providers.

Technical:	uses the MINT services (see below 'Aggregation).

Sustainability:	the project started 1st of April 2011 and runs until September 2013. Possible future sustainability is under discussion in the project consortium.
Cost and agreement:	no costs are involved. Partners need to sign a formal cooperation if they are not already enlisted in the Linked Heritage DoW.

Query result structure:	none since there is no portal website (dark aggregator).
Additional services:	none.
Remarks/other information:	none.

Aggregation platform provided by NTUA for DCA

URL: http://mint.image.ece.ntua.gr

Owned/Supported by: Image, Video and Multimedia Systems Laboratory, National Technical University of Athens

Contact: Nasos Drosopoulos
                            Image, Video and Multimedia Systems Laboratory
                            School of Electrical and Computer Engineering
                            National Technical University of Athens
                            9 Iroon Polytechniou Street
                            157 73 Athens / Greece
                            phone: +30 210 7724350
                            e-mail: ndroso@image.ntua.gr

No. of content partners: Numerous content providers used or are currently using the platform.
                            More details on
                            http://mint.image.ece.ntua.gr/redmine/projects/mint/wiki/Projects

Year of launch: 2010

Technical: Registered organisations can upload (HTTP, FTP, OAI-PMH) their metadata records in XML or CSV serialisation in order to manage, aggregate and publish their collections. A reference metadata model serves as the aggregation schema to which the ingested (standard or proprietary) schemata are aligned to. Users can define their metadata crosswalks with the help of a visual mappings editor for the XSL language. Mapping is performed with simple drag-and-drop or input operations that are then translated to the corresponding code. The mappings editor visualizes both the input and target XSD, in an intuitive interface that provides access and navigation of the structure and data of the input schema, and the structure, documentation and restrictions of the target one. It supports string manipulation functions for input elements in order to perform 1-n and m-1 (with the option between concatenation and element repetition) mappings between the two models. Additionally, structural element mappings are allowed, as well as constant or controlled value (target schema enumerations) assignment, conditional mappings (with a complex condition editor) and value mappings between input and target value lists. Mappings can be applied to ingested records, edited, downloaded and shared as templates between users of the platform. Preview interfaces present to users the steps of the aggregation including the current input XML record, the XSLT of their mappings, the transformed record in the target schema, subsequent transformations from the target schema to other models of interest (e.g., Europeana's metadata schema), and available HTML renderings of each XML record. Users can transform their selected collections using complete and validated mappings in order to publish them in available target schemas for the required aggregation and remediation steps. The platform has been deployed for a variety of aggregation workflows corresponding to the whole or parts of the back-end services.

Type:	cross-domain without a portal website (dark aggregator).
Partner focus:	all DCA content partners.
Content focus:	no own content.
DCA Partner relevance:	NTUA is DCA technical partner dealing with aggregation of digitised content.

Sustainability:	Project-based aggregators like Linked Heritage and DCA (both using MINT platform) are also free of charge, but there the sustainability of the service is related to the individual project strategy. Typically, the technical infrastructure, deployed and maintained at the National Technical University of Athens (NTUA) remain available for new content providers interested in joining the network; the harvesting scheme for the delivery of content to Europeana is kept updated by the NTUA, in order to be aligned with the new requirements and standards defined by Europeana.

Query result structure:	only visible on Europeana.
Additional services:	none.
Remarks/other information:	MINT services compose a web-based platform that was designed and developed to facilitate aggregation initiatives for cultural heritage content and metadata in Europe. It is employed from the first steps of such workflows, corresponding to the ingestion, mapping and aggregation of metadata records, and proceeds to implement a variety of remediation approaches for the resulting repository. The platform offers a user and organization management system that allows the deployment and operation of different aggregation schemes (thematic or cross-domain, international, national or regional) and corresponding access rights.