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Analytic report on sustainability and recommended business case

1 Executive Summary

It is well recognised that discrete funding on a single project basis may be appropriate for the development phase of infrastructure projects, but it does not represent a viable mode to sustain infrastructure in the long term. The CARARE project has created an aggregation service for content from a range of cultural heritage organisations receiving funding for this specific task and tied to a specific period of time, i.e. the length of the project. This means that the CARARE network and the aggregator itself (which is not cost neutral to run, maintain and expand) needs an on-going funding stream to ensure its sustainability. The objective of CARARE Work Package 7 has been to investigate and, if possible, to define a sustainable business model for the network and aggregator that allows for the provision of long-term services to the Europeana, while ensuring its extensibility (in terms of new content providers), adaptability to new user needs and also to new technological developments.

Initial analysis by the ADS noted three possible general approaches for maintaining content aggregators for Europeana data beyond the length of the project funding:

- 1) Europeana contributes to the sustainability of its aggregators e.g. working with aggregators to develop value added services for sectors/domains/content providing communities that help contribute towards the costs of running the aggregation service.
- 2) The aggregators contribute to the sustainability of Europeana – by providing content and developing services that contribute to the running costs of the aggregation service and also Europeana.
- 3) The aggregator develops an independent business model for its sustainability that enables it to continue providing content to Europeana and value added services for its own user community.

It is worth noting that selecting the most appropriate, and viable, model has been a particularly interesting challenge for CARARE due to diverse nature of the content providers participating in the project. This rich mix includes diversity in where the content providers are situated in local and national infrastructures, for example they may be based in a local authority, they may be part of central government, they may be part of various Higher Education infrastructures, they may be constituted by Royal Commission, or be in a museum or independent legal entity. In each case the channels by which the content provider receives funding are different. As a result CARARE has engaged in a review and broad analysis of viability and sustainability issues in the wider context of digital curation and access to heritage data (Moore *et al.* 2010), including the provision of these regional and national aggregation

services, aggregation services for the library, archive and museum domains, and also the developing Digital Research Infrastructure for the Arts and Humanities ([DARIAH](#)) and elsewhere in the [Europeana cluster of projects](#) and related initiatives. On investigation, no single sustainability model was deemed appropriate as a means of on going content provision and maintaining the CARARE network and its aggregator role. For example where option 3, above, might be most desirable for many content providers a business model that draws funding directly to the aggregator rather than to the content provider may not be acceptable for content providers who are under pressure to create their own business models based on access to their content and has proved difficult to define as CARARE itself has no ability to directly exploit the underlying content held by content providers, but rather is a conduit for metadata alone

In order to investigate appropriate sustainability models for the CARARE aggregator two distinct, but complimentary lines of investigation and analysis were drawn together. A cost model for the aggregator infrastructure was defined, this consisted of the running and support costs of the MINT tool and the MORE metadata repository, such a model should also take into account, as far as possible, the likely technological changes that might reasonably be expected to take place in the lifetime of the aggregator, although traditionally this is hard to quantify accurately. In addition, key elements of the CARARE project in terms of networking, mutual training support and collaboration were investigated and considered as part of the overall cost model for sustaining the partnership.

Secondly the CARARE project investigated sustainable funding models that might cover the elements in the cost model and looked and how the three general approaches outlined above might be facilitated by contributions from direct and in-kind funding from content providers and others, partnership with related Europeana projects and cultural heritage information infrastructure projects in the Higher Education, museum, library and archive domains.

Investigating viability and sustainability was the core activity of CARARE Work Package 7 and the formulation of potential business models and their reporting was the responsibility of the ADS as work package leader. The participation of all CARARE project partners was required in both gathering the required information to define the cost model and in selecting the funding models that would be acceptable to their organisations.

This report draws together work which was carried out in CARARE work packages 5 and 7 and is structured into three main themes that cover a review of sustainability models, the results of the CARARE stakeholder survey on sustainability and the investigation of potential business opportunities relating to 3D Cultural Heritage content. These sections are followed by a description of the approaches adopted by CARARE in trying to structure a sustainable, post-project funding, organisation that offers continued benefit to the content providers and

Europeana. These sections include the results of three phases of consultation amongst the CARARE partners covering the creation of a legal entity, participation in and structure of such and entity and a proposed business model and finally on the creation of a CARARE community interest group. This report finishes with a short overview of some of the barriers to sustainability identified throughout the project as well as a recommendation on pathways to a sustainable CARARE.

Acknowledgements

We would like to acknowledge the contributions made by all the CARARE partners to the surveys which under pin this report, and the contributions made by the members of the project board and the sustainability working group (Costis Dallas, Hans de Han, Henk Alkemade, Hella Hollander, Dimitris Gravrilis, Daniel Plentinkx, Kate Fernie and Rimvidas Laužikas) to the discussions as the work progressed.

2 Sustainability models

The first element of the work package was to investigate existing sustainability models in use in the cultural heritage sector. The result of this was internal project deliverable document '[Review and Analysis of the Sustainability of Digital Curation and Access to Heritage Data](#)'. Authored by the ADS (Moore *et al.* 2010), this document represented the first important step in fulfilling the work package objectives and was a review of a broad range of funding models currently adopted by cultural heritage organisations with a role in generating, curating and disseminating our digital cultural heritage. This document did not suggest or recommend sustainability models for immediate consideration although the conclusion of the document does discuss the viability of some options for CARARE in general terms. This document was also intended to inform the structure of the survey of CARARE stakeholders (the full document is available on the CARARE website (<http://www.carare.eu/eng/Resources>)).

2.1 Review of Models

It remains common for cultural heritage organisations to have business models that draw funding from a number of sources and/or to generate their income in a number of ways. Therefore the examples of a particular approach to funding or generating revenue given in the review document do not assume that this is the only model (or even primary model) for the organisations identified. In the review document each example approach also had examples of organisations that utilised that particular approach. The organisations were selected on the basis that information is available, their approach to the model is mature and well formed (i.e. representative of a good application of the model) and that the primary objectives of the organisation is directly relevant to the range of organisations represented in the CARARE partnership. To give the broadest possible perspective, organisations were chosen from outside the range of organisations already involved in Europeana. A very useful complementary document to the CARARE Review is the [Analysis of the Europeana and Athena Survey for the Aggregators](#) produced by the ATHENA project. The discussion on finance and sustainability in the Athena report is particularly useful.

The models identified and investigated were:

1. National/regional government funding

Very common funding in which all or a major part of the funding derives directly or indirectly from national or regional governments, departments or the quasi non-governmental organizations (the so-called QUANGO's).

2. Project funding

Funding focused on a specific project for a specific time. There is no continuity in funding.

3. Subscription funding

Stakeholders attempt to recoup infrastructural costs by charging subscription fees for access to some or all of its data to its users, which can be individuals, organizations, businesses etc.

4. Endowment funding

In this model an intense period of fundraising generates a large fund that subsequently provides sufficient annual return on investments to keep the resource running (and, possibly, freely available).

5. Commercial partnership

Successful projects can be interesting to partners outside the existing organization. There can be a kind of content swap to commercial partners on the bases of more formal vendor contracts. The organization actually makes money by means of selling knowledge, products or services in cooperation with commercial partners.

6. Advertising revenue

The web-advertising model is an extension of the traditional media broadcast model. Think e.g. of banner ads. This model works best when the volume of viewer traffic is large and highly specialized.

7. Direct charging

This is the 'user pays' model and it allows users to either purchase specific pieces of content or gain access for a limited amount of time. This model is more focused than the ordinary subscription model. In this model the user can buy exactly what he or she wants.

8. Low cost business

This model is all about reducing costs to a minimum after the initial grant or project funding. It is basically a survival model for an organization over the long term in order to continue to serve its constituency. Project funding is used to create an infrastructure that can be run at very low cost or in 'sleep mode' after the end of the project. It should be noted that low cost does not mean no cost and there are few example of this approach in operation.

9. Multiple streams

According to the ‘multiple streams’ model the institutions raise revenue from a number of different sources, these funding streams can include some or all of the models previously discussed. Its major goal is diversification of funding sources.

10. Collaboration

Whilst collaboration is not a model per se, such partnerships can play a significant role in the development of sustainable revenue or business models.

2.2 Review conclusions

What is clear from the review is that no single funding model can currently be considered as 100% sustainable. This is particularly true in light of the perceived need for public sector funding cuts in many countries as a response to the global financial crisis as national or regional funding has traditionally acted as a mainstay funding method for many cultural institutions. It was also noted that markets are fickle, subject to any number of external drivers, and that the monetary value of cultural data holdings is difficult to define. A key element to the success of a number of commercial funding models is the scale and reach of an organisation, its ability to ‘add value’, its copyright ownership, and its ability to invest in promotion (advertising) as well its ability to manage the short term thinking inherent in such markets. The last point is especially pertinent for cultural heritage institutions that have long-term preservation of collections as a core objective, choices regarding digitisation or accessioning must be predicated on factors other than the immediate potential commercial value of the material under consideration.

The final sections of the review looked at collaborations and mixed funding models, and in terms of robustness, i.e. sustainability. When pressure is put on one particular funding stream, these approaches seem to score well. However it was acknowledged that complex mixes and collaborative agreements also carry with them an overhead in terms of administration and strategic focus. In the context of CARARE as an aggregation service, it is clear that its content providers will draw their own funding from numerous sources, even where each individual content provider might only adopt a single funding methodology, obviously they will not all adopt the same one. This represented a challenge for CARARE’s own sustainability model in terms of complexity, although potentially a richly ‘mixed economy’ amongst providers may offer some degree of stability. It is also true that for CARARE the sustainability model that Europeana itself adopts will be fundamental to CARARE’s own sustainability.

Using this review as a starting point the next stage in the development of a business for the CARARE partnership was to look at the current disposition of the CARARE stakeholders and

their perceptions of what a sustainable CARARE might look like and what it might offer them in the long term.

3 Stakeholder Survey

The CARARE Stakeholder survey (D7.2) was conducted by N303 in early 2011 with support from MDR Partners with the following objectives:

- to gain better insight in the motives of the CARARE partners as stakeholders in the project;
- to identify possible business model(s) for CARARE;
- to obtain information about the ambition and demand for related solutions by partners and stakeholders

In total 22 organizations responded to the survey, it should be noted that of these, 20 were organizations participating in CARARE. Responses were also obtained from the RCAHMS (Scotland) and the Discovery Programme (Ireland) who do not participate in CARARE. The survey was conducted by a combination of either interview with or by self-completion by the stakeholder organisation. Around half of the respondents were interviewed either by N303, MDR or ADS and around half completed the questionnaire without an interview. The resulting analysis showed no marked difference in the quality of the answers received by either approach. However, the interviews often gave the respondents and the surveyors a deeper insight into their own organization. The full document had a restricted circulation within the project partnership.

The questionnaire had 25 questions divided into 4 sections each covering a specific area:

- a. organisational details
- b. involvement in CARARE
- c. business models for CARARE
- d. legal matters and licensing

The survey showed clearly that participation in CARARE is considered a real benefit to partners. Not only do they gain a positive experience through broader international contacts, the sharing of information, the development of technical knowledge and the fact they are operating in the front line of European digital experience, but also they see the possibilities for their own organisations to profit from CARARE and Europeana in terms of visibility, standardisation and content sharing. In terms of developing the business model this insight was fundamental to the future direction of the CARARE partnership.

The survey findings suggested that the responding partners all positively agree on the value of CARARE and the possibility of CARARE sustainable service. However, a range of different opinions were expressed regarding the role and function of CARARE when respondents were asked about who would be willing to pay for CARARE services. Some organizations appeared willing to pay, at least at the time of the survey, but a substantial number do not see a business case to pay for inclusion in an aggregation service. In this respect the added value of CARARE apparently was not clear to all partners. Regarding licensing, the findings of the survey suggest that there were few obstacles in re-using metadata via the Europeana DEA.

A synopsis of the responses most pertinent to sustainability is given here.

3.1 Questionnaire results by section

3.1.1 Section A: About your organization

Preservation and protection of the environment was cited as the most common organisational objective, followed by with teaching and education. Curation and management of digital assets and databases was explicitly mentioned by eight of the organizations. Eleven participating organizations have defined mission statements and all mission statements cover ambitions in the field of heritage such as interaction with society, research, communication and social relevance. Some of the mission statements are more focused. This is especially evident in the organizations operating in the field of archaeology. Four organizations, Koninklijke Nederlandse Akademie Van Wetenschappen - Data Archiving and Networked Services (KNAW-DANS), Archaeology Data Service, Athena - Research and Innovation Center in Information, Communication and Knowledge Technologies: Cultural and Educational Technology Institute (CETI) and Europeana Office) explicitly mention digital data or digitised content in their mission statement. This reflects the core tasks these organisations undertake regarding digitised content and digital interaction.

Target audiences

Nearly all the responding organizations consider the general public to be one of their key audiences. Responses from specific heritage organizations also included local and regional authorities, museums and researchers as target groups. Few include experts, scientists as their primary targets. Only two responders (The Heritage Institute of the Netherlands and KNAW-DANS) focus on only heritage professionals and experts/scientists. Only Europeana includes the tourist sector as one of its primary focus groups.

For most organizations there is no single target audience. Instead, there usually is a diverse mixture of different audiences. These consist mostly of a combination of general public, experts, professionals, policy makers, scholars, schools and businesses. This diversity of possible audiences, which at times have conflicting interests and which certainly have to be approached differently, has a direct influence on the way content is processed, used and

presented. See Table 1 below. Very few organizations identified commercial enterprises or sectors as target audiences. The public and Cultural Heritage professionals accounted for most of the target audiences.

Organization	General public (incl. children)	Tourists	Teachers	University students	Scholars & researchers	Experts, CH professionals and scientists	Museums	Listed building owners	Local & regional govt., civil servants	Other CH agencies	Lawyers	Archaeological excavation companies	Building & infrastructure companies	Sponsors
1	Blue					Green			Orange			Pink	Pink	
2	Blue					Green		Orange						
3	Blue		Blue		Green				Orange					
4	Blue					Green	Green				Pink			
5	Blue				Green									
6	Blue			Green	Green	Green								
7					Green									
8	Blue					Green				Green				
9	Blue				Green	Green								
10	Blue	Blue				Green				Green				
11	Blue					Green			Orange	Green				
12	Blue				Green	Green			Orange	Green				
13	Blue			Green		Green	Green		Orange			Pink	Pink	
14				Green		Green								
15	Blue							Orange	Orange					
16	Blue						Green	Orange	Orange					
17	Blue					Green								
18	Blue				Green				Orange					Blue
19	Blue			Green		Green								
20				Green	Green	Green								
21	Blue								Orange					
22	Blue													

Table 1 Audience type by organisation

Obligation to earn income from the commercial market

Most of the organizations surveyed have no obligation to earn income from commercial sources. Only six organizations in the survey were not government financed or were only partially government financed. These include a research institution that gets 40-50% of its

income from external sources and project funding, and heritage organisations with formal obligations to earn income in addition to the public funding which they receive.

3.1.2 Section B: Involvement in CARARE

This survey section investigated partner’s direct involvement in CARARE, their ambitions and their ideas (see Figure 1). The majority of organizations, when answering why they are participating in the CARARE project, stated that they see CARARE as a means to create better promotion and dissemination of cultural heritage in general, including better promotion of their own content (mentioned 14 times). Next, is the creation and expansion of networks (mentioned 6 times) and the exchange of ideas and information and the comparison of heritage management (mentioned 5 times). In the same category are the remarks about learning from other organizations concerning ICT/technical solutions (mentioned 3 times). It is clear from these remarks that CARARE functions as an important tool in sustaining inter-European contact and is valued as such. This finding has had very specific impact on the formulation of the CARARE follow-on planning.

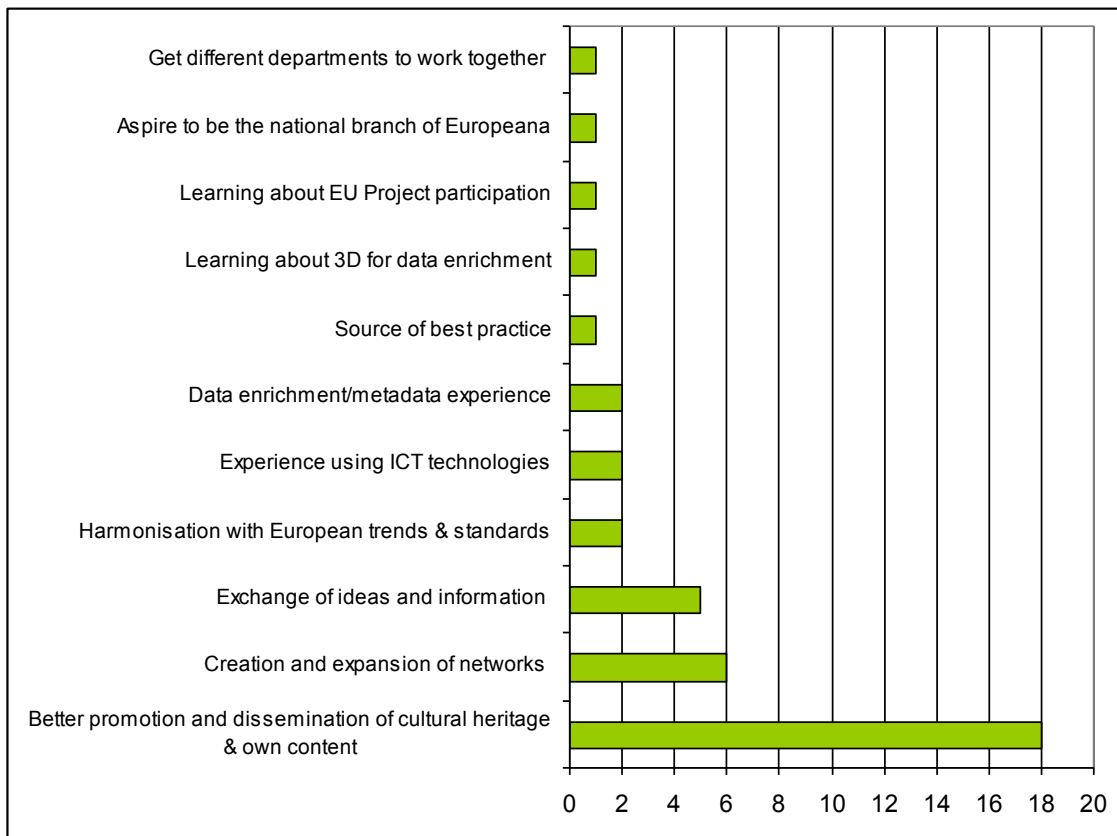


Figure 1 Benefits of CARARE to participating organisations

For Question 11: “where do you think best results for your organization will come from via CARARE if it develops beyond metadata ingestion tools and aggregation” the responses are summarised in table 2 below:

	Times mentioned
Developing new services	3
A virtual European cross over medium in order to be able to combine different content from different collections and different sectors in different countries with Europeana?	9
Creating better cooperation between heritage institutions,	10
Adding value to your content and/or generating users	7
Developing further new tools - say metadata enhancement	4
All of these	5

Table 2 Survey Q11 responses

Again, cooperation scores very high. If the answers to “a virtual European cross over medium”, which to a large extent deals with cooperation on content level, are included cooperation scores 19 out of 22.

A fundamentally important question for the issue of sustainability was Survey Question 13, which asked if CARARE could be developed into a service provider in its own right or needed to be linked to Europeana. This revealed a generally very cautious approach. Most respondents were aware of the fact CARARE’s data schema is richer than Europeana’s and could potentially function on its own because it offers richer information suited audiences out with Europeana. Three respondents thought that CARARE could only stay as a separate aggregator if it develops into a specialized user interface.

Most responders conclude it is strategically more sensible to keep CARARE connected to Europeana; Europeana being the main European portal to European digital heritage.

3.1.3 Section C: Business models for CARARE

Survey Questions 16 directly asked the organizations which of the 10 business model listed in the Survey Appendix attached to the questionnaire (see Section 2.1) they thought would be feasible for CARARE, whether this should be a combination and why they thought these

models might work to sustain CARARE into the future. The responses are illustrated in Figure 2 below.

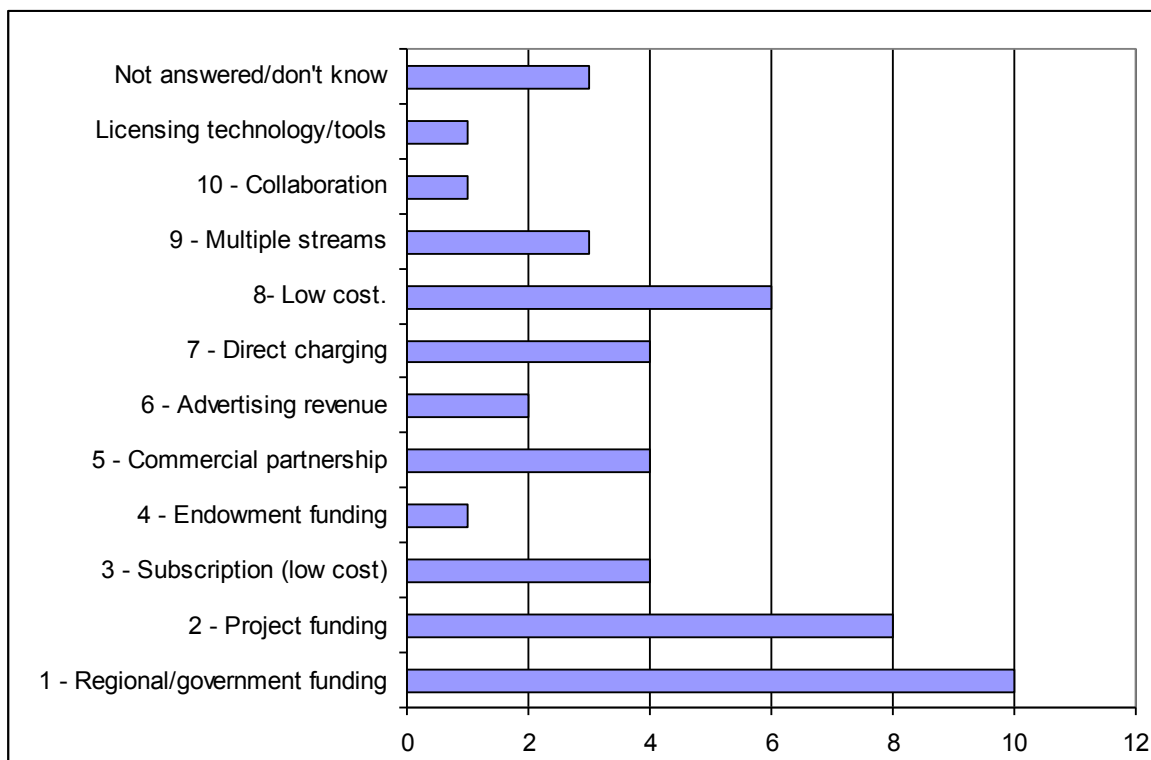


Figure 2 Business models per number of responses

Perhaps not so surprisingly given the funding models content providers currently use, the two most popular responses were regional/government funding and project funding. In 5 cases, responders suggested a mixture of both, leaving 5 favouring public funding (4 favouring this funding method alone) and 3 favouring project funding but always in addition to other non-public funding sources. The low-cost model was the next most popular business model and again, this was always in combination with another business model.

When asked (Survey Question 18) if the responding organization planned to use new business strategies themselves in the future there was a resounding ‘no’, see Table 3 below. The majority of respondents are not considering for new business strategies. This obviously includes the organizations that are primarily government funded.

	Yes	No	Not sure/ no answer
18. New business strategies?	2	12	1 / 7

Table 3 Question 18 responses

Crucial to the sustainability options that are open to CARARE is the question of whether partners might consider paying CARARE for products and services in the future. Stakeholders were fairly equivocal on this point and there was quite a range in answers (Table 4).

	Yes	No	Not sure/no answer
19. Pay for CARARE services/products	6	9	6 / 1

Table 4 Question 19 responses

Where there has been a “No” answer there is a feeling that heritage- related services funded by the EU should be free of charge as they are open source. In some cases European funding is explicitly given as part of the current business model. CARARE/Europeana is also seen as a great means to advertise content on a broader scale or to diffuse research results and quality standards. It is apparent most organizations do not have an explicit business model, depending as they are on public funding or grants and do not experience this as a business model, which it is, of course.

Perhaps the single most important question of the whole Stakeholder Survey (and one that was reiterated later in the project, see Section 7 Partner Consultation III) was whether partners would be willing to pay CARARE to aggregate data for them. This was covered in Survey Question 21 and the results are given in Table 5 below.

	Yes	No	No answer/maybe
21. Pay for CARARE as an aggregator?	5	10	3 / 4

Table 5 Question 21 responses

From these survey results it there appeared to be only limited interest in paying for CARARE services. Considering the answers given on questions 18 to 21, there is a consistency in the very finely balanced attitude from project partners towards financing CARARE directly. This was obviously an important signal to possible business cases being developed for CARARE.

4 Business Opportunities

A further internal CARARE deliverable (D5.3), produced in autumn 2012 by Daniel Pletinckx of Visual Dimension, was tasked with investigating and reporting on the potential for commercial and business uses of CARARE content. The report identifies the potential of these different uses but also makes clear that most of these uses are still uncharted terrain, in addition the report focuses specifically on the 3D content held by CARARE content providers. The main business uses identified were:

- On demand 3D printing
- Publications
- Games

4.1 On demand 3D printing

One of the most straightforward re-uses of 3D models in another form is *on demand 3D printing*. Museum objects, landmark buildings or important archaeological remains can be attractive enough to imagine people wishing to order a physical 3D print, made through rapid prototyping techniques. It is conceivable that CARARE could provide such a service or subcontract it to a commercial organisation. Technically, the 3D models need to be of sufficient geometrical quality and models need to be a closed shape to be printable. There are a wide variety of materials available today for 3D printing and some museums are already adopting 3D printing to create travelling exhibitions. In terms of IPR it may be necessary to ensure customers refrain from copying, reselling or making commercial use of the print when ordering the 3D print. The price of such a 3D print would not only contain the printing and shipping cost, but also a fee to the owner of the 3D data and a fee for CARARE.

4.2 Publications

Visualisations of 3D resources that do not represent physical objects or monuments (such as virtual reconstructions) could be used in printed publications, yielding a publishing fee. The same holds for special views on existing physical objects or monuments such as cross sections or orthographic views. In practice, this results in creating high-resolution images for print. In many cases, the quality of the 3D resources created for online publication via Europeana will be insufficient in geometrical and/or textural resolution, so that the images need to be made from an original high resolution version of the 3D resource. It is becoming much more common for publications to be entirely digital. CARARE has quite an advantage in this as PDF is the preferred software for digital publications and most Europeana 3D resources are made in 3D-PDF, and has created a functional specification of requirements ([Deliverable 5.1](#)) (Pletinckx and Haskiya, 2011). However, some devices used to read digital publications are

tablets and e-book readers, which are likely to use HTML5 and not 3D-PDF as the basis for digital publications that contain 3D.

4.3 Games

In the games industry, there is a trend to use more and more historically correct content. This trend provides the opportunity to provide 3D resources of archaeological objects or monuments to the games industry. In this case, not only the 3D model is important but also the metadata and the historical context. Using the 3D resources created by the CARARE partners in historically based games looks like a big opportunity because of the vast budgets that are available to make such games. However, there is currently little mutual working between the world of cultural heritage and the games world. The games world has invested in its own historical research departments that at least understand and support the needs of the games designers. It will probably require a lot of time, image building and creation of trust before the games world will re-use 3D models coming directly from cultural heritage. There are also technical issues in that 3D models in games are highly optimised, need to fit in the graphical style of the game and need to fit in the story of the game. Therefore 3D models need to go through a major redesign cycle before they are fit for use in a game. This means that in practice games companies will not pay much for such 3D models or simply will redesign them from scratch. Creative industries and arts

Reusing 3D models of major monuments or archaeological sites by creative industries and arts can have the potential to be a source of income, because the use of these models can add significant value to the artistic endeavours. In the performing arts and music, digital stages are frequently used through large screens and projection, even 3D projection, where the audience needs to wear 3D glasses. The cost of such digital theatre and opera stages can be significantly lower than building them and they allow a much more flexible and creative integration into the performance. As the projected stage image can be a real-time 3D image, it can have changing lighting or orientation of the displayed monument, contain animated elements such as simulated crowds, or be dynamic to show collapse or rebuilding or evolution through time. The use of virtual stages is quite widespread in concerts and music performances, but is slowly entering other domains of performing arts. In visual arts, 3D monuments and archaeological objects can be used as elements that are being re-interpreted and recombined in digital artworks. The use of recognisable landmark monuments or specific archaeological objects in 3D while creating digitally born artworks could also create potential income, as the use of 3D is taking on in visual arts.

Finally, in film, more and more historically correct 3D models of objects and buildings are used. All these uses require high resolution, high quality 3D models. The user of such models will not be the theatre house or film company itself but most likely an intermediate company

that provides this creative use as a service. However, artists in most cases will be direct users, but likely to generate generating a lower potential income.

4.4 Implications for sustainability

Whilst it has been extremely useful to have these potential business and funding uses detailed in the Visual Dimension report, it should be noted that all of them require access to the underlying content and not simply to the CC0 licensed metadata, nor to the richer metadata set curated by CARARE in the MORE depository. In essence for CARARE to benefit from these opportunities in terms of its own sustainability it would have to act as a broker between the customers and the content provider. This approach, along with others identified in the sections below, was identified as a means of adding value for partners in CARARE and potentially as a means of creating a revenue stream for a follow on (post project funding) CARARE body that results in a self-sustaining organisation that content providers could participate in free of charge. Although it should be noted that if a follow on body's income was generated by 'brokering' business between content providers and customers then participation would in fact not be free of charge, but would be covered by a brokerage fee either directly from the content provider or indirectly from the charge to the customer. It should also be noted that, as detailed in section 3, the stakeholder survey that not all CARARE partners have large amounts of 3D content and not all partners are in a position to provide them for the uses identified in this report for IPR, copyright or constitutional reason.

5 CARARE's Sustainability

In the light of the Sustainability Model Review and the Stakeholder Survey the CARARE Sustainability Working Group identified three leading options for ensuring CARARE's sustainability:

1. Content provider pays to have their data aggregated.
2. European funding pays to maintain the aggregator and Europeana infrastructure (or a mixture of 1 and 2).
3. Regional/National bodies pay to have numerous of their local content providers included (or a mixture of 1,2 and 3).

Options 2 and 3 rely on external funding from European, national or regional bodies. Whilst this may come to pass, a model based on the content partners only and within their control is likely to offer the best option for sustainability in the near term. The main reason for this was that a 'content partners only' model offers the clearest opportunity for business development and there were a number of areas of potential where opportunities had been identified, i.e. CARARE could:

1. Provide systems infrastructure for aggregation (i.e. MINT & MORE)
2. Provide technical support
3. Provide business development services aimed at generating revenue for CARARE and minimising the cost to the content provider. See Section 4 above and training in developing data for aggregation.
4. Provide a continuing mechanism for partner networking, collaboration and information exchange.

Clearly the provision of these services (with the potential exception of 4) would require funding and as a result cost of infrastructure support and training was investigated.

5.1 Infrastructure, Support and Training

Base on correspondence with the DCU and NTUA the following estimated annual costs were arrived at for continued infrastructure provision and technical support from the project partners currently providing this as part of their role in the CARARE project.

- MINT/MORE maintenance (purchased by a CARARE continuation body from the current host). This would be on-going cost representing the staff charges and overhead costs of the current hosts. This was estimated to be in the region 10-15,000 Euros annually.

- MORE/MINT hosting (including mass storage for the repository and on-line access). This was estimated at 3000 Euros annually.
- Travel and promotions, administered by a CARARE continuation body. This was estimated at 5000 Euros.
- Management of subscriptions, service level agreements and MINT/MORE maintenance plus administration of all points above, this must include preparation of an annual statement of accounts, which may require the services of a qualified accountant. This cost is likely to be in staff time for the organisation hosting a continuation body, an estimate of one month at 4000 Euros.

This gave an estimate of on-going costs of 22-27,000 Euros per annum. For this sum subscribing partners will have their metadata (in both CARARE and EDM formats) maintained in the MORE infrastructure and the ability to update their data twice annually. This will also allow on-going access to the MINT tool, including content provider specific XSLT as well as some level of technical support.

The scenario proposed at this stage was that CARARE develops an independent business model for its sustainability that enables it to continue providing content to Europeana and value added services for its own user community. This business model could then develop to include the provision of services and/or access to enhanced metadata sets for a fee, however in the first instance it was proposed that a subscription based model is developed that covers all costs for CARARE and the subscription is levied on the content providers directly. A content provider may be able to have their subscription covered by another body, perhaps a national or regional government, but this negotiation should be left the content provider rather than be a role for CARARE.

Any business model that promoted sustainability would require a term of agreement between the content provider and CARARE. For example, if CARARE was receiving funds from content providers then it would be essential that CARARE knew for how long this relationship was guaranteed to remain in place. Similarly if a content provider is using enhancement services provided by CARARE and their internal workflows are predicated on this relationship then it would be a prerequisite that this relationship have a formally specified term. The development of such a business model was deemed to require any successor body to CARARE to be a legal entity both to allow it to enter into contractual agreements with content providers, service level agreements with infrastructure suppliers and to have legal structure that facilitated employing staff for administration, promotion and business development purposes.

6 Partner Consultation I – Legal Entity

For the majority of the lifetime of the CARARE project it was considered very likely that a continuation body would need to be formulated as a legal entity. With regards to licensing for European Union-funded projects that deliver data to Europeana such as CARARE, three possible scenarios are envisaged by Europeana:

- a. The project consortium, acting as an Aggregator, forms a legal entity that is also responsible for signing the DEA with Europeana with the explicit consent of the project partners.
- b. One of the project partners assumes the role of an aggregator and signs the Data Exchange Agreement with Europeana on behalf of the other providers, with their consent. As it may be the case the coordinator of a project or another partner with a legal status takes on the role of the aggregator with the consent of the consortium. Europeana would then sign the Data Exchange Agreement with this aggregator.
- c. Europeana signs the Data Exchange Agreement with the individual project providers. If scenarios a. or b. above are not possible.

6.1 The case for a CARARE legal entity.

There are two possible general arguments for establishing a legal entity for CARARE

1. In order to enable it to act in the way described in the first Europeana scenario description above (a)
2. In order to provide it with a legal basis for other forms of activity not necessarily related to supplying data to Europeana (see Section 5)

As CARARE is a funded project, the relationship between the partners is specified in the project contract documents. At the scheduled finalisation of the project there is no automatic successor body with which the either the content providers or a sponsoring organisation can contract. It was therefore considered in the interests of the long-term sustainability of CARARE as an aggregator that it be constituted as a legal entity immediately after, or ideally before, the end of project funding. The possible exception to this scenario alluded to in the first paragraph of this section is where CARARE continues to develop on a project funding basis, i.e. there was a successor project, even in this case, assuming sustainability remains a high priority, it would be valuable for CARARE to be an organisation with enough legal standing to engage in contractual agreements with content providers.

6.2 Possible legal entity models for CARARE

As a result of this position, as it was understood at the time, in April 2012 MDR embarked on a comparative analysis of legal entities appropriate for a CARARE successor organisation, which was reported in an internal project deliverable D7.2 ‘the framework of agreements for content provision via Europeana’. The analysis took the form of an examination and assessment of the comparative advantages and disadvantages of 5 ‘relatively lightweight’ forms of legal entity prior to a decision by the CARARE Management Board on which form to choose in the case of formation of a CARARE legal entity.

These are:

- 1 AISBL (Belgian law)
- 2 CIC (UK law)
- 3 EEIG (European Law)
- 4 Stichting (Netherlands Law)
- 5 Verein (German Law)

Scores were applied to each of the identified legal forms for each of these criteria in order to guide the decision making process amongst the partners.

Scoring system:

- 1= obstacles are evident;
 2 = evidence that obstacles can be overcome relatively easily;
 3 = no/few obstacles evident

Legal form	Country of legislation	Costs	Ease of establishment /admin	Liabilities	Activity restrictions	European remit	Score (15)
AISBL	Belgium	3	1	3	3	3	13
CIC	UK	3	3	2	2	2	12
EEIG	Europe	3	3	2	2	3	13
Stichting	Netherlands	3	3	2	3	3	14
Verein	Germany	3	1	3	3	2	12

On the basis of this assessment/ scoring system, a Stichting under Dutch law appeared to have a minor advantage over the other legal forms, although an AISBL or EEIG were also thought to meet CARARE's needs. On balance, the CIC (UK) and Verein (Germany) forms were thought unsuitable, as being more closely tied to the circumstances of their host nation than the others.

D7.2 recommended that, on the basis of the available evidence, CARARE should initially investigate in somewhat more depth what is involved in the formation of a Stichting. During the CARARE plenary meeting in Vilnius September 2011, the partners agreed with this approach and as a result the following details on the practical aspects of the Stichting were presented to the CARARE Project Board for approval.

A Stichting is a legal person created through a legal act. This act is usually a notarised deed that contains the articles of the foundation, which must include the first appointed board. No government authority is involved in the creation or authorization of a foundation, it acquires full legal capacity through its sole creation. A foundation has no members and its purpose must be stated in its articles, using capital dedicated to such goal. Based on enquiries by the ADS, the necessary steps (done through a notary in the Netherlands) are as follows:

- The notary will have to submit proof that the person registering truly exists (e.g. through a notarized copy of a passport) and that the address is valid (e.g. through a notarized copy of a utility bill).
- The notary will register the non-profit at the Dutch Chamber of Commerce and can also request a tax identification number (i.e. proof of tax-exempt charitable status).
- Non-profit organizations, in general, are not required to file a tax return as long as the organization does not make any profit on its activities. The organization does need to prepare an annual statement of accounts.
- No directors or shareholders are required. A Board of Management is, however, required although this only needs to consist of one individual or entity.
- A foundation must have at least one local board member based in the Netherlands

Organisations who have previously registered Foundations indicated that the registration process itself is 'inexpensive' with costs being in the region of 2000 Euros. This cost was thought to be potentially be eligible under the CARARE project budget.

The CARARE Project Board discussed the process of establishing a legal entity in March 2012 and gave the go ahead for further investigation of the process and costs. Rijksdienst voor het Cultureel Erfgoed (CHA) agreed to investigate the possibility of formulating the Stichting and

the Archaeology Data Service was tasked with carrying out a partner consultation to ascertain which of the content providing partners would contribute a membership subscription to a CARARE legal entity, the scope and results of this consultation are given in the section below.

In November 2012 Culture Erfgoed in the Netherlands, working with Hans De Haan of N303, reported back with practical information about the steps and costs involved in setting up and running a Stichting. Their report identified the annual cost of obtaining audited accounts (around 3-4000 euros), which had not previously included in the estimated annual running costs of the legal entity (section 5.1 above).

It should be noted that timing of the release of the new Europeana Data Exchange Agreement (in July 2012) meant that these agreements needed to be signed individually by each CARARE content providers. This in turn meant that one of the two reasons given above for creating a legal entity,

“The project consortium, acting as an Aggregator, forms a legal entity that is also responsible for signing the DEA with Europeana with the explicit consent of the project partners”.

was no longer valid for the project. Thus the purpose of the legal entity would be to allow for a successor body to CARARE to develop business and other activities where a legal entity was actually required.

7 Partner Consultation II – Participation in a Stichting

At the time of the initial N303 Stake Holder survey (see Section 3) only around a third of partners were willing to enter into a financial relationship with CARARE either for it to act as their aggregator or to buy services from them. A second partner consultation was carried out by ADS in November 2012 to invite partners to consider the options that had been identified for maintaining CARARE as an aggregator after the end of project funding. These options were set out in a discussion paper, and partners were invited to give:

- An initial indication of their willingness to participate in a subscription service
- their opinions on the Stichting structure, governance, subscription levels and membership

A few key issues were pointed out to the partners during this second partner consultation:

1) CARARE does not in any sense own the content it provides metadata for, it is this content that holds most potential for generating revenue i.e. aggregation and delivery via Europeana enhances traffic to a potential revenue stream for content providers (those who are able to charge for content), not for CARARE.

2) Enhanced metadata (that CARARE holds, but need not necessarily own) may generate revenue, but a meaningful customer base has not been identified yet.

3) Services such as training are problematic in that the CARARE legal entity would need staff to deliver training and the most likely customers would be content providers. If the content provider subscribed to CARARE, how likely is it that they would purchase additional training and support?

4) Data enhancement services are a possible means of generating revenue, although there is some question as to whether customers for such services are likely to be content providers who have subscribed to CARARE.

Clearly in the case of 3 and 4 there was the option of having tiers of membership and additional charges made for training or data enhancement (assuming CARARE was able to deliver this), the complexities of managing this should be considered carefully and balanced against the likelihood of significantly increased revenue.

These alternative revenue streams may be developed over time, but there needed to be an entity to develop them, thus the costs and questions sections that follow concentrate almost entirely on the issues raised by setting up a Stichting and working out how it can be funded by content providers.

7.1 CARARE - a legal entity without business development staff costs.

As discussed above on-going costs of 22-27,000 Euros per annum (plus 3-4000 euros in audit fees) had been estimated as being sufficient to allow:

- Subscribing partners to have their metadata (in both CARARE and EDM formats) maintained in the MORE infrastructure.
- The ability to update their data twice annually.
- On-going access to the CARARE MINT tool, including content provider specific XSLT as well as some level of technical support.

Unless the CARARE project board decides to place the following in the public domain, the proposed legal entity would own the intellectual property rights to:

- The CARARE data model
- The mapping from the CARARE data model to EDM
- The XSLT which transforms the CARARE metadata to EDM

7.2 Questions to be resolved by the Project Board and CARARE partners

It seemed fairly straightforward that, in the absence of immediately available alternative revenue streams, CARARE should become a legal entity and that its members share the cost of running the service, the hardware and software infrastructure their support and the management of the foundation. However, there were actually a number of complexities that had to be considered to get to this stage.

A number of these related to the structure of the Stichting¹:

- a. Can it be created by a sub-group of the CARARE partners if not all partners agree to participate immediately?
 - i. Who will formulate the articles of the Stichting
 - ii. Who is authorised and/or in a position to take the lead in creating a Stichting and handling the monies required for set-up costs?
 - iii. Who would be able to host the Stichting and any personnel it may require?
- b. Who will be on the Board of Management?
 - i. Representatives of all current CARARE partners?
 - ii. Representatives of initial CARARE Stichting partners?
 - iii. Do newly joining content providers automatically get a place on the Board of Management?
 - iv. Note that Board members are liable for the Stichting, it may not be possible for all partners to offer a representative due to this condition.
 - v. Note that at least one Board member must be a Dutch national.
- c. How many people do we think are actually required to manage and administer the Stichting as an on-going service? Note, with regard to cost of staff and overheads it would be beneficial to have these staff hosted within another institution rather than operate independently.

¹ Similar issues would need to be considered for an AISBL or any of the other legal forms discussed in Section 6.

- d. How much should each member pay?
 - i. Equal share (costs divided by the number of content providers/partners).
 - ii. By size of organisation.
 - iii. By volume of content.
 - iv. In relation to national GDP, (this is the system used by the DARIAH ERIC)
 - v. By service used. Note some partners use MORE, but not MINT.
- e. How and when can new members join?
- f. How long should the minimum membership term be? (Subscriptions may be due yearly, but for planning purposes would commitment to a longer term be necessary?)
- g. Should a tiered membership be considered, based content provider needs?
- h. What happens to data already mapped and harvested if a content provider withdraws?
 - i. Data is maintained in the MORE repository
 - ii. Data is removed from the repository (how does this affect Europeana)
 - iii. What is to stop a content provider joining for one term, providing data and then leaving, with the consequent impact on the organisation's sustainability? This is an important question as metadata supplied under CC0 is effectively out with anybody's control.
- i. What guarantees can be given regarding levels of service from MINT/MORE if content providers are paying to utilise them via the CARARE organisation.
 - i. Number of updates offered each year.
 - ii. Speed of response in terms of harvesting, ingesting and onward supply of data to Europeana.
 - iii. Availability of the MINT and MORE services (down time for maintenance etc.).

- j. Viability – what is the minimum number of initial subscribing partners that would make the cost of participating acceptable rather than providing content directly to Europeana.
- k. Existing access to the MINT/MORE tools is key here as there would be a financial benefit to each organisation that is already using this infrastructure to continue to do so.
- l. What is the ability to extend the foundation to include new content providers.

If all twenty CARARE content providers subscribed then the cost per partner (if shared equally) would be between 1 and 2,000 Euros. However, if the membership of the organisation could be extended to include other Europeana projects that also use the CARARE MINT/MORE infrastructure then the cost could be greatly reduced. Such projects may include 3D ICONS, VMUST and LoCloud, and potentially also projects with digital content, but not currently engaged with Europeana, such as ARIADNE.

This model could work because the initial content development, technical training and user support will be covered under the project budgets and because these projects will also be in need of a sustainability plan after the project phase of work is completed. Extending the scope of the organisation to encompass other Europeana content providers could bring the cost of subscription to fewer than 1,000 Euros and potentially lower. It also provides a ready-made constituency amongst whom the costs of implementing a business model for the organisation and also of developing the MINT/MORE infrastructure may be shared at some point.

Risks

It is important that any Service Level Agreement addresses the following:

- Risks to NTUA and DCU due to financial strictures in the Eurozone and particularly in Greece.
- Procedures are in place regarding the backup and safeguarding of the content providers data held in the MORE repository.
- Procedures are in place regarding the backup and safeguarding of the content providers mappings held in the MINT tool.
- Will MINT/MORE ultimately be 'open source' including full documentation?
- Can MINT/MORE be relocated to other systems without extensive development being required if this is deemed necessary?

- How will development of MINT/MORE be managed? This will almost certainly be necessary as changes are made to Europeana requirements as the portal develops.

7.3 Findings of the consultation

The consultation took place in November 2012 and partners were asked both to give their comments on the above questions and on their willingness in principle to subscribe to the Stichting. Of the 13 partners responding, there were six definite positive responses, three negative responses and 4 undecided. Several of these responses made clear that a cap of 1000 Euros would be a subscription limit.

Thus despite RCE and N303 having expressed willingness to establish a Stichting for CARARE, the consultation response did not indicate enough participants willing and able to subscribe to an organisation and generate enough income to cover the costs of maintaining the CARARE aggregator as identified if this was looked at on a purely financial basis.

However, discussions with partners at project meetings revealed that there was extensive enthusiasm for some aspects of the CARARE project to continue in some form, especially if that form did not require a legal entity and did not operate on a subscription basis. With this in mind the final partner consultation related directly to ways in which this 'community of interest' could be developed.

8 Partner Consultation III - Community Interest Group

As was highlighted in the Stakeholder Survey (see Section 3) it is not just the technical and infrastructural services that are valued by CARARE partners. On the contrary, the most clearly positive responses regarding the benefits to partners from the project related to aspects such as improved networking and collaboration. Given the inability of the majority (or a viable number) of partners to engage in a subscription based legal entity for various reasons it appeared that there remained scope for setting up a Community Interest group.

In December 2012 a final Partner Consultation was run to establish the interest of the CARARE partnership in becoming involved in a Community Interest Group that can run at little or no cost with the main objectives of:

- **Networking:** fostering collaboration and exchanging information and ideas between people, projects and initiatives active in the area of bringing together archaeological and architectural heritage content such as CARARE, Ariadne, DARIAH, 3D ICONS, LoCloud and others
- **Workshop:** running an annual workshop or summer school to bring together the people involved in the network, with the focus on documentation of the archaeological and architectural heritage, harvesting and interchange of information and content, developing access and user engagement. Collaborating with relevant working groups in CIDOC, CAA, Europeana and others
- **Dissemination:** providing a forum for the exchange of news, information and ideas, a channel for promoting good practices. In collaboration with Europeana and others.

An aim of the group could be to facilitate the development of sustainable tools and services to integration of archaeological and architectural heritage content. This might include

- Support and facilitate the development of tools which support the harvesting and aggregation of content such as MINT, MORE and others
- Playing an active role in the Europeana network and in discussions about the development of aggregation services, standards and systems
- Continue the investigation of sustainable business models to support the network

Members would be invited to commit to contribute time rather than financial resources by for example:

- Organising/contributing to an annual summer school or workshop. The annual school might be an independent standalone event run by the Group, or it could be a workshop run as part of a regular conference such as EAA or CAA that members of the network are already likely to attend.
- Hosting the website and member forum
- Following the activities of related initiatives such as DARIAH, sharing news, promoting opportunities for collaborative developments
- Contributing to the maintenance of documentation and best practice guidelines
- Contributing expertise

The consultation proposal suggested that membership of the group would be open to organisations and individuals, and it was further suggested that any organisation that joins immediately at the end of the CARARE project funding would be a ‘founding member’. MDR, N303, NTUA, DCU, although not content providers, would all be eligible to become founding members on the same basis as other partners.

This consultation remains on going, but responses so far have been positive. It was noted that running an annual school as an independent event could involve a lot of commitment, but it was felt that this something that might be arranged in collaboration with a running projects such as Ariadne, DARIAH, 3D ICONS and LoCloud.

Work by the community to investigate the possibilities for collaboration with DARIAH and Ariadne is already underway. Many members of the CARARE community are also members of the Europeana network and are following developments, such as Europeana’s adoption of MINT as part of its content ingestion toolkit and work on sustainability.

9 Barriers to sustainability

Whilst the community value of CARARE can be sustained via the group detailed in Section 8, analysis of the potential for a self-sustaining successor body has highlighted a number of barriers to sustainability. Some of these barriers may be addressable by the community of interest in the future, but some of them are thornier issues that relate to situations beyond the control any successor however formulated.

- An aggregator does not own content, with the exception of and enriched metadata, which would require agreement with the data provider (a DEA or equivalent) if it were to be licensed for re-use.
- Most of the business opportunities identified require access to content, although a successor body could act as a broker.
- Partners who are in a position to exploit their content financially are generally already doing so and may not see the advantage of a brokerage service.
- Customers for data enhancement services, training services for data preparation or digitisation are most likely to be content providers themselves which makes a subscription model difficult to structure.
- The main customer for aggregator data is Europeana, who do not pay (and should not) for this data directly. However the European Commission is funding projects like CARARE that ultimately make data available to Europeana. It requires a 180 degree turn around in perception to go from a situation where a content provider is funded to make content available to the situation where the content provider funds another body to make that data available to Europeana on their behalf.
- CARARE does not control directly or 'own' the aggregation infrastructure – while software was implemented for the project the physical infrastructure (the networks and servers) used by the host institutions NTUA and DCU for CARARE is owned or licenced for use by them, and the software systems were originally developed by them. Its status regarding open sourcing decided at this point (i.e. by the end of project funding).
- Europeana may itself begin to develop services for data providers and aggregators, for example it may support the MINT tool for data providers. The status regarding support, training, support for domain metadata schema or access is not yet decided.

- The development of National Aggregation services funded by national governments and requiring no subscription, impacts on similar services offered by CARARE and domain aggregators, although without domain support.
- The lack of an easily identifiable customer base for services means that significant investment is likely to be required for business development with no guarantee of success. This represents a business risk for content providers, many of which operate in an environment where such a risk might be hard to justify or where they have a conservative attitude with regard to this type of risk.
- The global financial crisis of 2008 has meant that public bodies in particular have found themselves under financial pressure. Participation in a project like CARARE can be seen as an advantage in these situations as it supports cultural heritage organisations core activities while allowing them to participate at European level and add value. The same climate, however, means that finding money, even relatively small sums, is not an easy task for publicly funded organisations.

10 Conclusion

The elements of CARARE that were held in the highest regard by partners, i.e. the networking and community building aspect, form the basis for the proposal to form a successor 'community of interest' around CARARE. This community has specific activities in mind, including workshops and channels for promotion and for continued dialogue between partners.

Whilst it might seem that this leaves unresolved the issue of whether a successor body could develop business models based on a combination of subscription and exploitation of the business opportunities identified throughout the lifetime of the project, this may be temporary situation. The major barrier to exploiting these business opportunities, apart from uncertainty over a customer base, has been the fluidity of the structural (in terms of infrastructure aspirations, provision and funding) and IPR aspects of Europeana itself and also the rapidly changing constitutions of content providing partners. It is hoped that this fluidity will resolve into a more stable environment that might allow the community of interest to revisit the opportunities for becoming a legal entity and a self-sustaining aggregator. This made more likely because in the coming years a number of currently running Europeana projects, for example 3D ICONS and V-Must, will be coming to a conclusion and are assumed to be also looking for ways to maintain their services and sustain their own communities. It is hope that the community of interest developed by CARARE will be their first choice of vehicle to do this and, with larger numbers of partners, more opportunity for a truly sustainable solution might arise.

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