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## 1 Executive Summary

Digital Preservation Europe (DPE), as part of its planned activity, has reviewed the current international landscape with regard to the availability and provision of digital curation and preservation expertise in the European Union and beyond. As a starting point, DPE considered the following questions.

<b>What is competence?</b>		Notions of competence vary widely depending upon the specific user community's mission, objectives and understanding of digital curation and preservation issues.
<b>Why is competence significant in the to content creating and memory institutions?</b>		Content creators, owners, and holders often make crucial decisions about the creation, management, and dissemination of digital information that impact on long-term viability and availability of the digital materials themselves.
<b>What kind of support do we need?</b>		Support and guidance offered by competence centres should reflect an inter-disciplinary approach by combining technological developments, cutting-edge research and practical experience. The services offered by competence centres should be flexible enough to be utilised by a wide range of stakeholder communities while still respecting various local and/or discipline specific issues.
<b>What is the right mix of expertise?</b>		Competence centres should integrate many different aspects of expertise including research capacity, technical skill, dissemination capability and demonstrable practical experience. But some centres may have expertise in a very narrow domain, while others may have competence across a broad range of domains.
<b>Is expertise alone sufficient or should competence centres offer more?</b>		Centres should be able to demonstrate expertise at both theoretical and practical levels. However, expertise is not in itself sufficient. The competence centre must also provide a reliable point of reference to its target user community and offer access to valuable services and resources.
<b>Is the centre considered to be credible?</b>		It takes time to develop a reputation of trust and credibility and requires demonstrable expertise at both the theoretical and practical levels. Ironically, most of the expertise in the area of digital curation and preservation to date resides in short-term projects.
<b>How is credibility established?</b>		Credibility is generally established through community recognition and take-up of the tools, resources, research results, and methodologies produced by a competence centre.

<b>Should competence centres be certified?</b>		It is vital that the guidance and services offered by competence centres are regularly evaluated. Accreditation and Certification are two mechanisms for doing this; the community needs to put in place mechanisms to support accreditation and certification of competence centres.
<b>Does the centre have demonstrable commitment from governing bodies?</b>		To maximise the potential take-up of services and resources, it is essential that a centre has demonstrable financial and/or organisational support for its operations for a definite period of time.
<b>Can the centre communicate its expertise effectively?</b>		Centres must be able to demonstrate that they have community building capabilities and that they can develop effective communication strategies within their target user community and beyond. Competence centres must also be able to prove that they have the capacity to influence change at both national and international funding body and policy-making levels.

DPE considered these questions from a range of viewpoints and examined current examples of competence centres in the cultural heritage sector and beyond. These considerations have helped to define DPE's '7C's' benchmarking model. This benchmarking model enables the comparison of competence centres' overall strengths and weaknesses and illustrates areas where improvements might be made.

The criteria utilised by DPE's '7C's' benchmarking model include the following elements:

1. Capacity
2. Context
3. Credibility
4. Commitment
5. Certification
6. Competition
7. Communication

By employing all seven criteria, a holistic overview of the competence centres emerges. This overview can help to assess whether a given competence centre can provide and communicate a competitive, certified, sustainable, trusted and contextualised service. Based on the results of its assessment using the '7C's' benchmarking model, DPE recommends that the European Commission consider measures that will result in a 'virtuous circle' approach to curation and preservation activity whereby user needs feed into research, development, service provision, dissemination and practice. This approach recommends:

- ◆ a federated approach to the provision of support and guidance
- ◆ a life-cycle approach to the provision of support and guidance
- ◆ better coordination of disparate competence centres' activities
- ◆ improved integration of competence centres with industry
- ◆ a more collaborative approach to the provision of training and outreach activities

- ◆ increased research capacity within competence centres to help push forward the international research agenda
- ◆ the introduction of competition between competence centres to drive performance
- ◆ the investigation of business models that will help to provide sustainable funding for competence centres' activity.

DPE is confident that by addressing these areas, the European Commission will help to ensure that sustainable support is made accessible to assist content creators, curators and re-users to effectively manage and care for their digital resources over their entire life-cycle. We expect that the results of this review as well as being of use to European Commission to help inform the development of existing and new competence centres across the EU, it will also be of value to EU Member States in considering the development of new competence centres and the measurement of performance of existing ones.

## 2 Acknowledgements

DPE is extremely grateful to the European Commission for their input and support for the production of this review. Initial talks were held in Luxembourg on 1 March 2007 with Patricia Manson, DG Information Society and Media, Head of Unit, Learning and Cultural Heritage; Carlos Oliveira, DG Information Society and Media, Director E-Content, Learning and Cultural Heritage; and Ariane Labat DPE Project Officer at Information Society and Media Directorate General Content - Learning and Cultural Heritage. This meeting was extremely helpful in clarifying the position of the European Commission with regard to the need for digital curation and preservation competence centres and the perceived services and resources that they might need to offer.

DPE would also like to thank Matthias Hemmje, FernUniversität Hagen; Adolf Knoll, National Library of the Czech Republic; Raivo Ruusalepp, Estonian Business Archives and NANETH; and Andi Rauber, Technical University Wien, who were instrumental in providing information about the current landscape within the European Union Member States.

Finally, DPE wishes to thank the numerous international institutions and projects who submitted details to our online competence centre survey form. A full list of the institutions and their descriptions are included as an appendix to this review. The full list may also be viewed at <http://www.digitalpreservationeurope.eu/competence-centres/list>. DPE will maintain access to this list and will seek additions from the international community periodically to ensure that this is an evolving reflection of the current state of the art.



## 3 Introduction and Scope

### 3.1 Scope

The European Commission (EC) is actively working to empower its member states to safeguard their digital knowledge for long-term accessibility and re-use. The EC has set a goal for member states to formalise a strategy for the long-term preservation of their digital information by mid-2008.<sup>1</sup> The European Commission is aware that a great deal of support and guidance will be necessary to assist in the creation of these strategies and is eager to ensure that competent facilities are readily available to all member states. As a starting point, the EC organised a workshop to explore organisational models, boundaries and priorities for work, and to explore the potential impact and long-term sustainability of digitisation and digital preservation competence centres. The workshop was held in Luxembourg in November 2006, which concluded that 'competence centres should generate equal access to excellence from anywhere – but not duplicating excellence unnecessarily'.<sup>2</sup> DigitalPreservationEurope (DPE), as part of its planned activity, has been reviewing the current international landscape with regard to the availability and provision of digital curation and preservation expertise. We expect that the results of this review as well as being of use to European Commission to help inform the development of existing and new competence centres across the EU, it will also be of value to EU Member States in considering the development of new competence centres and the measurement of performance of existing ones.

### 3.2 What is competence and how is it determined?

In order to assess the current landscape of digital curation and preservation competence centres, DPE began by considering the following questions,

- ◆ What does competence mean?
- ◆ Who can offer me competent guidance on topics that matter to me?
- ◆ How do I know I can trust the guidance offered?

Notions of competence may vary widely depending upon the specific user community's mission, objectives, and understanding of curation and preservation issues. As such, it is almost impossible to define competence in any concrete or measurable way for anything but the most generic of curation and preservation guidance. Disparate stakeholders face a number of challenges and are required to make crucial decisions now that will impact the long-term viability of their digital information. Some of these challenges are common across domains; others are specific to a given community of practice. The range and nature of the various

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<sup>1</sup> Annex: Priority Actions and Indicative Timetable, Council Conclusions on the Digitisation and Online Accessibility of Cultural Material, and Digital Preservation, *Official Journal of the European Union*, 7 December 2006, [http://eur-lex.europa.eu/LexUriServ/site/en/oj/2006/c\\_297/c\\_29720061207en00010005.pdf](http://eur-lex.europa.eu/LexUriServ/site/en/oj/2006/c_297/c_29720061207en00010005.pdf)

<sup>2</sup> Report from the Workshop on Centres of Competence for Digitisation and Digital Preservation held in Luxembourg on 14 November 2006. [ftp://ftp.cordis.europa.eu/pub/ist/docs/digicult/competence-centres\\_en.pdf](ftp://ftp.cordis.europa.eu/pub/ist/docs/digicult/competence-centres_en.pdf), page 3.

stakeholders charged with caring for and adding value to their digital information over time means that generic guidance is simply not sufficient.

Guidance and support is urgently needed at a range of levels. It is crucial that the providers of this support and guidance are deemed to be trustworthy and credible – not only among their own target user community but also more widely. Building a reputation of trust and credibility is a lengthy process and requires demonstrable expertise in theoretical knowledge and/or practical experience over time. Ironically, most of the expertise in the area of digital curation and long-term preservation to date has resulted from short-term projects. As such, it has been difficult to implement a sustainable model for the provision of trusted advice and guidance on curation and preservation topics.

Competencies in curation and preservation are, however, emerging worldwide. These competencies may reside in numerous forms ranging from a single individual to large centres, to formal and informal networks, to the private sector. Accordingly, more work is needed to coordinate the capture and dissemination of this distributed expertise to ensure that competence centres are responsive to regional and disciplinary needs and expectations, advances in technology, evolving policy and legal frameworks, and that they reflect and influence ongoing international research and development activity.

### **3.3 Core requirements for competence centres**

First and foremost, competence centres must clearly demonstrate that they have digital curation and preservation capacity as well as the ability to fulfil a strong leadership role for their user community. Centres must also be able demonstrate community building capabilities and effective communication strategies to disseminate guidance, support and resources. Communication, however, cannot be one-way. Competence centres must listen and respond to the changing needs of their user communities and reflect the ongoing achievements of international research and development efforts. They must also be able to prove that they have the capacity to influence policy and standardisation development at both the national and international levels. The tangible benefits that may result from following the advice and guidance offered by competence centres must also be clearly identified and promoted to a range of domains to ensure widespread take-up. It will be equally vital that the guidance and services offered by competence centres are regularly evaluated and validated by an independent body. Not only will this help to build trust in the competence centres' outputs, this added element of competition will also help to push the centres to strive towards continually improving their knowledge, guidance and services. In addition to regular interaction with a range of user communities and sectors, competence centres must also begin to work more effectively with other competence centres to help overcome fragmentation and duplication of effort. Cooperation will be essential if we are ever to provide standardised, reliable guidance across all aspects of the digital information life-cycle.<sup>3</sup>

### **3.4 Barriers hindering the widespread use of competence centres across disciplines**

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<sup>3</sup> This is a clear goal for the EC as reflected in the key aims of the EC i2010 digital libraries strategy which is built around the three pillars of digitisation, accessibility and long-term preservation. [ftp://ftp.cordis.europa.eu/pub/ist/docs/digicult/competence-centres\\_en.pdf](ftp://ftp.cordis.europa.eu/pub/ist/docs/digicult/competence-centres_en.pdf)

Credibility is generally established through community recognition of the tools, resources and methodologies produced by a competence centre. Credibility building generally follows two distinct pathways – from top down (*de-jure*) or from bottom up (*de-facto*). The *de-jure* pathway results when specific actions are mandated by a governing body that ensures adoption is achieved via a system of rewards and penalties. The *de-facto* pathway results when a given community agrees to adopt best practices based on tangible benefits identified through research activity or practical experience. It is becoming clear that a convergence of both the *de-jure* and *de-facto* approaches is required to identify, promote, and ensure take-up and adherence to digitisation, curation and preservation standards and best practices.

Expertise may be demonstrated through theoretical research activity, through practical experience, or a combination of the two. It is, however, rare to find institutions that can adequately demonstrate both a sound theoretical understanding of the issues and a proven capacity for the actual curation and preservation of digital information over time. The lack of centres with both theoretical and practical expertise in the curation and preservation of digital resources is in part due to the largely misunderstood extent of the problem and its potential impact as well as a lack of shared knowledge and experience in tackling the problem across domains. Another challenge is bridging the gap between technology providers and content holders. To ensure maximum take-up, it is essential that the technology providers create tools that reflect and complement the actual workflows and practices of the content holders.

In many cases, those who have been funded to research core issues are not those who have been mandated with curating and preserving the data over time. The parallel nature of this situation has meant that practitioners in some domains have – out of necessity – had to develop their own tools and methodologies in the short term that may or may not reflect the emerging best practices being identified by international curation and preservation research projects. As such, practitioners in some communities may feel that the curation and preservation research community has nothing to offer them in terms of practical tools and resources. The divide between those who carry out the research, those who develop the tools and those who actually do the work poses a major barrier to the widespread uptake of shared approaches, tools and best practices. Furthermore, funding tends to centre round a cluster of key agreed issues which has negatively impacted the number of ground-breaking research projects that might help to push forward the agenda in this area.

The gap that exists between those who carry out the research, those who build the tools and those who do the work must be bridged to ensure that we begin to build centres of expertise in both theory and practice. Helping to bridge this gap and working to develop trusted services and resources that can be used by multiple communities of practice is a key role for existing and future competence centres. Indeed, these centres may be instrumental in paving the way for interoperability between disparate stakeholder communities.

It is becoming clear that competencies in all aspects of digital curation and preservation do not need to be replicated in every EU member state. The digital era has helped to eradicate national boundaries and the provision of expertise may be best provided by a country other than that of residence. Accordingly, the EC should endeavour to identify the best providers of specific expertise and work to improve the infrastructures that will make this expertise more widely available in a manner that is fit for purpose for all member states. This will require a complete diagnostic assessment of current competence centres at the national level to ensure that the *crème de la crème* of digital curation and preservation competence centres are identified and promoted across the EU.

### **3.5 Aims and objectives**

This review assesses current competence centre sources and models based on the notions described above. To achieve this, DPE has defined a benchmarking model that will enable the comparison and assessment of competence centres. This assessment will attempt to provide a more holistic view of competence centre models by highlighting their strengths and weaknesses as well as their salient characteristics. This review examines both the European and international landscapes. DPE is confident that this benchmarking model will be of value for identifying possible new competence centre models that may benefit EU member states.

## 4 Sources of digital curation and preservation competence

Sources of digital curation and preservation competency exist in a wide range of institutions, projects and collaborative endeavours. A few examples of the range and nature of these centres of competence include:

- ◆ Universities
- ◆ Scientific research community
- ◆ Ministerial structures
- ◆ National structures
- ◆ Industry and the private sector
- ◆ Healthcare infrastructures
- ◆ International and professional bodies
- ◆ Funded projects

In many environments, like *universities* and *scientific research centres*, the concept of competence is based primarily on credibility. Credibility is generally established through the reputations of academic staff and researchers and the quality and quantity of research publications and projects but may also reflect more quantitative measures such as the number of students enrolled and the number and amounts of research grants awarded. In this arena, competitiveness is a key element for promoting excellence and for competence building. In these types of centres, there is often a circuit of '*causa-effetto*' whereby their solid reputation as a competence centre increases their opportunities for participating in new endeavours, which, in turn, reinforces their overall credibility. For these types of centres, international contacts and high visibility are crucial as they provide a sort of informal certification. Funding bodies have begun to recognise that there is much to be gained by encouraging universities and research centres to work together in federated consortia. Not only does this approach bring together a broader range of expertise, but also opens new channels for the dissemination of research results. Accordingly, many funding bodies are starting to look favourably on bids that include partners from both universities and scientific research centres. Institutions such as Humanities Advanced Technology and Information Institute (HATII)<sup>4</sup> and the Council for the Central Laboratory of the Research Councils (CCLRC)<sup>5</sup> are good examples of these types of institutions.

Ministerial structures are set up in most countries to support public sector initiatives. Most often, competence is gained through the formation of working groups who examine a specific problem area. These structures tend to have a high level of competence but lack the authority to enforce their recommendations and policies beyond the working group participants. Examples of this type of centre are the ICCU (Central Institution for Unique Catalogue)<sup>6</sup> and CNIPA.<sup>7</sup> Both produce technical and organisational recommendations for government ministries.

*National structures* to support research exist in most countries. These centres tend to be comprised of regional participants who form a matrix of expertise in specific areas and are coordinated by a central, federal board. There is less competition in this environment as

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<sup>4</sup> <http://www.hatii.arts.gla.ac.uk>

<sup>5</sup> <http://www.cclrc.ac.uk>

<sup>6</sup> <http://www.iccu.sbn.it>

<sup>7</sup> <http://www.cnipa.gov.it>

resources and responsibilities are most often geographically assigned for practical reasons. The level of expertise found in these types of structures is generally very high. However, the criteria used to evaluate the centres are typically loosely defined and as such do not allow for comparisons across international contexts. An example of this type of centre is the German network of digital preservation expertise called nestor.<sup>8</sup>

In *industry*, competence is judged through the provision of a relevant and reliable service as well as by the company's success in penetrating the commercial market. Accordingly, competition is vital in this environment. In this context, competence centres are usually established in a '*de jure*' fashion whereby senior management mandates a certain approach that will provide a competitive edge over rival companies. Procedural support is provided to ensure that compliance occurs within a specified timeframe. This approach requires dedicated commitment from the highest levels of management within the organisation.

*Healthcare* infrastructures are subject to a greater range of legal constraints than most other types of competence centres. As such, they tend to be more standardised in their approach to the provision of guidance and support. As with the industrial sector, the establishment of competence centres in the healthcare context tends to be mandated from the top down – often being issued by government departments in order to meet political objectives. In this environment, the benefits of following the recommendations and guidance offered by the competence centres are clearly defined, as are the risks associated with non-compliance.

To promote the aggregation of the European Union's research community's outputs with the competitiveness of industry, the European Commission introduced two new *funding streams* under Framework Programme 6 (FP6).<sup>9</sup> These were the *Network of Excellence (NoE)* and *Integrated Project (IP)*. Some examples of these are listed below.

#### DELOS

- ◆ DELOS is the digital libraries network of excellence. 'DELOS is conducting a joint program of activities aimed at integrating and coordinating the ongoing research efforts of the major European teams working in Digital Library-related areas. Its main objective and goal is to develop the next generation of Digital Library technologies, based on sound comprehensive theories and frameworks for the life-cycle of Digital Library information.'<sup>10</sup> The quality of research produced by DELOS is very high, but participation comes mainly from the cultural heritage and academic sectors and does not at this point illustrate significant impact in other sectors. DELOS is funded only until the end of 2008. The DELOS team are currently working on identifying sustainability measures, but there is no question that the long-term availability of the expertise and resources contained within this project is in jeopardy.

#### MINERVA

- ◆ Since October 2006, the MINERVA Project has been enlarged to become MINERVA EC, the **MI**nisterial **NE**two**Rk** for **V**alorising Activities in digitisation, eContent**plus**. MINERVA EC aims to establish a permanent 'infrastructure, able to monitor new developments and trends, facilitate the use of existing standards and promote the definition of best practices, identify solutions

<sup>8</sup> <http://www.langzeitarchivierung.de>

<sup>9</sup> <http://ec.europa.eu/research/fp6>

<sup>10</sup> <http://www.delos.info>

to legal issues, provide tutoring and expert support.<sup>11</sup> Since its inception, MINERVA has established a solid reputation and has been influential in establishing best practice in the digitisation of content across Europe. MINERVA deals primarily with the digitisation of content and, as such, the EC will need to promote cooperation and collaboration between MINERVA and digital preservation competence centres to help support the life-cycle approach.

#### PrestoSpace

- ◆ PrestoSpace is an integrated project that aims ‘to provide technical solutions and integrated systems for a complete digital preservation of all kinds of audio-visual collections’.<sup>12</sup> While the project deals mainly with the digitisation of analogue holdings as a preservation strategy, the PrestoSpace model illustrates that a distributed consortium approach including industry, R&D, the academic sector and the cultural heritage community can be very successful and may offer some possibilities for long-term sustainability.

#### Network of Expertise in long-term STOrage and long-term availability of digital Resources in Germany (nestor)

- ◆ Nestor aims to ‘create a network of expertise in long-term storage of digital resources for Germany’ and ultimately to establish a ‘permanent distributed infrastructure for long-term preservation and long-term accessibility of digital resources in Germany.’<sup>13</sup> Nestor has gained international recognition as a source of expertise, but it is not yet clear how this expertise will be made permanently accessible.

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<sup>11</sup> <http://www.minervaeurope.org/about/minervaec.htm>

<sup>12</sup> <http://www.prestospace.org/project/index.en.html>

<sup>13</sup> <http://www.langzeitarchivierung.de>

## 5 Introducing the 7C's Benchmarking Model

Based on the salient features of the digital curation and preservation competence sources described in section 4, DPE developed the '7C's' benchmarking model to compare the current landscape of international competence centres.

The criteria employed by this benchmarking model include:

1. Capacity
2. Context
3. Credibility
4. Commitment
5. Certification
6. Competition
7. Communication

### 5.1 Capacity

The centre must be able to clearly demonstrate its expertise in a specific aspect(s) of digital curation and/or preservation. This expertise should be theoretical and/or practical and may have been amassed through participation in research activities, community building initiatives, international and standardisation initiatives, or the provision of services to a given user community or communities. Demonstrations of capacity may include take-up of services provided, community participation in the centre's awareness-raising events and training programmes, cutting-edge research outputs, or the success of the centre's efforts to influence change at the strategic decision-making level. The centre must also have an evident capacity for securing funding and attracting resources both at national and international level. One difficulty is that the concept of capacity is generally valid only among a specific user community and other communities of practice may not feel confident about using the services and/or resources offered by the centre.

Key Questions:

- ◆ Does the centre have demonstrable theoretical expertise and/or practical experience in digital curation and/or preservation?
- ◆ Who is the target user community for the centre?
- ◆ Does the centre have a reputation for excellence and/or leadership?
- ◆ Does the centre have substantial experience in international initiatives?
- ◆ Does the centre demonstrate activity in research and technology development?

The answers to these questions will determine whether the centre can provide a valuable and relevant service to a given user community.

### 5.2 Context

A competence centre must be seen as part of a wider world populated by a community of users, with internal mechanisms, constraints, rules and functions. The benefits and potential



values associated with utilising the centre must be explicitly defined in order to motivate the specific target community of practice. Context, however, cannot be considered solely from the perspective of a single community of practice but must also be placed into the wider context that includes governing bodies, legal regulations, inter-disciplinary connections and international research communities. In particular, the centre should demonstrate that it can liaise with and influence sectoral governing boards, international initiatives and professional organisations.

Key Questions:

- ◆ Is the centre well integrated into the target user community and their governing bodies?
- ◆ Does the centre show that it can liaise with and influence sectoral governing boards, international initiatives and professional organisations?
- ◆ Is the service offered by the centre in line with political, sectoral and legal regulations that govern the sector?

The answers to the questions for the first two elements of the 7C's model will determine whether the centre can provide a **contextualised service**.

### 5.3 Credibility

Before a centre can begin to influence change in a given user community's practices and/or at the highest levels of policy development, it must prove itself to be a trusted and credible source of expertise. As noted above, centres of expertise often have very specific user communities and use discipline-specific terms and concepts to convey guidance to those seeking advice. It can be difficult to extend the notion of credibility beyond a particular group of practitioners. As such, while it is vital that the centre can demonstrate that it is a credible source of expertise for a particular community of practice, it is equally crucial that the centre exhibit an awareness of how they fit into a wider context. The centres must also be able to illustrate that they can work cooperatively with competence centres in other sectors to ensure that they start to offer a more holistic approach.

Key Questions:

- ◆ Does the centre have a strong reputation for quality service provision within its user community?
- ◆ Is the centre trusted (and reliable) both by its governing authorities and by its user community?
- ◆ Is the centre's credibility limited to a specific user community or does its credibility extend beyond?

The answers to the questions for the first three elements of the 7C's model will determine whether the centre can provide a **trusted and contextualised service**.

### 5.4 Commitment

In order to achieve buy-in from a given user community, a competence centre must be able to demonstrate that they have some level of sustainability. Commitment may be limited in time

and scope but will help to demonstrate that a higher authority deems the centre to be worthwhile, relevant and competent. There are few incentives for potential users to invest their confidence in the guidance offered by a competence centre if the centre has not received endorsement from a trusted authority in the form of funding or some other commitment. Concrete examples of commitment may also be useful for defining generic business models suitable for long-term sustainability.

Key Questions:

- ◆ Does the centre have a defined role or service within the user community with the commitment of the governing and/or funding bodies?
- ◆ Does the centre have financial support to carry out its work?
- ◆ What happens to the expertise base when the funding runs out?

The answers to the questions for the first four elements of the 7C's model will determine whether the centre can provide a **sustainable, trusted and contextualised service**.

## 5.5 Certification

Compliance with international standards is becoming increasingly essential in most communities of practice. A self-certification 'flag' may be obtained simply on the basis that the centre conforms to a specific set of standards, or certification may be granted by a '*super partes*' agency. In either case, adherence to international standards may offer a means of third-party certification of the centre and its services. It is especially crucial that competence centres are able to demonstrate that they comply with the standards – such as European Commission recommendations and regulations – that they are recommending to their user community. The notion of audit and certification is gaining widespread acceptance among international curation and preservation communities as a means of building trust in digital repositories and associated services. There is every reason to believe that competence centres would also benefit immensely from external audit and certification to provide some type of guarantee of the quality and relevance for their services and resources.

Key Questions:

- ◆ Does the centre have some kind of stamp of approval from a governing body that is trusted?
- ◆ Does the centre's activity/practice conform to international standards related to the sector? How do you know that they conform?
- ◆ If the centre does not conform to standards for the sector, are there other competence centres within the sector that do conform?

The answers to the questions for the first five elements of the 7C's model will determine whether the centre can provide a **certifiable, sustainable, trusted and contextualised service**.

While the ideal here would be certification such mechanisms do not yet exist in the community but there are hallmarks that will allow us to say whether a service might have the characteristics that make it a likely candidate for certification.

## 5.6 Competition

An environment that encourages competition can benefit all stakeholders. Not only will a competitive environment help to drive forward research and development in the field of digital curation and preservation, but it can also help to ensure that competence centres do not become complacent and that they constantly strive to improve the quality of their services and resources. As mentioned above, adherence to standards can be a clear and transparent reference to test the performance and policies of competence centres, providing a '*super partes*' reference to stimulate fair competitiveness among centres.

Key Questions:

- ◆ Can the service offered by the competence centre be considered 'competitive'?
- ◆ How does the centre fit into the overall landscape?
- ◆ Does the centre cooperate with other centres or are they in direct competition with each other?

The answers to the questions for the first six elements of the 7C's model will determine whether the centre can provide a **competitive, certifiable, sustainable, trusted and contextualised service**.

## 5.7 Communication

A competence centre must be able to communicate effectively with many different stakeholder communities. They must be able to communicate their user communities' needs and requirements to policy makers and funding bodies and be able to influence change. They must also work to communicate those needs to commercial vendors to help shape the development of third-party tools and software to better meet their user community's requirements. They must also demonstrate that they are able to disseminate their expertise through outreach and training programmes aimed at a range of levels. Competence centres must also be able to communicate with other competence centres to ensure that duplication of effort is avoided and to maximise limited resources. Communication is perhaps the most crucial of the criteria employed by the 7C's benchmarking model. Even if a competence centre meets all of the previous criteria, they are essentially worthless if they cannot communicate effectively.

Key Questions:

- ◆ Does the centre disseminate its expertise to its target user community effectively?
- ◆ Does the centre communicate with funders and policy makers?
- ◆ Does the centre communicate effectively to vendors and industry?
- ◆ Can the centre communicate effectively beyond their user community?
- ◆ Has the centre provided training to a specific user community? Was the training considered to be effective?

The answers to the questions for the first seven elements of the 7C's model will determine whether the centre can provide and **communicate a competitive, certifiable, sustainable, trusted and contextualised service**.

Each of the seven criteria must be applied to provide a holistic view of the strengths and weaknesses of competence centres. Formal evaluation indicators may be qualitative or quantitative in nature. For the purposes of this review, we have adopted a qualitative approach to assessing each of the current models. If this methodology is endorsed for more formal evaluation, we may also wish to identify quantitative measures for determining the effectiveness of the models.

## **6 Assessing the current competence centres landscape using the 7C's Benchmarking Model**

While the range and nature of competence centres vary, we have identified five generic models that may be used to help characterise the current landscape for the provision of digital curation and preservation expertise. DPE recognises that other models may exist, but for the purposes of this review DPE will examine the following five generic models:

- ◆ Distributed centres of expertise and collaborative projects
- ◆ Single research-led institutions
- ◆ National libraries, archives or other organisations with preservation expertise
- ◆ Commercial preservation centres/services
- ◆ International bodies and professional associations

Section 6 of this review will assess each of the generic models listed above against DPE's '7C's' criteria. DPE has provided examples of current centres of competence for each of the five generic models. It is important to note here that the list of current examples is not exhaustive and that many of the examples could arguably be grouped under more than one model category.

## 6.1 Distributed centres of expertise and individual projects funded to research digital curation and preservation

There are many distributed centres of expertise and collaborative projects that bring together multiple institutions – often from a range of disciplines – to investigate specific research areas and to provide advice, guidance and tools for a specific user community. These projects generally provide access to a wide range of expertise and experiences. Funding of these types of projects is generally short-term in nature.

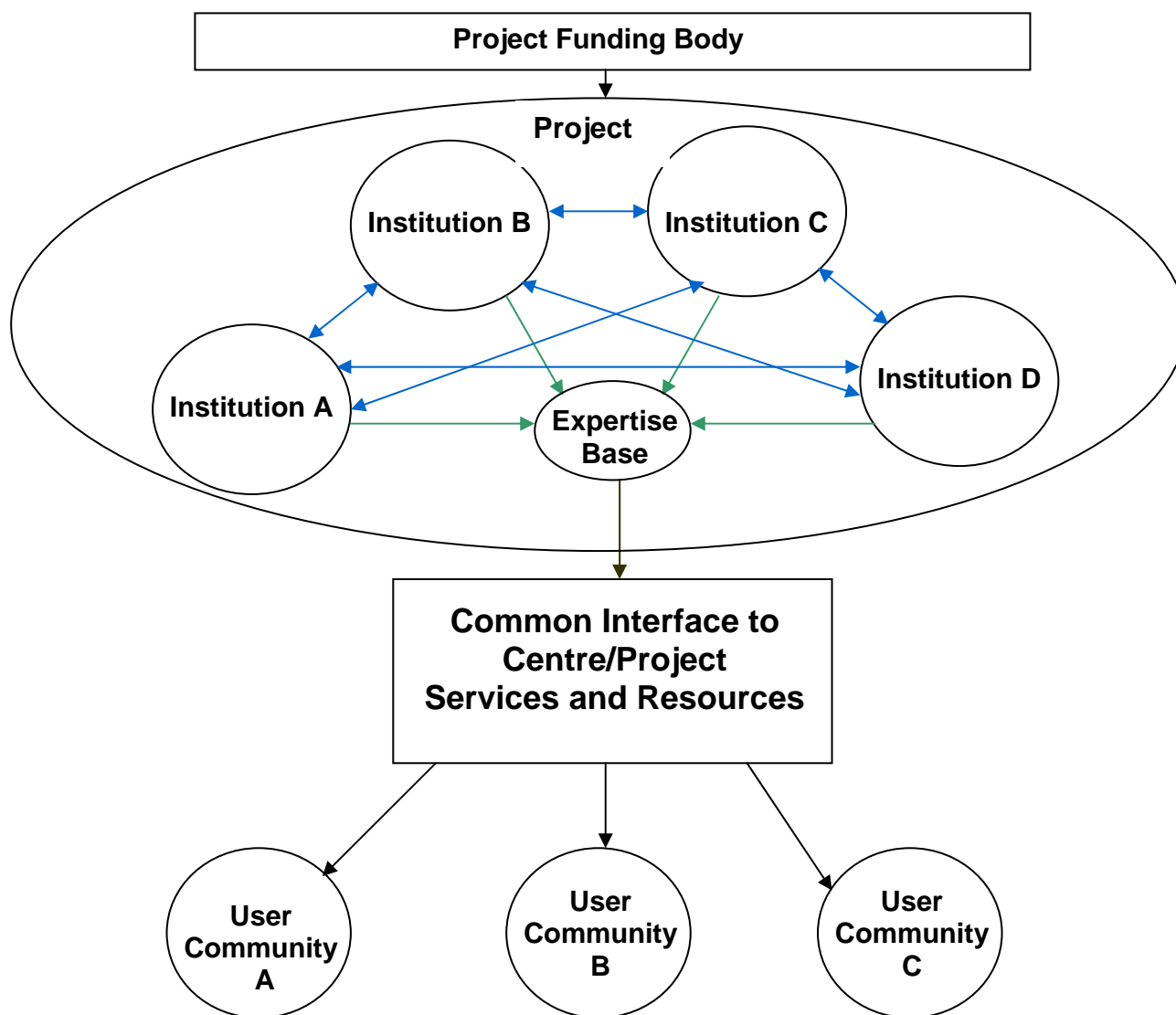


Figure 1: Distributed Centres of Expertise and Research

## Examples of this type of model include:

- ◆ Digital Curation Centre (DCC)<sup>14</sup>
- ◆ kopal – Co-operative Development of a Long-term Digital Information Archive<sup>15</sup>
- ◆ Virtual Information and Knowledge Environment Framework (VIKEF)<sup>16</sup>
- ◆ Digital Repository Infrastructure Vision for European Research (DRIVER)<sup>17</sup>
- ◆ Preservation and Long-term Access through NETworked Services (PLANETS)<sup>18</sup>
- ◆ CASPAR – Cultural, Artistic and Scientific knowledge for Preservation, Access and Retrieval<sup>19</sup>
- ◆ Arts and Humanities Data Service (AHDS)<sup>20</sup>
- ◆ DigitalPreservationEurope (DPE)<sup>21</sup>
- ◆ Centre for Educational Technology and Interoperability Standards (CETIS)<sup>22</sup>
- ◆ Network of Expertise in Long-term Preservation of Digital Resources (nestor)<sup>23</sup>
- ◆ Arbeitskreis Digital Preservation<sup>24</sup>
- ◆ LDB – Centre for Long-term Digital Preservation<sup>25</sup>

## Capacity

Capacity is generally quite high in these types of centres. The individual reputations of the partners involved tend to increase the overall perception of capacity in the eyes of their user communities. Indeed, to secure funding each of the partner institutions must be able to clearly demonstrate a strong capacity for the specific subject being investigated. However, as partner institutions may often be involved in several simultaneous projects, there is also the risk that staff resources may be spread too thinly, which in turn threatens the capacity of the overall project. Dependencies on partner institutions to achieve joint deliverables can also hinder productivity and, consequently, the overall capacity to provide support and guidance.

## Credibility

Through the staff of the partner institutions, these centres may provide access to a wide range of expertise and experiences representing a range of disciplinary viewpoints. As such, the credibility of the centre as a whole is likely to be stronger than the sum of its individual parts. Ongoing external reviews and evaluations by funding bodies also help to provide assurances of quality that may bolster the credibility of the centre/project's outputs.

## Commitment

Funding for these types of projects tends to be finite. Generally speaking, funding is granted for a period of three to five years. While the limited time frame of funded activity can help to

<sup>14</sup> <http://www.dcc.ac.uk>

<sup>15</sup> <http://kopal.langzeitarchivierung.de/index.php.en>

<sup>16</sup> <http://www.vikef.net/>

<sup>17</sup> <http://www.driver-repository.eu>

<sup>18</sup> <http://www.planets-project.eu>

<sup>19</sup> <http://www.casparpreserves.eu>

<sup>20</sup> <http://www.ahds.ac.uk>

<sup>21</sup> <http://www.digitalpreservationeurope.eu>

<sup>22</sup> <http://www.cetis.ac.uk>

<sup>23</sup> <http://www.langzeitarchivierung.de/index.php?newlang=eng>

<sup>24</sup> <http://www.ocg.at/ak/langzeitarchivierung/index.html>

<sup>25</sup> <http://ldb.project.ltu.se>

focus the efforts of the project, it may also threaten the availability of project expertise and services in the long term. In addition, each partner's existing institutional infrastructure and contacts may offer resources that can benefit the project as a whole.

### **Certification**

The fact that these types of projects have been funded in the first place could be taken, in the absence of more formal certification mechanisms, as 'informal' certification of their relevance to a given user community and the merits of the consortium partners.

### **Context**

Institutions involved these types of projects often represent multiple disciplines. This can help to increase communication and collaboration opportunities between domains and ultimately result in the provision of better services and tools for a wider range of user communities. However, this environment can also be prone to a lack of agreement and understanding of key terms, core issues and basic approaches. This can hinder the overall effectiveness of the centre.

### **Competition**

Funding for these types of projects is generally made through an open bidding process which ensures that the successful bids are comprised of the best possible participants for the given subject area.

### **Communication**

As the many partners tend to represent different user communities, there is greater potential to extend the communication of the project's outputs to a wider audience. However, internal communication between multiple partners can be very difficult to coordinate and, as a result, the project partners may lack a shared vision.

### **Major Strengths**

- ◆ Good mix of staff skills and backgrounds, so capacity tends to be high
- ◆ Projects often include staff from several disciplines, so a range of perspectives are represented
- ◆ Credibility of the project as a whole tends to be high due to the reputations of the individual partners
- ◆ Funding of the project may be considered as a form of certification
- ◆ Competitive nature of bidding for funds tends to produce projects with highly experienced staff and ongoing evaluation by funding bodies tends to lead to high-quality outputs
- ◆ Individual partners' existing contacts and communication channels can help to disseminate the project outputs to a much wider audience

### **Major Weaknesses:**

- ◆ Commitment tends to be short-term in nature, so there is little long-term sustainability for guidance, support and services
- ◆ Risk that internal communications will be ineffective, thereby hindering a shared vision
- ◆ Multiple disciplines involved may mean a lack of shared understanding of basic terms and concepts and make agreement on a shared approach problematic



## 6.2 Single research-led centres with curation and preservation expertise

Centres falling into this category are generally part of a larger organisation like a university or research centre. They tend to gain expertise through participation in short-term, externally funded research activity. The range of expertise tends to be focused in a very specific area as funding for new projects is often awarded due to previous related experience. This can lead to the centre becoming very knowledgeable in certain aspects of digital curation and preservation but can also mean that there may be little opportunity for the centre to extend its knowledge base beyond its comfort zone. In many cases, the parent institution may have one or more departments that are simultaneously investigating various aspects of digital curation and preservation – each of which may be aiming to serve different user communities. The results of research may or may not be communicated between the different departments/projects.

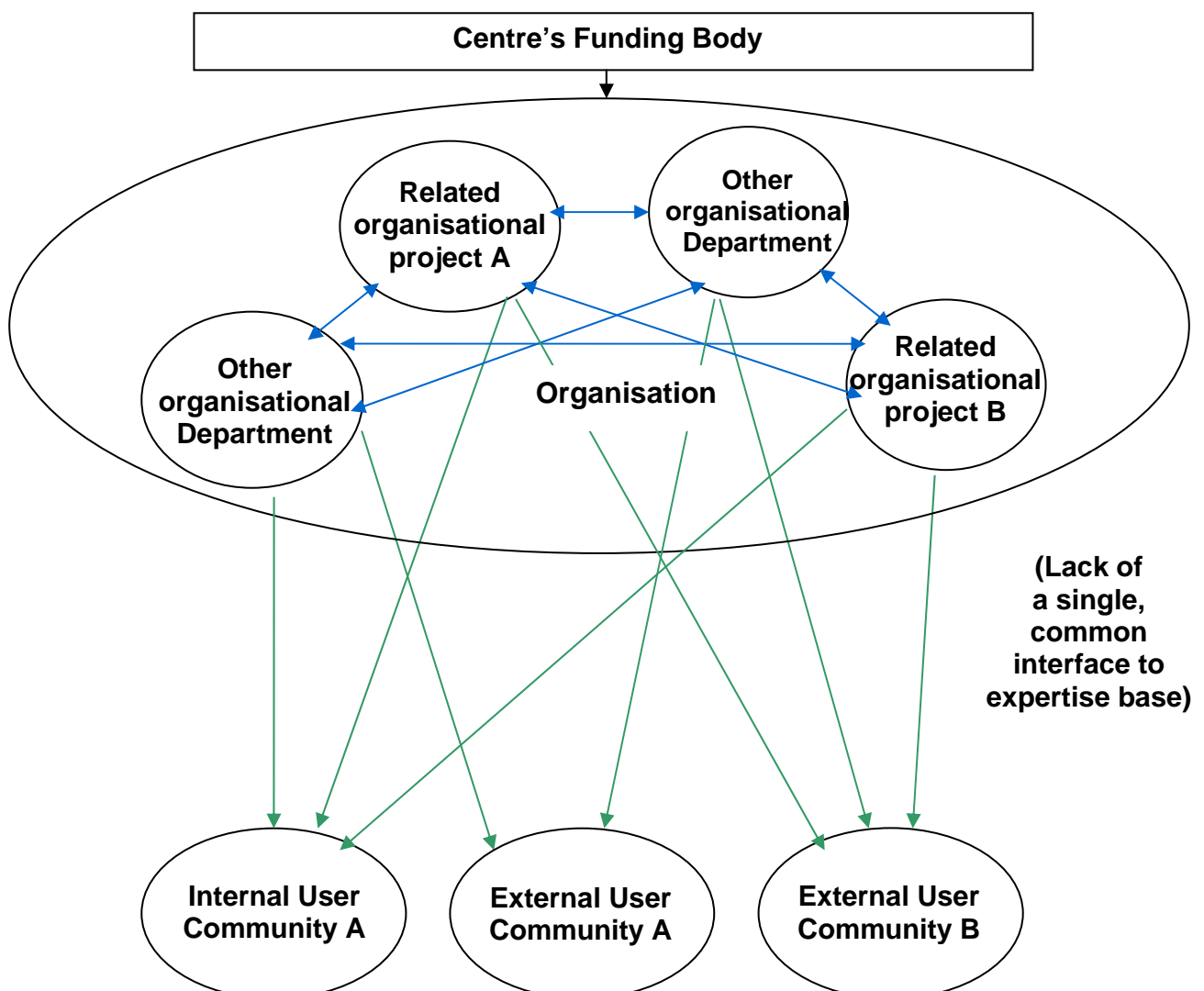


Figure 2: Single research-led centres with curation and preservation expertise

### Examples of this type of model include:

- ◆ Salzburg Research<sup>26</sup>
- ◆ Ludwig-Boltzmann-Institut Medien.Kunst.Forschung<sup>27</sup>
- ◆ Seibersdorf Research<sup>28</sup>
- ◆ FernUniversität in Hagen (FUH)<sup>29</sup>
- ◆ Humanities Advanced Technology and Information Institute (HATII)<sup>30</sup>
- ◆ UKOLN<sup>31</sup>
- ◆ Council for the Central Laboratory of the Research Councils (CCLRC)<sup>32</sup>
- ◆ European Space Agency (ESA)<sup>33</sup>
- ◆ Technische Universität Wien (TU Vienna)<sup>34</sup>
- ◆ University of London Computing Centre (ULCC)<sup>35</sup>
- ◆ Niedersächsische Staats- und Universitätsbibliothek Göttingen (SUB)<sup>36</sup>
- ◆ Università degli Studi di Urbino<sup>37</sup>

### Capacity

Capacity tends to be very high in specific topic areas. Conversely, this very specific expertise tends to limit the type of future research funding that institutions can successfully apply for. As a result, there is a risk that these types of institutions are not provided with opportunities to extend their boundaries and competencies in the digital curation and preservation research arena beyond their acknowledged subject areas.

### Credibility

These types of centres generally have a very high level of credibility in their specific subject area. However, as mentioned above, there may be a glass-ceiling effect in place as new funding tends to be awarded on the basis of prior experience in a given topic area. Accordingly, there is little room for an institution to stray too far from its topics of expertise and extend its credibility with regard to new subject areas and new target user communities.

### Commitment

Funding for curation and preservation research and development tends to come through short-term funded projects and grants rather than through the institution itself. As such, there is no guarantee that expertise can be sustained within the institution over time. The larger organisation may or may not view the subject areas being researched by the centre to be core to the overall organisational mission and, as such, without securing external funding the long-term research activity of the centre may be at risk.

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<sup>26</sup> <http://www.salzburgresearch.at/company/index.php>

<sup>27</sup> <http://media.lbg.ac.at/de/index.php>

<sup>28</sup> <http://www.arcs.ac.at>

<sup>29</sup> <http://www.informatik.fernuni-hagen.de/ia>

<sup>30</sup> <http://www.hatii.arts.gla.ac.uk>

<sup>31</sup> <http://www.ukoln.ac.uk>

<sup>32</sup> <http://www.cclrc.ac.uk>

<sup>33</sup> <http://www.esa.int>

<sup>34</sup> [http://www.tuwien.ac.at/tu\\_vienna](http://www.tuwien.ac.at/tu_vienna)

<sup>35</sup> <http://www.ulcc.ac.uk>

<sup>36</sup> <http://www.sub.uni-goettingen.de>

<sup>37</sup> <http://www.uniurb.it/it/index.php>

## **Certification**

As with funded projects, the very fact that the centre has been provided with resources to undertake the research is likely to be a sufficient demonstration that if certification mechanisms were available the centre would be well placed to achieve such certification.

## **Context**

Research-led centres tend to have a good reputation for theoretical knowledge in their given subject areas. However, they often lack practical, hands-on experience in curating and preserving digital information over time. As such, it can be difficult to extend take-up of the resources and services provided by these centres beyond their specific user community.

## **Competition**

Awards of research grants and project funding tend to be open and often result in bids of high merit. However, as noted above, research grants tend to be awarded to centres with demonstrable experience in a specific topic area. This can pigeon-hole the centre and hinder its competitiveness in applying for new areas of research funding.

## **Communication**

To secure adequate funding for research activity, these research-led centres are often involved in multiple projects at any given point in time. As mentioned previously, there may be numerous related projects being carried out simultaneously by other departments in the organisation. If well coordinated, these projects can provide a valuable ready-made community to work on the development of shared support and guidance. Unfortunately, there tends to be little awareness of, and coordination between, these projects on an organisational level and there is generally no common interface for various user communities to find and access resources and services. As such, there is a risk that there will be duplication of effort within the organisation as a whole.

## **Major Strengths**

- ◆ High capacity in certain topic areas
- ◆ Research outputs and resources are generally viewed as credible by the user community
- ◆ There may be numerous related projects being carried out by the larger organisation that can help to feed into the centre's research activity
- ◆ Open bidding process for research grants tends to lead to high-quality bids

## **Major Weaknesses:**

- ◆ Expertise tends to be focused in a few narrow areas
- ◆ Possibility of duplication of effort within the organisation as a whole
- ◆ Often lack hands-on, practical experience in curating and preserving data
- ◆ Communication between the various departments and projects within the organisation may not be effective and consequently there may be little awareness or coherence between these efforts

### 6.3 Commercial curation and preservation centres/services

These types of centres may be funded either through private membership fees or through consultancy fees. These centres often have good visibility and are generally regarded as highly competent by their user communities. As these centres serve clearly defined user communities, their work tends to be focused and user-driven. These kinds of centres often have good contact with industry and vendors as well as with international standards bodies and policy makers. There is often a misguided notion that these types of centres are more sustainable than other types. However, it is important to remember that their long-term viability depends entirely on their perceived relevance and value in the eyes of their members and clients, so their longevity is in no way permanently guaranteed.

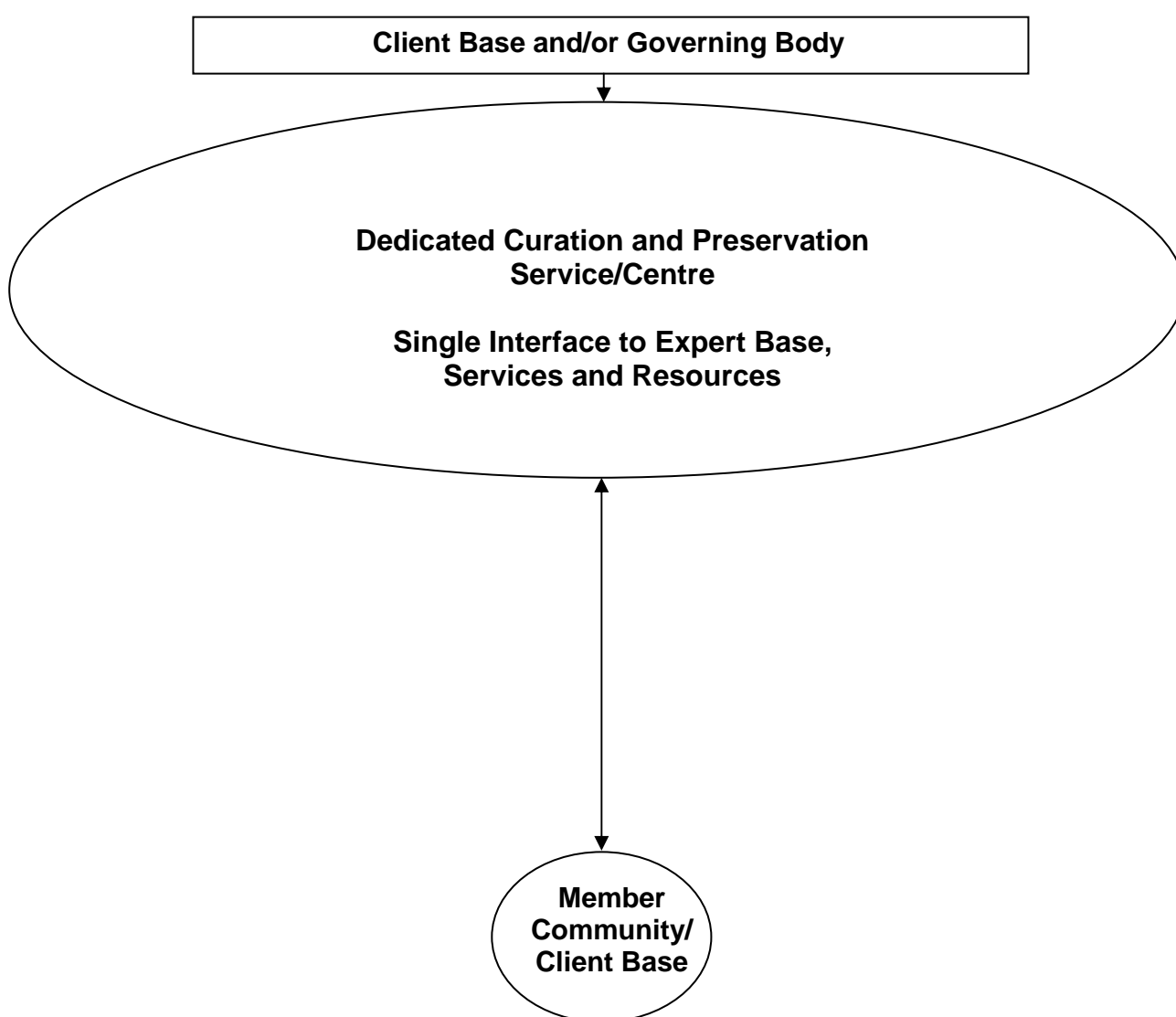


Figure 3: Commercial curation and preservation centres/services

**Examples of this type of model include:**

- ◆ Digital Preservation Coalition (DPC)<sup>38</sup>
- ◆ Digital Archiving Consultancy Limited (DAC)<sup>39</sup>
- ◆ National Digital Archive of Datasets (NDAD)<sup>40</sup>
- ◆ Eesti Äriarhiiv<sup>41</sup>
- ◆ Istituto Centrale per il Catalogo Unico (ICCU)<sup>42</sup>
- ◆ Centro Nazionale per l'Informatica della Pubblica Amministrazione (CNIPA)<sup>43</sup>

**Capacity**

Capacity in these types of centres is normally quite highly regarded by the client base. As these types of centres rely heavily on funding from customers/clients, efforts to build capacity tend to directly reflect the needs of their user communities. This responsiveness also helps to provide a perception of capacity in the eyes of the user community.

**Credibility**

The centre's credibility is usually based on actual performance and customer satisfaction rather than on reputation alone. Accordingly, 'word of mouth' promotion of the centre's services and resources is vital for their ongoing survival.

**Commitment**

Commitment may come from public funding but more often comes from membership or client fees. As such, the centre is generally quite secure so long as it is perceived to be offering relevant and valuable services and resources to its client base.

**Certification**

The centre may have a governing body and/or scientific board that oversees its activity. This helps to reinforce the notion that the services and resources have a certain level of quality. Apart from this, there is no real certification for these types of centres, but the fact that members and/or clients buy into the services and resources being provided demonstrates that the community views these services and resources as being valuable.

**Context**

Commercial centres tend to have a good reputation for providing relevant and valuable services and resources to a specific community of users. However, as access to these resources is often based on membership, they may lack the ability to extend take-up beyond their user community. Indeed, it may not be in their best interest financially to do so.

**Competition**

As these types of centres depend on the fees of members and/or clients, they must offer a competitive and relevant service that provides the user community with a perception of value for money.

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<sup>38</sup> <http://www.dpconline.org/graphics/index.html>

<sup>39</sup> <http://www.d-archiving.com>

<sup>40</sup> <http://www.ndad.nationalarchives.gov.uk>

<sup>41</sup> <http://www.eba.ee>

<sup>42</sup> <http://www.iccu.sbn.it>

<sup>43</sup> <http://www.cnipa.gov.it>

## **Communication**

In most cases, guidance and resources are made available to members only. As such, dissemination of the resources tends to be limited to a distinct user group.

## **Major Strengths**

- ◆ Responsive to user community needs
- ◆ Performance-based reputation
- ◆ Competitive environment for members' investment tends to mean that services and resources have to be very relevant and perceived as value for money

## **Major Weaknesses:**

- ◆ Resources tend to reflect the needs of very specific user communities
- ◆ Access to resources and services may be limited to members only

## 6.4 National libraries, archives or other organisations with preservation expertise

These large, established institutions have proven their competence in curating and preserving analogue materials over decades and sometimes centuries. The majority of these types of centres are well aware of the risks facing our digital memory and have been actively working to improve their skill-sets to care for digital materials as well as they have cared for analogue materials. However, while these centres are improving their skills in this area, expertise is not yet confirmed. Funding for these types of centres is generally secure and they have a solid reputation of competence among their user communities. These types of centres could provide an extremely valuable framework for coordinating competence in a national setting.

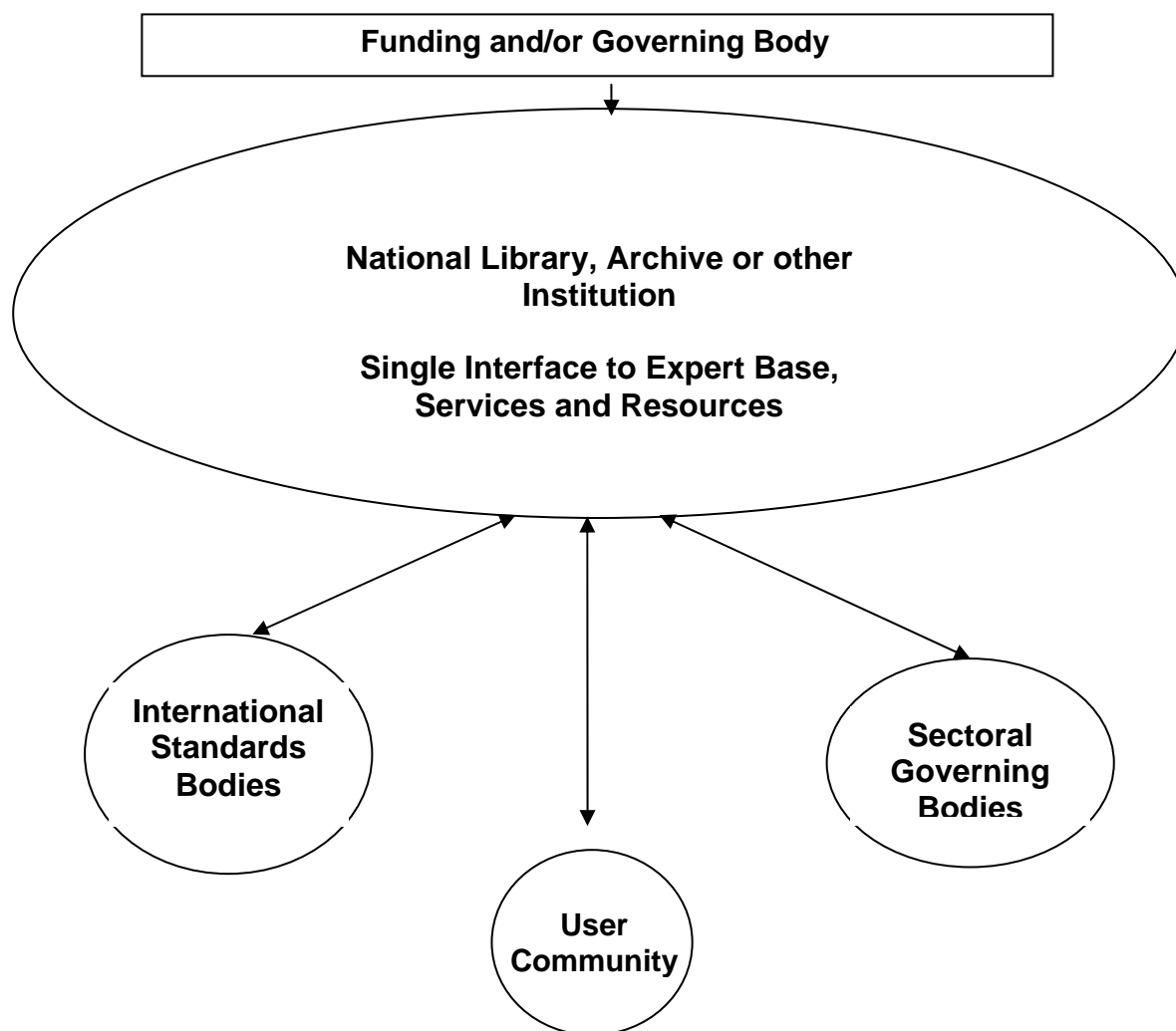


Figure 4: National libraries, archives or other organisations with preservation expertise

## Examples of this type of model include:

- ◆ Österreichische Nationalbibliothek (ONB)<sup>44</sup>
- ◆ Phonogrammarchiv<sup>45</sup>
- ◆ Österreichische Mediathek<sup>46</sup>
- ◆ Universitätsbibliothek Innsbruck<sup>47</sup>
- ◆ Nationaal Archief van Nederland<sup>48</sup>
- ◆ Koninklijke Bibliotheek (KB)<sup>49</sup>
- ◆ Národní knihovna České republiky (NK)<sup>50</sup>
- ◆ Statsbiblioteket (SB)<sup>51</sup>
- ◆ British Library (BL)<sup>52</sup>
- ◆ The National Archives (TNA)<sup>53</sup>
- ◆ UK Data Archive (UKDA)<sup>54</sup>
- ◆ Biblioteca Nazionale Centrale di Firenze<sup>55</sup>

## Capacity

These types of centres have a very high capacity in the curation and preservation of analogue materials. However, there may be a misguided notion that these types of centres can automatically translate their competencies with analogue materials to their stewardship of digital materials. Their expertise in this area is emerging but not yet guaranteed.

## Credibility

The credibility of these types of centres is normally well established. These types of centres tend to provide national leadership and guidance to smaller cultural heritage institutions within the country. Visibility also tends to be high among other user groups, not just those that may be seen as the target user communities. However, there may be confusion over the role that these types of centres can play in curating and preserving digital information that is still in the active phase of its life-cycle.

## Commitment

The provision of funds for the preservation of analogue materials is generally quite secure in these types of organisations. However, the governing bodies for these types of centres may not see the immediate need to provide additional funding for the curation and preservation of digital materials. As such, these types of centres may have to rely on involvement in externally funded projects to secure the funds necessary to improve their capacity for the long-term curation and preservation of digital resources.

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<sup>44</sup> <http://www.onb.ac.at>

<sup>45</sup> <http://www.pha.oeaw.ac.at>

<sup>46</sup> <http://www.mediathek.ac.at>

<sup>47</sup> <http://www.uibk.ac.at/ub/statistik/index.html>

<sup>48</sup> <http://www.nationaalarchief.nl>

<sup>49</sup> <http://www.kb.nl>

<sup>50</sup> <http://www.nkp.cz>

<sup>51</sup> <http://www.statsbiblioteket.dk>

<sup>52</sup> <http://www.bl.uk>

<sup>53</sup> <http://www.nationalarchives.gov.uk>

<sup>54</sup> <http://www.data-archive.ac.uk>

<sup>55</sup> <http://www.bncf.firenze.sbn.it>



## **Certification**

There is no real means of certifying the services and resources offered by these types of centres. However, these centres do generally conform to international standards, which offer some guarantees with regard to interoperability and accessibility. Indeed, these types of centres may be influential in the development of international standards and national policies.

## **Context**

These types of centres have been mandated with preserving access to resources – whether analogue or digital. Accordingly, they have a great deal of experience with ingest and access workflows. This experience could be utilised by providers of technological solutions and third-party service providers to help develop tools that reflect actual work processes more accurately. These types of centres also have good connections with international standards and governing bodies and indeed have demonstrated that they can help to influence the development of standards and policies.

## **Competition**

Competition is not really an issue for these types of centres. Often, there are legal requirements mandating the deposit of materials into the centre.

## **Communication**

There are generally no restrictions on accessing resources and services within these types of centres. These types of centres tend to communicate very well with smaller, regional cultural heritage institutions but may not have as much influence with other stakeholder communities. It is vital that communication between content creators and these types of centres is pushed forward in the resource's life-cycle so that it is not simply a hand-off of materials between these stakeholders but a managed process that ensures the best possible chance of long-term viability for the digital resources.

## **Major Strengths**

- ◆ Strong reputation and visibility among varied user groups
- ◆ Good level of commitment from funding bodies
- ◆ Well placed to leverage communication between content creators, content curators and technology providers
- ◆ Evidence that they can influence standards and policy development
- ◆ Good level of practical experience

## **Major Weaknesses:**

- ◆ Absence of competition in this environment
- ◆ More evidence of these centres' competence regarding curation and preservation activity during the active phase of the resource's life-cycle is required

## 6.5 International Bodies and Professional Associations

The formation of these consortium-based centres tends to occur voluntarily and in response to the specific needs of a particular community of practice. Participants in these types of consortia tend to represent international organisations aiming to influence the development of policy and standards and also to improve advocacy among their specific user community.

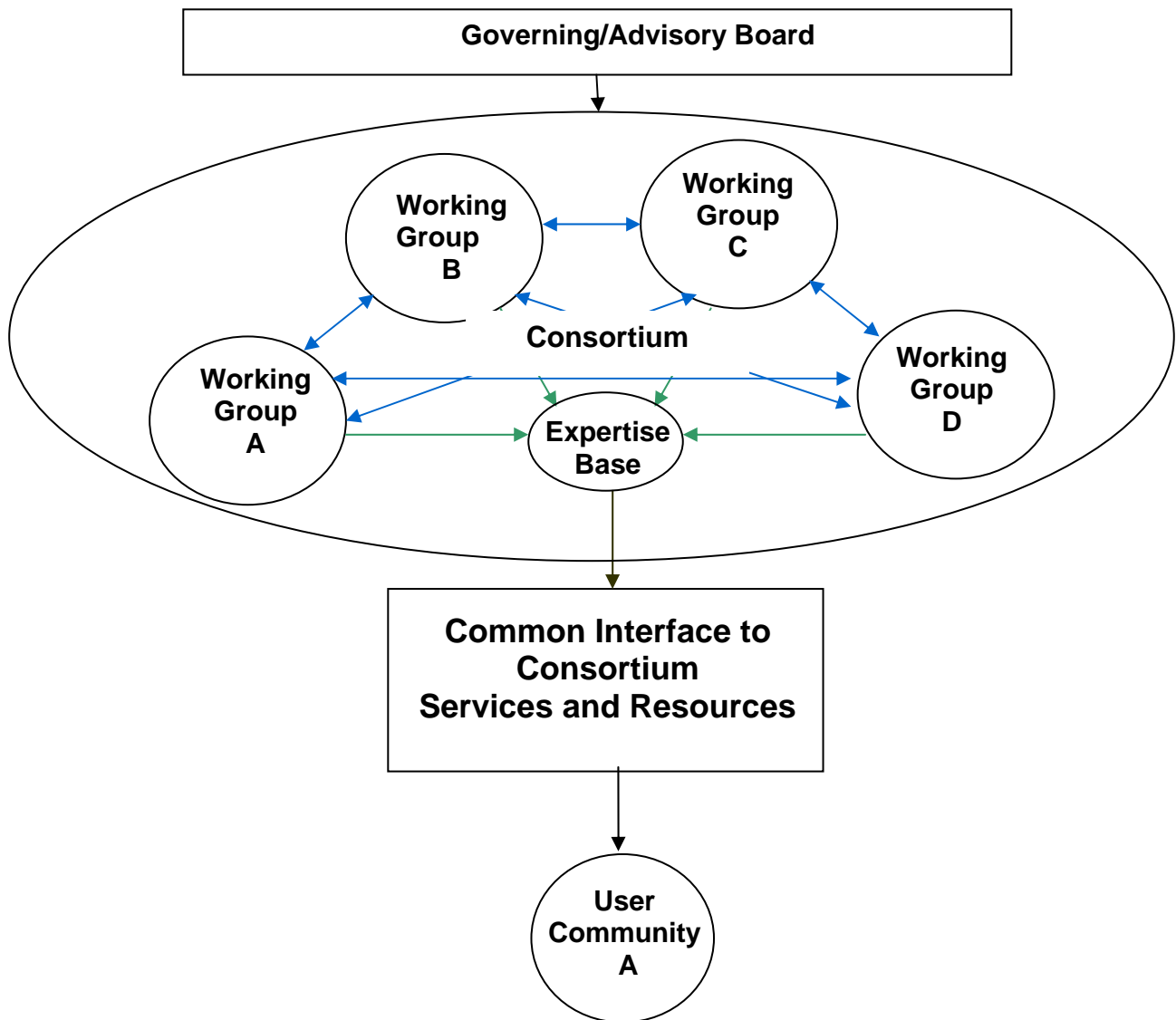


Figure 5: International Bodies and Professional Associations

## Examples of this type of model include:

- ◆ The World Wide Web Consortium (W3C)<sup>56</sup>
- ◆ Dublin Core Metadata initiative (DCMI)<sup>57</sup>
- ◆ International Council on Archives (ICA)<sup>58</sup>
- ◆ International Federation of Library Associations (IFLA)<sup>59</sup>

## Capacity

Most often, competence is gained through the voluntary formation of working groups who examine specific problem areas with regard to a particular community of practice. These structures tend to have a high level of competence but generally lack the authority to enforce their recommendations and policies beyond the working group participants.

## Credibility

The credibility of these centres is usually very well established as the range of participants represents large, international organisations. However, expertise may be limited to a specific topic area connected to working group activity. As such, without extending the context of the particular topic beyond the domain of the working group participants, there may be little recognition of the overall relevance to other user communities. These types of centres generally have a strong influence on the development of national policies and international standards for their particular community of practice.

## Commitment

These types of centres can have varying levels of commitment. Indeed, some centres rely entirely on voluntary participation. The lack of financial support is not necessarily detrimental as the commitment of the volunteer participants demonstrates a real dedication to solving the specific challenge. This enthusiasm may prove to be more valuable than more tangible forms of support. A problem with this sort of centre is that if interest in the topic wanes among participants, there is a risk that the centre and its recommendations will become redundant and eventually lose credibility.

## Certification

There tends to be no real certification for the outputs of these types of centres. However, many of these types of centres actively influence the development of national policies and international standards. As such, these centres may be successful in leveraging recognition for the centres' outputs in the international arena.

## Context

As noted above, these types of centres tend to be formed to investigate very specific problems and to produce recommendations for a particular community of practice. Therefore, it may be difficult to extend take-up of a centre's recommendations beyond the given community of practice.

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<sup>56</sup> <http://www.w3.org>

<sup>57</sup> <http://dublincore.org>

<sup>58</sup> <http://www.ica.org>

<sup>59</sup> <http://www.ifla.org>

## **Competition**

There tends to be little competition in these types of centres as participation is generally volunteer-based.

## **Communication**

In most cases, the consortium will have a common interface to the resources and guidance produced. Communication of the centre's recommendations is normally quite effective for the target user community. However, the recommendations may not be as effectively communicated beyond the target user community.

### **Major Strengths:**

- ◆ Good level of capacity
- ◆ Dedication and commitment of participants
- ◆ Evidence that they can influence standards and policy development
- ◆ Participants may have a good mix of both theoretical and practical experience

### **Major Weaknesses:**

- ◆ Absence of competition in this environment
- ◆ May not be as effective in communicating outside their target user community
- ◆ Centre will survive only so long as there is interest in the specific topic(s) being investigated

## 7 Conclusions and Recommendations

### 7.1 Summary

Curating and preserving digital information over its entire life-cycle embraces the notion that this information has value over and above that associated with its present-day use. Effective curation and preservation activity should not be viewed as a simple case of transferring stewardship from content creators to curators but rather as an evolving process whereby value is added through the provision of context and linkage. To develop the necessary infrastructures to support this level of activity across Europe, reliable and relevant guidance and support must be readily available to a range of stakeholder communities. Although there are already a number of competence centres aiming to provide guidance and support, most are not fully equipped to meet all of the potential curation and preservation needs. The examination of current examples of competence centres led to definition of DPE's '7C's' benchmarking model. The benchmarking elements were utilised to evaluate the overall strengths and weaknesses of five generic competence centre models based on the salient features of the current examples. It is now clear that each of the models examined has definite strengths but that none of the current models meets all of the requirements as set out in DPE's '7C's' benchmarking model. To pull together the strengths of the existing models and to overcome their weaknesses, DPE recommends the establishment of a federated network of competence centres with a single, common interface to the provision of resources and services. This approach will help to solve digital curation and preservation challenges that could not be solved by any single centre alone.

DPE strongly believes that a federated approach should represent all areas of curation and preservation activity – from requirements gathering and cutting-edge research through to tools development and service provision and beyond to outreach activity. The federation of competence centres should support and promote the continuing improvement in data curation and preservation and should work to eliminate duplication of effort. The federation should be pluralistic in nature. By this we mean that the federation should communicate with and support the many diverse stakeholder communities by seeking to understand and reflect their different paradigms and methodologies. The federation should also work to identify and disseminate support from both the generic and disciplinary-specific perspectives. The federation should establish an open and creative culture to help foster the flow of ideas and experiences between research, technological development, and practice. It is vital that the federated competence centres' research and development activities reflect the requirements of the various stakeholder communities and that their practical experiences are fed back into the federation to enable ongoing refinement of the centres' operations. This will help to ensure that the federation's research and development activity has relevance for the user community and that the federation's advice is informed and valued by its varied client base.

The main objectives of the federation of competence centres should be to:

- ◆ Establish a vibrant research programme that is informed by the requirements and experiences of a range of stakeholder communities
- ◆ Nurture strong community relationships from a range of disparate stakeholders
- ◆ Work with user communities and technology providers to develop tools and resources as well as relevant and valuable services
- ◆ Achieve the 'virtuous circle' whereby expertise, experience and user requirements inform the federation's research and development activity

DPE's vision of a successful federation of competence centres is one that is coherent and international in its outlook. By combining the acknowledged strengths of the various generic models, DPE aims to inspire a 'virtuous circle' approach to the provision of digital curation and preservation support. DPE is confident that, by adopting a 'virtuous circle' approach to the provision of digital curation and preservation expertise, the European Commission can ensure that sustainable support is made readily accessible to content creators, curators and re-users across EU member states over the entire life-cycle of their digital resources.

## **7.2 Possible Revisions to this Report**

DPE intends to keep this topic under review during the next 24 months and if we feel it is appropriate we will release a revised version of this document. Please contact us with suggestions, and if you wish to have your institutional details included in our report please add them to the Competence Centre Page on the DPE Website.

## Appendix 1: Competence Centres

DigitalPreservationEurope (DPE) invited submissions from projects and institutions who felt that they should be included in its list of current competence centres. An online form was made available and 48 responses were received from around the world. A complete list of submissions by country/region is included below. The online submission form was made available at: <http://www.digitalpreservationeurope.eu/competence-centres/> from 12 to 23 March 2007. We have supplemented this list with the names of others.

We are grateful to organisations who contributed to this survey. We reprint their descriptive information as provided.

Country	Name	Description*	URL
EU, then Member States Listed first		*As provided by the submitting organisation. © in the descriptions rests with the organisation described	
EU	Cultural, Artistic and Scientific knowledge for Preservation, Access and Retrieval (CASPAR)	CASPAR – Cultural, Artistic and Scientific knowledge for Preservation, Access and Retrieval – is an Integrated Project co-financed by the European Union within the Sixth Framework Programme (Priority IST-2005-2.5.10, ‘Access to and preservation of cultural and scientific resources’).  Funding Method: European Commission Length of Funding: 4 years Number of Staff: 11-50	<a href="http://www.casparpreserves.eu">http://www.casparpreserves.eu</a>
EU	DELOS	DELOS is a Network of Excellence on Digital Libraries partially funded by the European Commission in the frame of the Information Society Technologies Programme (IST). The main objectives of DELOS are research, whose results are in the public domain, and technology transfer, through cooperation agreements with interested parties.	<a href="http://www.delos.info">http://www.delos.info</a>
EU	DigitalPreservation Europe (DPE)	DigitalPreservationEurope, building on the earlier successful work of ERPANET, facilitates pooling of the complementary expertise that exists across the academic research, cultural, public administration and industry sectors in Europe. DigitalPreservationEurope (DPE) fosters collaboration and synergies between many existing national initiatives across the European Research Area. DPE addresses the need to improve coordination, cooperation and consistency in current activities to secure effective preservation of digital materials.  Funding Method: European Commission Length of Funding: 3 years Number of Staff: 11-50	<a href="http://www.digitalpreservationeurope.eu">http://www.digitalpreservationeurope.eu</a>

Country	Name	Description*	URL
EU, then Member States Listed first		*As provided by the submitting organisation. © in the descriptions rests with the organisation described	
EU	Digital Repository Infrastructure Vision for European Research (DRIVER)	The "Digital Repository Infrastructure Vision for European Research" (DRIVER) project responds to the vision that any form of scientific-content resource, including scientific/technical reports, research articles, experimental or observational data, rich media and other digital objects should be freely accessible through simple Internet-based infrastructures. Like GEANT2, the successful European network for computing resources, data storage and transport, the new DRIVER repository infrastructure will enable researchers to plug into the new knowledge base and use scientific content in a standardised, open way. The project is funded by the European Commission under the auspices of the "Research Infrastructure" unit.	<a href="http://www.driver-repository.eu">http://www.driver-repository.eu</a>
EU	Ministerial Network for Valorising Activities in digitisation, eContentplus (MinervaEC)	MinervaEC is a Thematic Network in the area of cultural, scientific information and scholarly content. The Consortium brings together stakeholders and experts from all over Europe, capitalising the results achieved by the previous Minerva project, and supporting the European Commission initiative "i2010 – A European Information Society for growth and employment" as well as the Dynamic Action Plan launched in Bristol in November 2005 by the European Union Member States.	<a href="http://www.minervaeurope.org/about/minervaec.htm">http://www.minervaeurope.org/about/minervaec.htm</a>
EU	PrestoSpace	The project's objective is to provide technical solutions and integrated systems for a complete digital preservation of all kinds of audio-visual collections. Institutions traditionally responsible for preserving audio-visual collections (broadcasters, research institutions, libraries, museums, etc.) now face major technical, organisational, resource, and legal challenges in taking on the migration to digital formats and the preservation of already digitised holdings. Technical obsolescence and physical deterioration of their assets imply widely concerted policy and efficient technical services to achieve long-term digital preservation. The principal aim is to build-up preservation factories providing affordable services to all kinds of collection's custodians in order to manage and distribute their assets.	<a href="http://www.prestospace.org/project/index.en.html">http://www.prestospace.org/project/index.en.html</a>
EU	Preservation and Long-term Access through NETWORKed Services (PLANETS)	The PLANETS project brings together European National Libraries and Archives, leading research institutions and technology companies to address the challenge of preserving access to digital cultural and scientific knowledge. The four-year project is funded by the European Commission Information Science and Technologies Framework Programme 6, Call 5 (FP6 Call 5).	<a href="http://www.planets-project.eu">http://www.planets-project.eu</a>
EU	Virtual Information and Knowledge Environment Framework (VIKEF)	<p>Funding Method: European Commission  Length of Funding: 4 years  Number of Staff: 11-50</p> <p>VIKEF bridges the gap between the partly implicit knowledge and information conveyed in scientific and business content resources (e.g. text, speech, images) and the explicit representation of knowledge required for a targeted and effective access, dissemination, sharing, use, and annotation of ICK resources by scientific and business communities and their information- and knowledge-based work processes. R&amp;D within VIKEF builds on and significantly extends the current Semantic Web efforts by addressing crucial operationalisation and application challenges in building up real-world semantically enriched virtual information and knowledge</p>	<a href="http://www.vikef.net/">http://www.vikef.net/</a>



Country	Name	Description*	URL
EU, then Member States Listed first		*As provided by the submitting organisation. © in the descriptions rests with the organisation described	
		environments.	
Belgium	Nationaal Geografisch Instituut	<p>NGI is the national mapping agency for Belgium. We are putting special effort into the digitisation of our historic map and photo collection. The focus is on opening up the geographical content of these maps and aerial photos to the user of (digital) geographic information, be it the general public or the GIS professional. Our goal is to be able to provide the information in a form compatible with the actual geographic data and techniques, and to include the information in the national data infrastructure, complementary to the actual geographic information required by the new INSPIRE directive. Staff and funding information given below refers to the entire NGI. Activities relevant to the survey are only a minor part in comparison with the main goal (the update of the topogeographical inventory of the Belgian territory).</p> <p>Funding Method: Partially state funded, partially commercial revenues            Length of Funding: Indefinite            Number of Staff: 251-500</p>	<a href="http://www.ngi.be">http:// www.ngi.be</a>
Belgium	PACKED vzw	<p>PACKED is a Dutch acronym for Platform for Archiving and Preservation of Works of Art on Electronic or Digital Media. PACKED's aim is to gather and disseminate information, carry out research, develop a framework and standards for archiving and preservation of AV media in Flanders.</p> <p>Funding Method: Flemish government            Length of Funding: 5 years            Number of Staff: 1-10</p>	<a href="http://www.packed.be">http://www.packed.be</a>
Belgium	Royal Museums for Art and History	<p>Funding Method: Federal government            Length of Funding: 3 years            Number of Staff: 251-500</p>	<a href="http://www.kmkg.be">http://www.kmkg.be</a>
Belgium	Royal Observatory of Belgium	<p>Digital Access to Metric Images Archives Network – DAMIAN. High precision and resolution fully automatic digitiser facility for photographic images on glass plates, film sheets and rolls up to 350 mm wide. With special emphasis on aerial photographs and astronomic images and spectra.</p> <p>Funding Method: Government            Length of Funding: 3 years            Number of Staff: 1-10</p>	<a href="http://www.ksb.be">http://www.ksb.be</a>

Country	Name	Description*	URL
EU, then Member States Listed first		*As provided by the submitting organisation. © in the descriptions rests with the organisation described	
Denmark	Netarchive.dk	<p>Netarchive.dk is a virtual organisation build by the Royal Library in Copenhagen and The State and University Library in Aarhus. The objective of Netarchive.dk is to collect and preserve the Danish part of the Internet. Netarchive.dk has developed administrative software based on the Heritrix crawler and has implemented an active bit-preservation algorithm for the harvested material. Presently holds. The archive holds presently 32 TB of data. Members from the archive are active in IIPC</p> <p>Funding Method: The two libraries have received a special funding from the Ministry of Culture dedicated to handling the new legal deposit law.</p> <p>Number of Staff: Approximately 5 full time equivalent.</p>	<a href="http://www.netarchive.dk">http:// www.netarchive.dk</a>
Denmark	The State and University Library	<p>The State and University Library holds and has preservation responsibility for the Danish Newspaper Collection, The Danish Phonographic collection and the Broadcasting archive. Together with The Royal Library it is also responsible for collecting and preserving the Danish Part of the Internet (see description of netarchive.dk). The focus of the activities has been to automate ingest processes (metadata, quality control) and on dissemination activities. The archive presently holds more than 100 TB of digitised audio-visual content.</p> <p>Funding Method: Government – The Danish Ministry of Culture.</p> <p>Number of Staff: 6</p>	<a href="http://www.statsbiblioteket.dk">http://www.statsbiblioteket.dk</a>
Finland	Finnish Social Science Data Archive	<p>The Finnish Social Science Data Archive (FSD) is a national resource centre for social science research and teaching. FSD provides a variety of services ranging from data archiving and dissemination to information services. Its primary goal is to increase the use of existing social science data in Finland and internationally.</p> <p>Funding Method: Funded by the Ministry of Education</p> <p>Length of Funding: Continuous</p> <p>Number of Staff: 11-50</p>	<a href="http://www.fsd.uta.fi/english/">http://www.fsd.uta.fi/english /</a>
Finland	National Library of Finland	<p>National Library of Finland is responsible for the long-term preservation of Finnish electronic publications, including audiovisual containers as well as web publications. The Library also digitises its collections of printed material and recorded sound in order to secure their preservation and increase their availability to the public.</p> <p>Funding Method: Government funding</p> <p>Length of Funding: Continuous</p> <p>Number of Staff: 51-250</p>	<a href="http://www.kansalliskirjasto.fi">http://www.kansalliskirjasto .fi</a>

Country	Name	Description*	URL
EU, then Member States Listed first		*As provided by the submitting organisation. © in the descriptions rests with the organisation described	
France	CINES	<p>In 2004, the French ministry for higher education and research (MENESR) assigned CINES the mission of assuring and certifying the long-term preservation of French electronic PhD theses, as well as the digital publications of the Persée web portal. These new projects led CINES to design and implement a generic solution for archiving digital and electronic documents. This solution is called PAC, 'Plateforme d'Archivage au CINES' (CINES's long-term preservation platform). This service is made available to the higher education and research community.</p> <p>Funding Method: State Education subsidies Length of Funding: N/A Number of Staff: 11-50</p>	<a href="http://www.cines.fr/-l-application-PAC-.html">http://www.cines.fr/-l-application-PAC-.html</a>
Germany	Bavarian State Library Munich	<p>In cooperation with Leibniz-Computing-Centre Munich. 28 TB, 13 million digitised pages, 18,000 titles</p> <p>Material focus: a. digitised materials: manuscripts, incunabulas, 16th-century prints, rare books, DoD b. e-books, e-journals, websites</p> <p>Funding Method: German Research Foundation, governmental funding Length of Funding: 2 years Number of Staff: 1-10</p>	<a href="http://www.babs-muenchen.de">http://www.babs-muenchen.de</a>
Ireland	University College Dublin	<p>The Irish Virtual Research Library &amp; Archive (IVRLA) is a major digitisation and digital object management project launched in UCD in January 2005. The project was conceived as a means to preserve elements of UCD's main repositories and increase and facilitate access to this material through the adoption of digitisation technologies. Additionally, the project will undertake dedicated research into the area of interacting with and enhancing the use of digital objects in a research environment through the development of a digital repository. When fully implemented, the IVRLA will be one of the first comprehensive digital primary source repositories in Ireland, and will advance the research agenda into the use and challenges affecting this new method of research, and of digital curation over the coming years.</p> <p>Funding Method: Research grant Length of Funding: 5 years Number of Staff: 1-10</p>	<a href="http://www.ucd.ie/ivrla">http://www.ucd.ie/ivrla</a>

Country	Name	Description*	URL
EU, then Member States Listed first		*As provided by the submitting organisation. © in the descriptions rests with the organisation described	
Italy	Biblioteca Nazionale Centrale Firenze	<p>BNCF was one of the partners in the NEDLIB project and since then the National Library has been trying to address the requirements of long-term digital preservation. Up to now BNCF has 7.2 TB of digital publications as the result of web archiving projects (we are one of the founders of the International Internet Preservation Consortium) and, according to recent Italian legislation, BNCF will receive the legal deposit of Italian digital publications (both online and offline). We are also storing more than 13 TB of digital objects (as the result of digitisation projects of BNCF collections). Since last year BNCF has been working (along with the National Library of Rome and funded also by Fondazione Rinascimento Digitale) on the 'Digital Stacks project'. This project is setting up a hardware, software and policies infrastructure for long-term preservation, focusing on 1) reliability over the long term of the hardware and software infrastructure and 2) certification as a Trusted Digital Repository</p> <p>Funding Method: Private/public            Length of Funding: 2006 and 2007, 200,000,00 per year            Number of Staff: 1-10</p>	<a href="http://www.bncf.firenze.sbn.it">http://www.bncf.firenze.sbn.it</a>
Italy	Centro di Fotoriproduzione Legatoria e Restauro	<p>The CFLR has a digital laboratory that it operates in the field of acquisition, access and preservation of the Italian cultural heritage. The digital laboratory has high-resolution scanners, a digital library with high-definition images and digital mass storage devices (RAID, optical device, etc.). Moreover, the CFLR carries out research on: optical device (reliability and quality, monitoring status, life expectancy) and image formats (studies on JPEG2000 (robustness, quality, compression, interoperability, embedded metadata) and document imaging formats.</p> <p>Funding Method: Collaboration with other Institutes (OPTIMA: Comitato Nazionale per l'Informatizzazione nella Pubblica Amministrazione and Fondazione Rinascimento Digitale, among others)            Length of Funding: 1-2 years for 100,000 euros            Number of Staff: 1-10</p>	<a href="http://www.cflr.beniculturali.it">http://www.cflr.beniculturali.it</a>
Italy	Università di Urbino, Istbal	<p>Funding Method: Public body            Length of Funding: 10 years</p>	<a href="http://www.uniurb.it/sbc/ist_bal.htm">www.uniurb.it/sbc/ist_bal.htm</a>
Italy	Università Studi Milano – Centro Apice	<p>Centro Apice preserves and improves precious and rare books and collections of documents. Apice computerises 80,000 pages (Tiff 400 dpi, the standard used is the Standards Organisation Data Dictionary-Technical Metadata for Digital Still Images, created by National Information Standards Organization). The digital images can now be browsed and studied on PCs placed in the library.</p> <p>Funding Method: Public funding            Length of Funding: Annual            Number of Staff: 1-10</p>	<a href="http://www.apice.unimi.it">http://www.apice.unimi.it</a>

Country	Name	Description*	URL
EU, then Member States Listed first		*As provided by the submitting organisation. © in the descriptions rests with the organisation described	
Portugal	IAN/TT	<p>RODA – Repository of Digital Authentic Objects is a project launched by National Archives supported by EU funding through national programmes. It aims to produce a prototype and a testbed for 3 digital object classes (relational databases, text and still images). It is based on OAIS, InterPARES findings. It has developed conceptual, logical and physical models as well as code generation to partially support digital archive macro functions: ingest, management and dissemination. A study is also to be conducted to analyse all the possibilities regarding organisational structure and financing for a digital archive.</p> <p>Funding Method: Budget and EU funding Length of Funding: 1.5 years Number of Staff: 1-10</p>	<a href="http://roda.iannt.pt/">http://roda.iannt.pt/</a>
Portugal	INESC-ID	<p>GRITO – GRIDs and Preservation is a national project due to start in September 2007, led by INESC-ID and involving other national partners. INESC-ID is a research lab affiliated to the IST, the Engineering School of the Lisbon Technical University. INESC-ID and IST have been working with the National Library of Portugal on developments for the National Digital Library (which include preservation).</p> <p>Funding Method: National R&amp;D Programme Length of Funding: 36 months Number of Staff: 1-10</p>	<a href="http://www.inesc-id.pt">http://www.inesc-id.pt</a>
Spain	lamusediffuse	<p>lamusediffuse is a collaborative team directed by Pilar Gonzalo exploring the forms, impact and possibilities of electronic technologies in contemporary culture. We started as a group of Fulbright Scholars from different parts of the world, sharing a common interest in improving the lives of individuals by improving access to culture through digital technologies and their creation. Now, some others have joined us, thus improving our potential and outreach. Currently we are running e-artcasting, a non-profit research project, an information source and a professional network to share experiences, exchange information and develop resources about Sociable Technologies in Art Museums from all over the world. It is our belief that these new ways of communication are valuable tools for Art Museums interacting with their audiences. From this point of view, e-artcasting explores and documents their use, impact and possibilities.</p> <p>Funding Method: Non-profit Organisation Length of Funding: N.A. Number of Staff: 1-10</p>	<a href="http://lamusediffuse.com">http://lamusediffuse.com</a>

Country	Name	Description*	URL
EU, then Member States Listed first		*As provided by the submitting organisation. © in the descriptions rests with the organisation described	
Sweden	LDP-centre	<p>Competence centre for Long-term Digital Preservation and access. The LDP-centre is a competence centre for research, technical development and testing of methods and technologies for long-term digital preservation and access. Partners in the centre, archives, libraries and universities, are working jointly on this issue to find good methods, practices and as far as possible common solutions.</p> <p>Funding Method: Partners and project allowance Length of Funding: 1-3 years Number of Staff: 1-10</p>	<a href="http://www.ldp-centrum.se">http://www.ldp-centrum.se</a>
The Netherlands	DANS: Data Archiving and Networked Services	<p>DANS is the Dutch national organisation responsible for storing and providing permanent access to research data from the humanities and social sciences. To this end DANS collaborates with researchers and encourages them to work in partnership with one another. DANS operates as a network, with a centre responsible for organising the data infrastructure.</p> <p>Funding Method: Lump sum and project funding Length of Funding: Fixed Number of Staff: 11-50</p>	<a href="http://dans.knaw.nl">http://dans.knaw.nl</a>
The Netherlands	Digital Heritage Netherlands	<p>Digitaal Erfgoed Nederland (DEN) – or Digital Heritage Netherlands – is the Dutch national clearing house for ICT and cultural heritage. Commissioned by the Ministry of Education, Cultural Affairs and Science, DEN collects and distributes knowledge about ICT standards and other quality instruments, including digital preservation and permanent access. In this way, the cultural heritage field will be able to build a national Digital Heritage Collection in a professional, future-proof and public-oriented manner.</p> <p>Funding Method: Cultuurnota (of Ministry of Education, Cultural Affairs and Science) Length of Funding: 2005-2008 Number of Staff: 1-10</p>	<a href="http://www.den.nl">http://www.den.nl</a>
The Netherlands	European Commission on Preservation and Access (ECPA)	<p>The European Commission on Preservation and Access (ECPA) was established in 1994 to promote activities aimed at keeping collections in European archives and libraries accessible over time. Books, documents, photographs, films, tapes and disks are all subject to decay. The digital revolution has introduced new problems of obsolescence of soft- and hardware. In order to keep our documentary heritage available for future generations of users, large-scale programmes must be developed for its preservation. The ECPA aims to raise public awareness of this issue and to impress the urgency of the situation on policy makers, funding agents and users. The ECPA acts as a European platform for discussion and cooperation of heritage organisations in areas of preservation and access. The publications of the Commission are widely distributed to institutions throughout Europe. To promote the exchange of knowledge and experience, the ECPA organises conferences,</p>	<a href="http://www.knaw.nl/ecpa/">http://www.knaw.nl/ecpa/</a>

Country	Name	Description*	URL
EU, then Member States Listed first		*As provided by the submitting organisation. © in the descriptions rests with the organisation described	
		meetings and workshops.	
The Netherlands	Digital Longevity Department	The Dutch National Archive has established a Digital Longevity Department to help ensure that Dutch government digital information is sustainable, properly managed, and can be preserved in an authentic and re-usable manner for the long term. The Digital Longevity Department has been the national knowledge centre for the management and preservation of government digital information since 2003. Activities include research, advice, publications, dissemination, and participation in international projects. The department also maintains the Digital Longevity Knowledge bank, a comprehensive collection of national and international publications on all matters relating to digital preservation.	<a href="http://www.digitaleduurzaamheid.nl/index.cfm?paginakouze=185">http://www.digitaleduurzaamheid.nl/index.cfm?paginakouze=185</a>
The Netherlands	International Institute of Social History	Funding Method: Public funding Length of Funding: Not limited Number of Staff: 51-250	<a href="http://www.iisg.nl">http://www.iisg.nl</a>
UK	Archaeology Data Service	Funding Method: UK HE (AHRC/JISC) Length of Funding: 5 years Number of Staff: 1-10	<a href="http://www.ads.ahds.ac.uk">http://www.ads.ahds.ac.uk</a>
UK	British Library	The British Library has a dedicated cross-directorate Digital Preservation Team (DPT), which has an international reputation in the field. It is currently composed of 8 full-time staff and is expected to be 12 strong by summer 2007. The key areas of focus for the DPT include: Technology, analysis and support for the design and implementation of the National Digital Library; Production of preservation plans for new content streams of digital materials which will be stored in the National Digital Library; A risk assessment of all digital collections held by the BL; Implementation of a digital preservation testbed environment to facilitate technology watch activities; Collaboration with national and international initiatives such as PREMIS. Digital preservation projects currently under way at the BL include: Planets <a href="http://www.planets-project.eu">http://www.planets-project.eu</a> ; Life2 <a href="http://www.ucl.ac.uk/lslifeproject/">http://www.ucl.ac.uk/lslifeproject/</a> ; Preserv <a href="http://preserv.eprints.org">http://preserv.eprints.org</a>	<a href="http://www.bl.uk">http://www.bl.uk</a>
UK	Digital Curation Centre (DCC)	Funding Method: Governmental Length of Funding: Number of Staff: Over 1000	<a href="http://www.dcc.ac.uk">http://www.dcc.ac.uk</a>
		Scientists, researchers and scholars across the UK generate increasingly vast amounts of digital data, with further investment in digitisation and purchase of digital content and information. The scientific record and the documentary heritage created in digital form are at risk from technology obsolescence, from the fragility of digital media, and from lack of the basics of good practice, such as adequate documentation for the data. Working with other practitioners, the Digital Curation Centre will support UK institutions who store, manage and preserve these data to help ensure their enhancement and their continuing long-term use.	



Country	Name	Description*	URL
EU, then Member States Listed first		*As provided by the submitting organisation. © in the descriptions rests with the organisation described	
		Funding Method: Joint Information Systems Committee (JISC) Length of Funding: 3 years Number of Staff: 11-50	
UK	Humanities Advanced Technology and Information Institute (HATII)	HATII's research concentrates on the areas of technologies, methods and theoretical developments that enable (a) access – by combining context and hierarchy with interoperable metadata to improve information management and use; (b) content analysis and appraisal – by exploring the applicability of the records continuum paradigm, of the functional analysis of information systems and re-examining basic assumptions about archival theory and practice in the light of knowledge management; (c) evaluation and impact methodologies – for the use of digital resources in research; and (d) preservation – by developing and evaluating techniques and technologies and defining strategies that provide curators and content owners with access to best practice guidelines and appropriate technology services.	<a href="http://www.hatii.arts.gla.ac.uk/">http://www.hatii.arts.gla.ac.uk/</a>
		Funding Method: University Length of Funding: Indefinite Number of Staff: 11-50	
UK	King's Digital Consultancy Services, King's College London	KDCS provides consultancy, training and research for the information and digital domain. KDCS specialises in digital preservation planning and implementation with a focus on web archiving.	<a href="http://www.digitalconsultancy.net/">http://www.digitalconsultancy.net/</a>
		Funding Method: Cost recovery service Length of Funding: Permanent Number of Staff: 1-10	
UK	National Archives of Scotland	The Digital Data Archive (DDA) Project began in September 2004 to develop the means to archive born-digital objects. The system has been based on the OAIS, the PREMIS data dictionary, the PD0008 Code of Practice and has used the Prince II project management methodology. We have incorporated the PRONOM DROID for file format identification. The resulting system is due to go live in July 2007.	<a href="http://www.nas.gov.uk">http://www.nas.gov.uk</a>
		Funding Method: Internal resources Length of Funding: Ongoing Number of Staff: 1-10	
UK	National Library of Scotland	NLS is building a Trusted Digital Repository for legal deposit publishing, in-house digital content and to host Scottish digital culture. The present project is phase 1m and focuses on the foundations, plus a fully functional web archive.	<a href="http://www.nls.uk/professiona/ict/trusted_digital_repository.html">http://www.nls.uk/professiona/ict/trusted_digital_repository.html</a>
		Funding Method: Government funding Length of Funding: Two years from mid-2006 Number of Staff: 1-10	
UK	Oxford University	We are heavily involved in digitisation, digital preservation and repository activities with involvement in a variety of projects. Of particular relevance to this survey are: SHERPA DP ( <a href="http://www.sherpadp.org.uk">www.sherpadp.org.uk</a> ), PRESERV ( <a href="http://preserv.eprints.org">preserv.eprints.org</a> ), PARADIGM ( <a href="http://www.paradigm.ac.uk">www.paradigm.ac.uk</a> ), CAIRO ( <a href="http://cairo.paradigm.ac.uk">cairo.paradigm.ac.uk</a> )	<a href="http://www.ouls.ox.ac.uk">http://www.ouls.ox.ac.uk</a>



Country	Name	Description*	URL
EU, then Member States Listed first		<p>*As provided by the submitting organisation. © in the descriptions rests with the organisation described</p> <p>and the LOCKSS programme.</p> <p>Funding Method: Institutional and funding bodies Length of Funding: 2 years – indefinite Number of Staff: 11-50</p>	
UK	Royal Botanic Gardens, Kew	<p>The Herbarium of the Royal Botanic Gardens, Kew, is actively creating, disseminating and preserving digital data and images relating to its plant specimen collections. This form is completed for the Herbarium departmental digitisation activities only, not for the institution as a whole.</p> <p>Funding Method: Mixed, DEFRA grants and project funding Length of Funding: Ongoing except project funding Number of Staff: 1-10</p>	<a href="http://www.kew.org/herbcat">http://www.kew.org/herbcat</a>
UK	SCRAN	<p>Scran provides access to quality learning images, sounds, movies and learning resources. There are over 370,000 images from museums, galleries and archives, all rights cleared for educational use at <a href="http://www.scran.ac.uk">www.scran.ac.uk</a>. In addition, there are learning tools such as pathfinders, resource packs, a topic bank and curriculum navigator, giving easy access to packaged materials. The Album tool provides a simple and innovative way for teachers and learners to create, manage and deliver their own electronic collections of tailored reusable resources.</p> <p>Funding Method: Ongoing grant and subscription fees. Length of Funding: Ongoing. Number of Staff: 1-10</p>	<a href="http://www.scran.ac.uk">http://www.scran.ac.uk</a>
UK	UCE Birmingham (University of Central England in Birmingham)	<p>The UCE Birmingham (<a href="http://www.uce.ac.uk">www.uce.ac.uk</a>) is a medium-sized university in Birmingham, UK. A Digital Library was established in 2000 and includes a state-of-the-art unit for digitisation. We primarily manage a digital library (called UCEEL) online repository for the university and are integrated within the Library &amp; Learning Resources Department. We have undertaken many external projects digitising special collections and archives (e.g. work for the Imperial War Museum, LSE, The Royal Society London). We feel we are a specialist centre in the digitisation of analogue – paper-based material into high-quality digital surrogates for preservation purposes as well as access.</p> <p>Funding Method: University; Higher Education Funding Council for England Capital Length of Funding: HEFCE Capital Programme 1 funding 2000-2002 and Capital 4 2006-2008 has paid for a lot of expensive hardware and scanning/digitisation equipment Number of Staff: 1-10</p>	<a href="http://www.uce.ac.uk/uceel">http://www.uce.ac.uk/uceel</a>
UK	UKOLN	<p>UKOLN (<a href="http://www.ukoln.ac.uk">http://www.ukoln.ac.uk</a>) provides advice and services on digital library and information management technologies to UK further and higher education, research and cultural heritage institutions. Digital preservation and curation research is an important and significant (though not the only) area of interest and activity at UKOLN. Through its involvement in the UK Digital Curation Centre and a range of other research</p>	<a href="http://www.ukoln.ac.uk">http://www.ukoln.ac.uk</a>

Country	Name	Description*	URL
EU, then Member States Listed first		*As provided by the submitting organisation. © in the descriptions rests with the organisation described	
		projects, UKOLN has built up broad expertise in digital preservation topics, particularly with regard to preservation metadata and the long-term curation of web content and e-mail. Apart from the DCC, UKOLN's current digital preservation-related research activities include the DELOS network of excellence, projects on through-life knowledge and information management in engineering (the KIM project) and the development of repositories for providing ongoing access to materials, particularly through the EBank project on crystallographic datasets (eBank UK), and the Repositories Support Project.	
		Funding Method: Core and project funding Length of Funding: Variable Number of Staff: 11-50	
UK	Wellcome Library	The Wellcome Library today is one of the world's greatest collections for the study of the history of medicine. The print, manuscript, audio, film, pictorial and digital collections are a national treasure and an unrivalled intellectual resource. In the digital research environment the Library has made a long-term commitment to develop its capability to incorporate born-digital materials into its collections. It has appointed a permanent staff member who is responsible for developing the processes for acquiring and managing born-digital material. The Library also participates in the UK Web Archiving Consortium, selecting and archiving sites in line with the Library's collection development policy. The Wellcome Trust – through the Wellcome Library – is also working with a group of UK biomedical research funders to develop a UK version of PubMed Central. Though the primary aim of UKPMC is to facilitate better access to the research literature – and create new services and tools that meet the needs of the research community – long-term preservation of the 'minutes of science' is another key objective. UKPMC is now live and can be accessed at <a href="http://ukpmc.ac.uk">http://ukpmc.ac.uk</a>	<a href="http://library.wellcome.ac.uk/">http://library.wellcome.ac.uk/</a>
		Funding Method: Internally resourced Length of Funding: Permanent Number of Staff: 1-10	
UK	ULCC (University of London Computer Centre)	The digital archives group of ULCC grew out of the requirements of past scientific supercomputer services to manage data resources over many years and many computer architectures. It has been delivering services related to all aspects of the digital archive life-cycle for nearly ten years. It is also engaged in research, development and consultancy and offers training in digital preservation.	<a href="http://www.ulcc.ac.uk/">http://www.ulcc.ac.uk/</a>
		Funding Method: Contracts for services Length of Funding: Dependent on contract (3 months to 10 years) Number of Staff: 11-50	

**Further Competence Centre Candidates.**

Country	Name	Description*	URL
Austria	Arbeitskreis Digital Preservation	*As provided by the submitting organisation. © in the descriptions rests with the organisation described	<a href="http://www.ocg.at/ak/langzeitarchivierung/index.html">http://www.ocg.at/ak/langzeitarchivierung/index.html</a>
Austria	Ludwig-Boltzmann-Institut Medien.Kunst.Forschung	The mission of the Ludwig Boltzmann Institute Media.Art.Research is to archive, publish and perform scholarly work on media art and related media theory including the extensive holdings of the Ars Electronica Archive. Scientific, artistic, technological and cultural mediation activities are designed to enhance the process of encountering our social surroundings in which media play a decisive role.	<a href="http://media.lbg.ac.at/de/index.php">http://media.lbg.ac.at/de/index.php</a>
Austria	Österreichische Mediathek		<a href="http://www.mediathek.ac.at">http://www.mediathek.ac.at</a>
Austria	Österreichische Nationalbibliothek (ONB)	As an information centre for providing services, the ANL offers its visitors access to and professionally competent advice on its own holdings (over seven million objects), and links to international databases as well. In addition it accepts research commissions and consults documentation centres and services, e.g., on literature devoted specifically to women. Since the beginning of the digital age a constantly growing portion of the service is carried out through the homepages of the ANL. Because of a requirement of the Austrian Media Law the ANL is the only library in the country that receives a copy of every publication appearing in Austria, including university theses and products of the electronic media. Those obligatory items are simultaneously the basis on which the Austrian Bibliography is published. In addition to that the Library systematically chooses and collects literature from foreign countries that specifically refer to Austria, and literature on the humanities that is of particular relevance for our collections.	<a href="http://www.onb.ac.at">http://www.onb.ac.at</a>
Austria	Phonogrammarchiv	The Phonogrammarchiv, an institute of the Austrian Academy of Sciences, is the oldest sound archive in the world. Since September 2001 the activities of the Phonogrammarchiv also include the archiving and preservation of videographic research documents. Activities: Preserving, producing, collecting, accessioning and processing as well as making available research sound and video recordings by predominantly Austrian scholars and institutions, without disciplinary or regional restrictions. The Phonogrammarchiv also supports scientific field research by technical and methodological advice and the loan of adequate recording equipment.	<a href="http://www.pha.oeaw.ac.at">http://www.pha.oeaw.ac.at</a>

Country	Name	Description*	URL
		*As provided by the submitting organisation. © in the descriptions rests with the organisation described	
Austria	Salzburg Research	Salzburg Research conducts applied research in the areas of information and communication technologies with a focus on creating and managing digital content. We presently employ 55 researchers across our application areas of Digital Media, eCulture, eTourism and EduMedia.  Salzburg Research offers a combination of strategic and practical solutions in technology and social development. Our mix of lead international projects, national competence centres, Pan European pilot studies and local consulting contracts, provides a dynamic flow of innovation and knowledge between our regional, national and international clients and partners. Our clients and partners include private companies, national and international technology leaders and public bodies such as governments, public administration, libraries and other educational and social institutions.	<a href="http://www.salzburgresearch.at/company/index.php">http://www.salzburgresearch.at/company/index.php</a>
Austria	Seibersdorf Research	The Austrian Research Centers are currently successfully implementing the new ARC 2004plus strategy, which covers the period from 2004 to 2007. A recent internal foresight study of the ARC Group has identified potential new research fields for the period 2007 to 2010, which will supplement ARC's current research areas in the longer term. Three new focal areas can be derived from the results of the differential foresight study and the specific knowledge of ARC with regard to application-related technology demand. These three future thematic areas are structured into seven indicative thematic programmes:	<a href="http://www.arcs.ac.at">http://www.arcs.ac.at</a>
Austria	Technische Universität Wien	The TU Vienna has a great pool of specialists who are acting in a wide range of different topics in research, teaching and as partners of the economy. More than 2000 scientists do their research and teaching at highly advanced and modern institutes – in summary about 70. Although fundamental research has priority at the TU Vienna applied research is also done. Moreover services are offered as high-tech problem solving and examination expertise for industry and economy. Innovation orientated companies are highly interested in co-operating with the Vienna University of Technology because of its high-tech and high-quality research and its openness for requests of the economy.  The Vienna University of Technology puts great emphasis on co-operation between its own institutes as well as with other universities. Therefore the TU Vienna participates in several European Union (EU) and other research programmes.	<a href="http://www.tuwien.ac.at/tu_vienna">http://www.tuwien.ac.at/tu_vienna</a>
Austria	Universitätsbibliothek Innsbruck		<a href="http://www.uibk.ac.at/ub/statistik/index.html">http://www.uibk.ac.at/ub/statistik/index.html</a>
Czech Republic	Národní knihovna České republiky (NK)		<a href="http://www.nkp.cz">http://www.nkp.cz</a>
Germany	FernUniversität in Hagen (FUH)	Research and development of technologies supporting the development, deployment, and maintenance of web-based user interfaces for distributed, collaborative, and knowledge-based information systems, digital libraries as well as multimedia archives.	<a href="http://www.informatik.fernuni-hagen.de/ia">http://www.informatik.fernuni-hagen.de/ia</a>

Country	Name	Description*	URL
Germany	kopal - Co-operative Development of a Long-term Digital Information Archive	<p>*As provided by the submitting organisation. © in the descriptions rests with the organisation described</p> <p>Making digital documents available long-term is one of the still unsolved problems of our information society. With the increasing number of electronic publications, it is becoming critical that we reliably archive them. In the course of technological development, new digital file formats which are dependent on specific hardware and operating systems are continually being developed and used. Thus, older data are often not usable with current hardware and software. The kopal project is dedicated to finding a solution to this problem in the form of a cooperatively developed and operated long-term archive for digital data.</p>	<a href="http://kopal.langzeitarchivierung.de/index.php.en">http://kopal.langzeitarchivierung.de/index.php.en</a>
Germany	Network of Expertise in long-term STORAGE and long-term availability of digital Resources in Germany (nestor)	<p>The project's objective is to create a network of expertise in long-term storage of digital resources for Germany. As the perspective of current and future archive users is central to the project, the emphasis is put on long-term accessibility. Within the project the following offers will be created: a web-based information forum, a platform for information and communication, criteria for trusted digital repositories, recommendations for certification procedures of digital repositories, recommendations for collecting guidelines and selection criteria of digital resources to be archived, guidelines and policies, the concept for a permanent organisation form of the network of expertise in digital preservation. The long-term goal is a permanent distributed infrastructure for long-term preservation and long-term accessibility of digital resources in Germany comparable e.g. to the Digital Preservation Coalition in the UK.</p>	<a href="http://www.langzeitarchivierung.de">http://www.langzeitarchivierung.de</a>
Germany	Niedersächsische Staats-und Universitätsbibliothek Göttingen (SUB)	<p>Information and knowledge are shaping the future of modern societies. Rapid access to printed and digital information is a decisive prerequisite for students' successful studies and for internationally renowned research.</p> <p>The Goettingen State and University Library has been an innovative information center for the university since its founding in 1734. As the state library, it provides a standard-setting contribution to the information infrastructure for the state, country, and beyond.</p>	<a href="http://www.sub.uni-goettingen.de">http://www.sub.uni-goettingen.de</a>

Country	Name	Description*	URL
		*As provided by the submitting organisation. © in the descriptions rests with the organisation described	
Italy	Central Institution for Unique Catalogue (ICCU)	The Central Institute for the Union Catalogue of Italian Libraries and for Bibliographic Information, which is structured into five divisions, a coordinating and an administrative sector:  -manages the technical and scientific coordination of the National Library Service (SBN) in collaboration with institutional partners it promotes the projects and services of the network and integration with other systems; -carries out research and study activities on cataloguing standards in collaboration with national and international bodies; -coordinates Music, Manuscripts, Census of Italian 16th Century Editions, and Italian Libraries databases; -publishes cataloguing guides and handbooks as well as other scientific and general bibliographic instruments, amongst which are the series on the Italian 16th Century Editions and the Catalogue of Italian Libraries; -carries out teaching activities for the sectors of competence.	<a href="http://www.iccu.sbn.it">http://www.iccu.sbn.it</a>
Italy	Centro Nazionale per l'Informatica della Pubblica Amministrazione (CNIPA)		<a href="http://www.cnipa.gov.it">http://www.cnipa.gov.it</a>
The Netherlands	Koninklijke Bibliotheek (KB)	The KB is the National Library of the Netherlands. -We give researchers and students access to research information -We enable everyone to share in the riches of our cultural heritage -We foster the national infrastructure for scientific information -We further permanent access to digital information within an international context.	<a href="http://www.kb.nl">http://www.kb.nl</a>
The Netherlands	Nationaal Archief van Nederland	The Nationaal Archief supplies historical information to a varied public, based upon the content of its collection: the archives related to national government.	<a href="http://www.nationaalarchief.nl">http://www.nationaalarchief.nl</a>
UK	Arts and Humanities Data Service (AHDS)	The Arts and Humanities Data Service (AHDS) is a UK national service aiding the discovery, creation and preservation of digital resources in and for research, teaching and learning in the arts and humanities.	<a href="http://www.ahds.ac.uk/">http://www.ahds.ac.uk/</a>
UK	Biotechnology and Biological Sciences Research Council (BBSRC)	The Biotechnology and Biological Sciences Research Council (BBSRC) is the UK's principal funder of basic and strategic biological research. To deliver its mission, BBSRC supports research and research training in universities and research centres throughout the UK, including BBSRC-sponsored institutes; and promotes knowledge transfer from research to applications in business, industry and policy, and public engagement in the biosciences.	<a href="http://www.bbsrc.ac.uk/">http://www.bbsrc.ac.uk/</a>
UK	Centre for Educational Technology & Interoperability Standards (CETIS)	CETIS provides a national research and development service to UK Higher and Post-16 Education sectors, funded by the JISC (the Joint Information Systems Committee). This includes providing strategic advice to JISC, supporting its development programmes, representing it on international standardisation initiatives, and working with the wider educational community to facilitate the use of standards-based eLearning, especially through Special Interest Groups. We also provide direct support for the JISC eLearning	<a href="http://www.cetis.ac.uk/">http://www.cetis.ac.uk/</a>

Country	Name	Description*	URL
		*As provided by the submitting organisation. © in the descriptions rests with the organisation described	
		Programme, especially the eFramework and Design for Learning strands.	
UK	Chartered Institute of Library and Information Professionals (CILIP)	CILIP: the Chartered Institute of Library and Information Professionals. We are the leading professional body for librarians, information specialists and knowledge managers.	<a href="http://www.cilip.org.uk/default.cilip">http://www.cilip.org.uk/default.cilip</a>
UK	City eHealth Research Group (CeRC)	Since 2000, the researchers at the City eHealth Research Group (CeRC) have been working on medical digital libraries and the application of agent technologies in health care. We have been developing the National electronic Library of Infection (NeLI), a Specialist Library of the NeLH. In addition, we have been looking at distribution of digital libraries, quality of service, Semantic Web and health care ontologies. We are also involved in building an online health community around communicable disease and in research into the impact of health information delivery over the Internet on user knowledge and attitudes. This was investigated in our recent project: Antimicrobial Resistance Web Site. Further, our research includes agent-based user customisation aspects of health care digital libraries and general issues of application of agent technologies in the health care domain.	<a href="http://www.city.ac.uk/cerc/">http://www.city.ac.uk/cerc/</a>
UK	Digital Archiving Consultancy Limited (DAC)	The Digital Archiving Consultancy (DAC) advises on the archiving, long-term storage, preservation and curation of digital information, supporting companies and other organisations. We also provide workshops, seminars and training on digital archiving.	<a href="http://www.d-archiving.com/">http://www.d-archiving.com/</a>
UK	Digital Preservation Coalition (DPC)	The Digital Preservation Coalition (DPC) was established in 2001 to foster joint action to address the urgent challenges of securing the preservation of digital resources in the UK and to work with others internationally to secure our global digital memory and knowledge base.	<a href="http://www.dpconline.org/graphics/index.html">http://www.dpconline.org/graphics/index.html</a>
UK	EDINA	EDINA, based at Edinburgh University Data Library, is a JISC-funded national data centre. It offers the UK tertiary education and research community networked access to a library of data, information and research resources. All EDINA services are available free of charge to members of UK tertiary education institutions for academic use, although institutional subscription and end-user registration are required for most services.	<a href="http://www.edina.ac.uk/">http://www.edina.ac.uk/</a>
UK	European Bioinformatics Institute	European Bioinformatics Institute (EBI) is a pioneer of novel and developmental bioinformatics research. We have specialist research and services groups providing an invaluable resource of biological data and utilities to aid the scientific community in the understanding of genomic and proteomic data.	<a href="http://www.ebi.ac.uk/">http://www.ebi.ac.uk/</a>
UK	Joint Information Systems Committee (JISC)	The mission of the Joint Information Systems Committee (JISC) is to provide world-class leadership in the innovative use of Information and Communications Technology to support education and research.	<a href="http://www.jisc.ac.uk/">http://www.jisc.ac.uk/</a>

Country	Name	Description*	URL
		*As provided by the submitting organisation. © in the descriptions rests with the organisation described	
UK	Medical Research Council	The Medical Research Council (MRC) is a publicly funded organisation dedicated to improving human health. We support research across the entire spectrum of medical sciences, in universities and hospitals, in our own units and institutes in the UK, and in our units in Africa.	<a href="http://www.mrc.ac.uk/index.htm">http://www.mrc.ac.uk/index.htm</a>
UK	National eScience Centre (NeSC)	NeSC aims: <ul style="list-style-type: none"> <li>- To stimulate and sustain the development of e-Science in the UK, to contribute significantly to its international development and to ensure that its techniques are rapidly propagated to commerce and industry.</li> <li>- To identify and support e-Science projects within and between institutions in Scotland, and to provide the appropriate technical infrastructure and support in order to ensure rapid uptake of e-Science techniques by Scottish scientists.</li> <li>- To encourage the interaction and bi-directional flow of ideas between computing science research and e-Science applications</li> <li>- To develop advances in scientific data curation and analysis and to be a primary source of top-quality systems and repositories that enable management, sharing and best use of research data.</li> </ul>	<a href="http://www.nesc.ac.uk/">http://www.nesc.ac.uk/</a>
UK	Natural Environmental Research Council (NERC)	NERC funds world-class science in universities and our own research centres that increases knowledge and understanding of the natural world. We are tackling the 21st century's major environmental issues such as climate change, biodiversity and natural hazards. We lead in providing independent research and training in the environmental sciences.	<a href="http://www.nerc.ac.uk/">http://www.nerc.ac.uk/</a>
UK	Science and Technology Facilities Council (formerly CCLRC)	Formed by Royal Charter in 2007 (by combining CCLRC and PPARC), the Science and Technology Facilities Council is one of Europe's largest multidisciplinary research organisations supporting scientists and engineers world-wide. The Council operates world-class, large-scale research facilities and provides strategic advice to the UK government on their development. It also manages international research projects in support of a broad cross-section of the UK research community. The Council also directs, coordinates and funds research, education and training.	<a href="http://www.cclrc.ac.uk/Home.aspx">http://www.cclrc.ac.uk/Home.aspx</a>
UK	Technical Advisory Service for Images (TASI)	The Technical Advisory Service for Images is a JISC-funded service. It provides advice and guidance to the UK's Further and Higher Education community on the issues of: <ul style="list-style-type: none"> <li>- Creating digital images (including raster, vector and animated formats)</li> <li>- Delivering digital images to users</li> <li>- Using digital images to support teaching, learning and research</li> <li>- Managing both small and large-scale digitisation projects</li> </ul>	<a href="http://www.tasi.ac.uk/">http://www.tasi.ac.uk/</a>
UK	The Museums, Libraries and Archives Council (MLA)	The Museums, Libraries and Archives Council (MLA) is the lead strategic agency for museums, libraries and archives. We are part of the wider MLA Partnership, working with the nine regional agencies to improve people's lives by building knowledge,	<a href="http://www.mla.gov.uk/">http://www.mla.gov.uk/</a>



Country	Name	Description*	URL
		<p>*As provided by the submitting organisation. © in the descriptions rests with the organisation described</p> <p>supporting learning, inspiring creativity and celebrating identity. The Partnership acts collectively for the benefit of the sector and the public, leading the transformation of museums, libraries and archives for the future. MLA was launched in April 2000 as the strategic body working with and for museums, archives and libraries, tapping into the potential for collaboration between them. The new organisation replaced the Museums and Galleries Commission (MGC) and the Library and Information Commission (LIC), and includes archives within its portfolio.</p>	
UK	The National Archives (TNA)	The National Archives is at the heart of information policy – setting standards and supporting innovation in information and records management across the UK, and providing a practical framework of best practice for opening up and encouraging the re-use of public sector information. This work helps inform today’s decisions and ensure that they become tomorrow’s permanent record. The National Archives is also the UK government’s official archive, containing 900 years of history from the Domesday Book to the present, with records ranging from parchment and paper scrolls through to recently created digital files and archived websites. Increasingly, these records are being put online, making them universally accessible.	<a href="http://www.nationalarchives.gov.uk/">http://www.nationalarchives.gov.uk/</a>
UK	UK Data Archive (UKDA)	The UK Data Archive (UKDA) is an internationally renowned centre of expertise in data acquisition, preservation, dissemination and promotion; and is curator of the largest collection of digital data in the social sciences and humanities in the UK. The UKDA provides resource discovery and support for secondary use of quantitative and qualitative data in research, teaching and learning as a lead partner of the Economic and Social Data Service.	<a href="http://www.data-archive.ac.uk/">http://www.data-archive.ac.uk/</a>
UK	UK eHealth Association	The UK eHealth Association, established in April 1999 as the UK Telemedicine Association, is a non-profit making company limited by guarantee and governed by a Board of Trustees. It was formed to represent organisations and individuals interested in the development of eHealth in the UK. The UKeHA has an active Technical Special Interest Group (SIG) involved with the technical issues of telecommunications and connectivity of medical devices, transmission of images, international standards and quality assurance of service for remote care and communications. Other SIGs are involved with Small and Medium-sized Enterprises, Legal and Ethical Issues, and eHealth in Chronic Illness.	<a href="http://www.ukeha.co.uk/">http://www.ukeha.co.uk/</a>
UK	UK eInformation Group (UKeIG)	UKeIG is a respected and well-established forum for all information professionals, users and developers of electronic information resources in all formats. We offer a wide range of resources as well as details of our seminars and workshops.	<a href="http://www.ukeig.org.uk/">http://www.ukeig.org.uk/</a>
UK	UK Telemedicine and E-health Information Service	The Telemedicine and E-health Information Service is run by the University of Portsmouth. It gives access to information about all aspects of telemedicine including: <ul style="list-style-type: none"> <li>- telemedicine activities, both pilot/developmental projects and permanent delivery of healthcare services</li> <li>- organisations involved in telemedicine whether as hosts for projects, information facilities, publishers or</li> </ul>	<a href="http://www.tis.bl.uk/">http://www.tis.bl.uk/</a>

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Country	Name	Description*	URL
		<p>*As provided by the submitting organisation. © in the descriptions rests with the organisation described</p> <ul style="list-style-type: none"><li>suppliers of equipment</li><li>- people involved in telemedicine as contacts for organisations and projects</li><li>- publications about telemedicine including articles, chapters, books, reports, surveys, theses and videos</li><li>- equipment currently available for telemedicine</li></ul> <p>The purpose of TEIS is to provide a background source of information to anyone researching the field or proposing a trial or a larger-scale implementation of telemedicine.</p>	

## Competence Centres outside the EU Making Submissions to the Survey

Country	Name	Description*	URL
		*As provided by the submitting organisation. © in the descriptions rests with the organisation described	
Australia	PADI	The National Library of Australia's Preserving Access to Digital Information (PADI) initiative aims to provide mechanisms that will help to ensure that information in digital form is managed with appropriate consideration for preservation and future access.	<a href="http://www.nla.gov.au/padi/">http://www.nla.gov.au/padi/</a>
Canada	Canadian Association of Research Libraries (CARL)	CARL/ABRC provides leadership to the Canadian academic research library community through enhancing scholarly communication and assisting members to provide full support for postgraduate study and research	<a href="http://www.carl-abrc.ca/">http://www.carl-abrc.ca/</a>
Canada	Canadian Heritage Information Network (CHIN)	The Canadian Heritage Information Network (CHIN) is a national centre of excellence that provides a visible face to Canada's heritage through the world of networked information. CHIN's vision is to connect Canadians and worldwide audiences to Canada's heritage. Our mission is to promote the development, the presentation and preservation of Canada's digital heritage content for current and future generations of Canadians.	<a href="http://www.chin.gc.ca/">http://www.chin.gc.ca/</a>
Canada	Canadian Initiative on Digital Libraries	The Canadian Initiative on Digital Libraries promotes, coordinates and facilitates the development of Canadian digital collections and services in order to optimise national interoperability and long-term access to Canadian digital library resources	<a href="http://www.nlc-bnc.ca/cidl/cidle.html">http://www.nlc-bnc.ca/cidl/cidle.html</a>
Canada	Social Sciences and Humanities Research Council (SSHRC)	The Social Sciences and Humanities Research Council of Canada (SSHRC) is an arm's-length federal agency that promotes and supports university-based research and training in the social sciences and humanities.	<a href="http://www.sshrc-crsh.gc.ca/">http://www.sshrc-crsh.gc.ca/</a>
Canada	Canada Institute for Scientific and Technical Information	CISTI's Research Press is in the process of digitizing the backfiles of its research journals. Six of the titles have been digitized to date, with the remaining titles expected to be completed by April 2008	<a href="http://cisti-icist.nrc-cnrc.gc.ca/cisti_e.html">http://cisti-icist.nrc-cnrc.gc.ca/cisti_e.html</a>
		Funding Method: Internal Length of Funding: One year Number of Staff: 251-500	
Canada	Documentation and Conservation of the Media Arts Heritage (DOCAM)	DOCAM's main objective is to develop new methodologies and tools to address the issues of preserving and documenting digital, technological and electronic works of art. Over the project's five-year mandate, numerous case studies will be conducted that will focus on documentary collections and conserving works of art featuring technological content.	<a href="http://www.docam.ca">http://www.docam.ca</a>
		Funding Method: Social Sciences and Humanities Research Council of Canada (SSHRC) Length of Funding: 5 years Number of Staff: 1-10	
INT	Dublin Core Metadata Initiative (DCMI)	The Dublin Core Metadata Initiative is an open organization engaged in the development of interoperable online metadata standards that support a broad range of purposes and business models. DCMI's activities include work on architecture and	<a href="http://dublincore.org">http://dublincore.org</a>

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		*As provided by the submitting organisation. © in the descriptions rests with the organisation described modeling, discussions and collaborative work in DCMI Communities and DCMI Task Groups, annual conferences and workshops, standards liaison, and educational efforts to promote widespread acceptance of metadata standards and practices.	
INT	International Federation of Library Associations (IFLA)	IFLA (The International Federation of Library Associations and Institutions) is the leading international body representing the interests of library and information services and their users. It is the global voice of the library and information profession.	<a href="http://www.ifla.org">http://www.ifla.org</a>
INT	International Council on Archives (ICA)	The mission of ICA is to promote the preservation and use of archives around the world. In pursuing this mission, ICA works for the protection and enhancement of the memory of the world and to improve communication while respecting cultural diversity.	<a href="http://www.ica.org/">http://www.ica.org/</a>
INT	World Wide Web Consortium (W3C)	The World Wide Web Consortium (W3C) develops interoperable technologies (specifications, guidelines, software, and tools) to lead the Web to its full potential. W3C is a forum for information, commerce, communication, and collective understanding.	<a href="http://www.w3.org">http://www.w3.org</a>
INT/Canada	InterPARES: International Research on Permanent Authentic Records in Electronic Systems	The International Research on Permanent Authentic Records in Electronic Systems (InterPARES) project aims at developing the theoretical and methodological knowledge essential to the long-term preservation of authentic records created and/or maintained in digital form. This knowledge should provide the basis from which to formulate model policies, strategies and standards capable of ensuring the longevity of such material and the ability of its users to trust its authenticity.	<a href="http://www.interpares.org/">http://www.interpares.org/</a>
INT/USA	International Association of Social Science Information Service and Technology (IASSIST)	IASSIST is an international organisation of professionals working in and with information technology and data services to support research and teaching in the social sciences. Its 300 members are from a variety of workplaces, including data archives, statistical agencies, research centres, libraries, academic departments, government departments and non-profit organisations	<a href="http://www.iassistdata.org/">http://www.iassistdata.org/</a>
Korea	KADO	Korea Knowledge Portal is a website designed to promote the circulation of digitised national knowledge and information of various knowledge providers chosen for strategic database development and to strengthen the related systems. This service is developed and operated by the Korea Agency for Digital Opportunity and Promotion, and the metadata of knowledge providers in each field are integrated and linked for the management of national knowledge and information resources. The extended robust one-stop integrated search system was developed to provide a stable and active national information service. Korea Knowledge Portal gives the highest priority to maximising the sharing and usage of national knowledge and information resources and providing an easy and efficient user-oriented knowledge information service by developing a more effective search and management basis for national knowledge and information resources and providing vast knowledge and	<a href="http://www.knowledge.go.kr">http://www.knowledge.go.kr</a>

Country	Name	Description*	URL
		<p>*As provided by the submitting organisation. © in the descriptions rests with the organisation described information through the expansion of links to knowledge and information.</p> <p>Funding Method: Public funding only Length of Funding: 10 months Number of Staff: 11-50</p>	
New Zealand	National Library of New Zealand	<p>Interest in end-to-end processes for digital preservation – permissions/policies, managing multiple ingest streams, preservation metadata, automated processes, persistent identifiers, authenticity/integrity routines, business change impact, sustainability etc.</p> <p>Funding Method: Government Length of Funding: 4-year project to June 2008, then injection into baseline funding for ongoing management. Number of Staff: 251-500</p>	<a href="http://plone.appserv09.natlib.govt.nz/collections/digital-collections">http://plone.appserv09.natlib.govt.nz/collections/digital-collections</a>
Sri Lanka	Sri Lanka Institute of Information Technology	<p>Funding Method: Library budget Length of Funding: Not specified Number of Staff: 1-10</p>	<a href="http://www.sliit.lk">www.sliit.lk</a>
South Africa	DISA: Digital Imaging South Africa	<p>Digital Imaging South Africa (DISA) is a non-profit making initiative for cooperation among research libraries and archives in Southern Africa, sponsored by the Andrew W. Mellon Foundation. The aim of DISA is to make Southern African material of high socio-political interest, which would otherwise be difficult to locate and use, accessible to scholars and researchers worldwide. DISA will undertake digital imaging projects in Southern Africa, which will result in this important historical material becoming universally accessible, while at the same time developing knowledge and expertise in digital imaging technology in the library and archival community in the region. UNESCO recently funded a study of the current digital preservation practices and policies in public and public-supported institutions in three African countries, viz. Botswana, Ethiopia and South Africa.</p> <p>The South African research team, led by Dr Dale Peters of DISA, contributed to a comparative analysis of the situation regarding preservation of information in the respective countries, regarding both traditional and digital options.</p> <p>Funding Method: Grant funded Length of Funding: 5 years Number of Staff: 1-10</p>	<a href="http://aboutdisa.ukzn.ac.za/workshops/UNESCOdigPres/pressrelease.html">http://aboutdisa.ukzn.ac.za/workshops/UNESCOdigPres/pressrelease.html</a>
South Africa	Stellenbosch University	<p>The LOCKSS-SA project is ‘completed’ from a project perspective, although the uptake of the technology in a South African context has not been as favourable as initially expected. We (Stellenbosch University) aim to continue to create awareness of the DP problem for SA open access journals. There is not among us a large and extensive pool of competency of DP skills other than creating plug-ins for e-journals to be preserved by LOCKSS, but we are very much aware of the various standards (like OAIS and their implementations) and their</p>	<a href="http://www.lib.sun.ac.za/lockss-sa">http://www.lib.sun.ac.za/lockss-sa</a>

Country	Name	Description*	URL
		<p>*As provided by the submitting organisation. © in the descriptions rests with the organisation described importance. We aim to apply the LOCKSS technology for e-journal preservation and ETD preservation. Please note the website is still under construction.</p> <p>Funding Method: Grant provided by the OSI Foundation.</p> <p>Length of Funding: Completed.</p> <p>Number of Staff: 1-10</p>	
USA	California Digital Library (CDL)	The California Digital Library supports the assembly and creative use of the world's scholarship and knowledge for the University of California libraries and the communities they serve. In addition, the CDL provides tools that support the construction of online information services for research, teaching and learning, including services that enable the UC libraries to effectively share their materials and provide greater access to digital content.	<a href="http://www.cdlib.org/">http://www.cdlib.org/</a>
USA	Coalition for Networked Information (CNI)	The Coalition for Networked Information (CNI) is an organisation dedicated to supporting the transformative promise of networked information technology for the advancement of scholarly communication and the enrichment of intellectual productivity. Some 200 institutions representing higher education, publishing, network and telecommunications, information technology, and libraries and library organisations make up CNI's Members.	<a href="http://www.cni.org/">http://www.cni.org/</a>
USA	Cornell University Library	IRIS is a vital component in the Library's goal of maintaining its place as the primary information resource for Cornell University. New programmes and initiatives will not come at the expense of essential services, and all will be treated as valued functions.	<a href="http://www.library.cornell.edu/">http://www.library.cornell.edu/</a>
USA	Council on Library and Information Resources (CLIR)	CLIR is an independent, non-profit organisation. Through publications, projects and programmes, CLIR works to maintain and improve access to information for generations to come. In partnership with other institutions, CLIR helps create services that expand the concept of 'library' and supports the providers and preservers of information.	<a href="http://www.clir.org/">http://www.clir.org/</a>
USA	Digital Library Federation	The DLF operates through a professional director with a small staff and a Board of Trustees on which each member institution is represented. Drawing on its members and others in the scholarly, library and computing communities, the DLF brings together experts needed for each DLF initiative, and awards Distinguished Fellowships for special projects. The Council on Library and Information Resources houses the staff, provides administrative support and collaborates on publications. Funding comes from members and grants.	<a href="http://www.diglib.org/">http://www.diglib.org/</a>
USA	EDUCAUSE	EDUCAUSE is a non-profit association whose mission is to advance higher education by promoting the intelligent use of information technology. Membership is open to institutions of higher education, corporations serving the higher education information technology market, and other related associations and organisations.	<a href="http://www.educause.edu">http://www.educause.edu</a>

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USA	Electronic Records Archives (ERA), National Archives and Records Administration (NARA)	ERA is NARA's strategic response to the challenge of electronic records. ERA will authentically preserve and provide access to any kind of electronic record, free from dependency on any specific hardware or software, enabling NARA to carry out its mission into the future.	<a href="http://www.archives.gov/era/">http://www.archives.gov/era/</a>
USA	Florida Center for Library Automation	FCLA runs the Florida Digital Archive, a preservation repository for the use of the eleven public universities of Florida. The FDA uses locally developed repository software called DAITSS, which implements preservation strategies based on format transformation (migration, normalization, localization). DAITSS is available to other institutions.  Funding Method: operating budget Length of Funding: indefinite Number of Staff: 1-10	<a href="http://www.fcla.edu/digitalArchive">http://www.fcla.edu/digitalArchive</a>
USA	Harvard University Library	The Harvard University Library (HUL) is a centralized technical service provider to the University's constituent libraries, archives, and museums. HUL has operated a large-scale digital repository, with associated ingest, access, data management, archival storage, and preservation services, for over six years, with more than 5.5 million assets (23 TB) under management. HUL staff have particular expertise in digital curation and project management, preservation and discovery metadata, digital reformatting, and formats. They have and continue to participate in many international digital library, curation and preservation initiatives, including METS, NDIIPP, NISO Z39.87, OCLC Registry of Digital Masters, PDF/A (ISO 19005-1), PREMIS, and RLG/OCLC/NARA projects on repository certification; and hold leadership or advisory roles in the DigCCurr, Digital Library Federation (DLF), IS&T Archiving, and Open Repositories conferences, and the PLANETS and PRONOM projects. HUL developed and maintains the widely-adopted open source JHOVE format identification, validation, and characterization tool, and is leading the collaborative development with OCLC of the Global Digital Format Registry (GDFR), a sustainable service for distributed management of important format representation information. Other recent HUL preservation activities include web archiving and large-scale (> 1 million volumes) text digitization. Though its Open Collections Program (OCP), and a variety of additional on-line public access catalogs for images, geospatial data, and archival finding aids, HUL seeks to expose a great variety of Harvard's digital assets to the public for research and pedagogy.  Funding Method: Annual assessment from libraries for "common good" services and staff. Annual University subvention for operations. Internal University grant for infrastructure and content. Small endowments targeted for preservation. External grants for special projects. Length of Funding: 5 year internal grant (through 2010). Ongoing assessment, subvention, and	<a href="http://hul.harvard.edu/ois/">http://hul.harvard.edu/ois/</a>

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USA	HMG Consulting	Software architecture and design for preservation; digital library software. Widely published, including a book with title 'Preserving Digital Information' (ISBN 978-3-540-37886-0) and the Digital Document Quarterly.  Funding Method: Self funded Length of Funding: Since 2001 Number of Staff: 1-10	<a href="http://www.home/pacbell.net/hgladney">http://www.home/pacbell.net/hgladney</a>
USA	Inter-university Consortium for Political and Social Research (ICPSR)	Established in 1962, ICPSR is the world's largest archive of digital social science data. We acquire, preserve and distribute original research data and provide training in its analysis. We also offer access to publications based on our data holdings.	<a href="http://www.icpsr.umich.edu/">http://www.icpsr.umich.edu/</a>
USA	Library of Congress	The Library of Congress has taken a collaborative approach to the collection and preservation of digital information in order to remain relevant and useful to Congress and its constituents in the digital age. No single institution can do the job of collecting, preserving and making available all the information in digital form that students, teachers, researchers and lifelong learners have come to expect will be available at the touch of a mouse.	<a href="http://www.digitalpreservation.gov/">http://www.digitalpreservation.gov/</a>
USA	North East Documentation NEDCC	NEDCC's mission is to improve the conservation efforts of libraries, archives, historical organisations, museums and other repositories; to provide the highest quality services to institutions without in-house conservation facilities or those that seek specialised expertise; and to provide leadership in the preservation and conservation fields.	<a href="http://www.nedcc.org/home.php">http://www.nedcc.org/home.php</a>
USA	Online Library Center (OCLC) Computer Center	Founded in 1967, OCLC Online Computer Library Center is a non-profit, membership, computer library service and research organisation dedicated to the public purposes of furthering access to the world's information and reducing information costs. More than 57,000 libraries in 112 countries and territories around the world use OCLC services to locate, acquire, catalogue, lend and preserve library materials.	<a href="http://www.oclc.org/">http://www.oclc.org/</a>
USA	San Diego Supercomputer Center	The Chronopolis National-Scale Digital Preservation Repository (Chronopolis) is a joint partnership between the San Diego Supercomputer Center (SDSC), the UCSD Libraries (UCSDL), the National Center for Atmospheric Research (NCAR), and the University of Maryland (UMD). This partnership seeks to build a federated preservation architecture that will provide a 100 year digital preservation environment for nationally recognized intellectual holdings of U.S. academic, research, and cultural heritage institutions. Collections that meet criteria for national preservation will be offered digital curation and management services via the Chronopolis preservation environment and will share the advantages that a federated approach to digital preservation can provide. The Chronopolis environment is critical to the core mission of SDSC which is to support the data cyberinfrastructure needs of the scientific and engineering communities. The	<a href="http://www.sdsc.edu">http://www.sdsc.edu</a>



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USA	University of Illinois at Urbana-Champaign	<p>*As provided by the submitting organisation. © in the descriptions rests with the organisation described</p> <p>Chronopolis preservation environment will provide the services necessary to identify, preserve, and make accessible scientific data sets over the long term. A dedicated digital preservation environment is needed to fulfil this mission as key digital scientific information will be lost without formal curation for their planned sustainability.</p> <p>Funding Method: NARA, LC, NSF  Length of Funding: start-up  Number of Staff: 1-10</p> <p>The Data Curation Education Program (DCEP) at the Graduate School of Library and Information Science (GSLIS) at the University of Illinois at Urbana-Champaign, is a concentration within our ALA-accredited Master of Science in Library Science degree program. The DCEP contentraion offers a focus on data collection and management, knowledge representation, digital preservation and archiving, data standards, and policy. Data curation is the active and on-going management of data through its lifecycle of interest and usefulness to scholarship, science, and education. Data curation activities enable data discovery and retrieval, maintain its quality, add value, and provide for re-use over time, and this new field includes authentication, archiving, management, preservation, retrieval, and representation. Our program will provide a strong focus on the theory and skills necessary to work directly with academic and industry researchers who need data curation expertise.</p> <p>Funding Method: IMLS grant  Length of Funding: 3 years  Number of Staff: 1-10</p>	<a href="http://www.lis.uiuc.edu/programs/ms/data_curation.html">http://www.lis.uiuc.edu/programs/ms/data_curation.html</a>

### Project information

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