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COMMISSION RECOMMENDATION
on the digitisation and online accessibility of cultural material and digital preservation

IMPACT ASSESSMENT

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EXECUTIVE SUMMARY

Background: This Impact Assessment (IA) supports the Commission Recommendation on the digitisation and online accessibility of cultural material and digital preservation, which is part of the Commission i2010 initiative on digital libraries. It examines policy options for bringing out the full economic and cultural potential of Europe's cultural heritage in the digital age.

Users are switching en masse to digital content and this combined with the information technologies for creating and using this digital content offers plenty socio-economic opportunities. The EU has both the critical mass and the unique assets to make the best of these opportunities, making catalysing action at EU level not only relevant but necessary. At global level, several non-European countries, such as the US, China and India, are already investing massively in digitisation efforts to unlock the value of cultural content online.

The availability of cultural content, accessible for all anywhere, anytime, can both fuel creativity and strengthen European cultural identity. Users can be offered new engaging cultural experiences through services built on rich digital content; and applications reusing digital material of a cultural nature can yield major productivity gains in sectors like education, media and tourism.

Over the last few years, numerous digitisation projects and initiatives have been developed by cultural institutions, private organisations and Member State authorities. Although these efforts have highlighted specific facets of the digitisation and digital preservation challenge, overall digitisation actions in the Member States remain largely fragmented.

An online consultation has provided information about the views of the stakeholders on policy intervention in this field. The consultation, held from 30 September 2005 to 20 January 2006, resulted in replies from 225 stakeholders across all interests. The replies confirmed there was widespread support for mobilisation at Community level of policies, programmes and resources aimed at making Europe's cultural heritage more accessible and usable on the Internet.

The assessment: The IA considers the European scale of the challenge and the cross-border nature of the underlying issues and goes on to identify the strands along which action at Community level will be the most efficient:

- Increasing transparency and predictability of the context in order to improve public and private investors' understanding of the industrial potential of the content and related services markets. Such action will leverage investments in the sector, necessary to defend Europe's competitive assets.

- Avoiding fragmentation and managing the growing complexity between standards, technical options and strategies that European organisations have to cope with if they are to embark on digitisation or digital preservation projects.

- Creating synergies to reach critical mass of content and resources and to pool complementary know-how. Such action will deliver greater social and economic value than the sum of benefits gained from a multiplicity of isolated initiatives.

The IA identifies three main policy options and assesses how far they can realise the economic and cultural potential of Europe's digital cultural heritage. The three options considered are:

- "Wait and see": maintaining at the present level the priority given to digitisation and digital preservation issues in EU programmes and refraining from formally organising political and strategic coordination on these issues at EU level;

- "Flexible coordination": political and strategic coordination at EU level to stimulate a joint effort by Member States and European organisations towards commonly agreed objectives and prioritising initiatives tackling challenges of common European concern within EC programmes;

- "Strong top-down coordination": political and strategic coordination at EU level to arrive at a common vision and actions, including mandatory standards and legislative measures at European level. Mobilising EC programmes to implement this common vision.

Options discarded after IA: The "Wait and see" option is not proportionate to the urgent need to overcome the present fragmentation and to secure the online visibility of European's cultural heritage. The option will fail to provide stakeholders with the stability needed to plan investments and will fail to achieve critical mass. There is a serious risk of further fragmentation between standards and organisational settings applied across Europe. The "Strong top-down coordination" would require the imposition of mandatory standards and legislative harmonisation, thereby increasing administrative burden and transaction costs, while delivering only marginal additional legal certainty. Furthermore, this approach may be unbalanced in its impact between large organisations and SMEs or local cultural organisations. An approach which is over-prescriptive on standards could also create barriers to new entrants, which is at odds with the vibrant technical and business innovation in this sector.

Preferred option: The IA concludes that "Flexible coordination", which is also the option most appreciated by stakeholders, is the preferred option. This option consists of a balanced set of proportionate measures to support digitisation and digital preservation, creating synergies between European organisations, competences and resources. It offers the most conducive environment for immediate and longer term investments; it creates capacities upon which any kind of organisation, large or small, public or private, within and beyond the core digitisation and digital preservation tasks, can build new activities.

The IA shows that it is the whole set of recommended measures and not measures taken in isolation that optimise policy outcomes. For example, economies of scale will be better captured if the overview of efforts, plans and results on the digitisation and digital preservation fronts across Europe is linked with the set up of cost-efficient production lines and with the coordination of national and European programmes. Multiplier effects from core digitisation and digital preservation tasks

towards other sectors will be triggered both by the measures encouraging high levels of interoperability and by measures catalysing sound public-private partnerships.

Last, the European Commission has sketched the path towards the European digital library (EUDL). By 2008, users of the EUDL will be able to search in a minimum of 2 million digital works (books, pictures, sound files, etc.) originating from the various collections of different cultural institutions (libraries, archives, museums), through one common multilingual access point in the form of a web portal. By 2010, the European Digital Library will have expanded to a minimum of 6 million digital works by federating access to digital collections of a number of archives, museums, other libraries and possibly publishers. The IA confirms that the recommended measures will concretely contribute to the set up of the EUDL. At the same time, the implementation of the Recommendation will deliver the appropriate framework for digitisation and digital preservation initiatives at local, national and European level.

1. **C**ONSULTATION OF INTERESTED PARTIES

1.1. **Organisation of the consultation**

An online consultation was launched on 30 September 2005. It accompanied the Commission Communication 'i2010: digital libraries', adopted on the same date. The consultation was published on EUROPA at: http://europa.eu.int/information_society/activities/digital_libraries/index_en.htm.

A number of relevant communities and potential multipliers were alerted by e-mail. The consultation was open until 20 January 2006. It was structured around eight questions on digitisation/online accessibility and digital preservation.

The Commission received 225 replies. Organisations and individuals from 21 Member States and from 8 countries outside the EU replied to the consultation. The replies have been posted on the digital libraries website[1]. Two organisations asked for their submission not to be posted on the Commission website. The organisations and persons that submitted replies can be divided in the following categories:
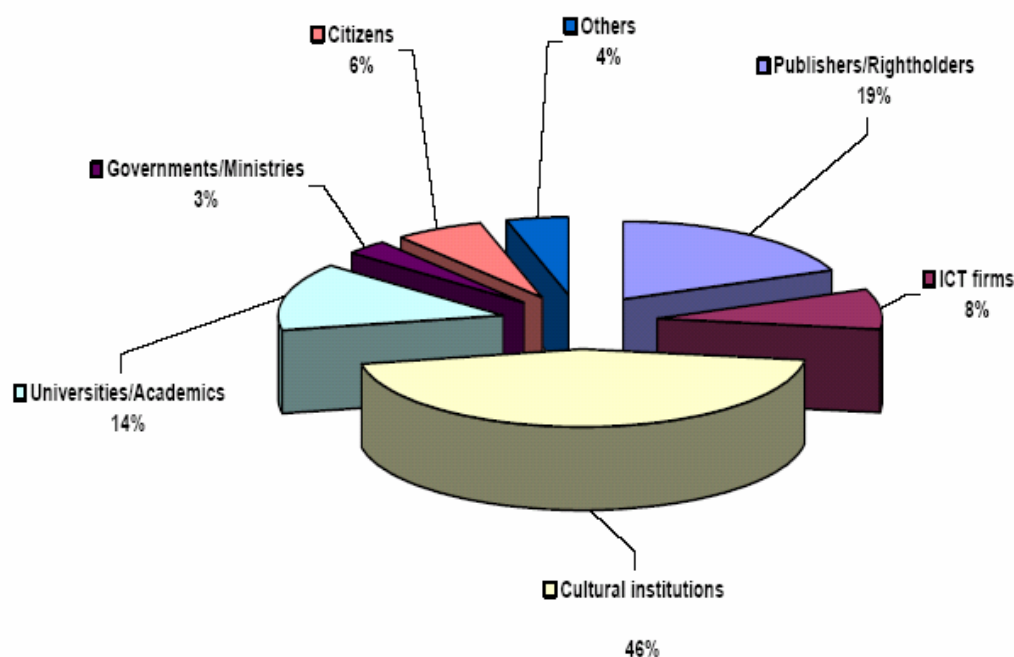
Within the category cultural institutions different types of institutions - libraries, archives, audiovisual archives, museums – are all represented, as well as the different administrative levels – national, regional, local. The category publishers/rightholders regroups content producers (books, newspapers, music), collecting societies and authors representatives. The category universities/academics covers contributions from universities, academic libraries as well as university researchers active in the

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[1] http://europa.eu.int/information_society/activities/digital_libraries/consultation/replies/index_en.htm

field of digitisation and digital preservation. The category ICT-firms refers to the replies by software companies, internet companies and firms offering technological solutions. The category 'others' refers to the replies from amongst others international organisations (e.g. WIPO), organisations representing people with disabilities and organisations representing the interests of indigenous people.

1.2.   Substance of the replies and way they have been taken into account

In the replies to the consultation, the possible **Commission initiative was generally very well received**, in particular by cultural and academic institutions, citizens, technology firms and national ministries. **They think it presents an enormous opportunity for making Europe's cultural, scientific and scholarly heritage more accessible and usable on the Internet**. There is a great willingness to contribute to the initiative. Rightholders and their representatives generally welcome the debate on digital libraries, but emphasise the need to fully respect copyright rules and newly evolving business models. The copyright issue is indeed the most contentious part of the consultation. Whereas the rightholders emphasise the adequateness of the present copyright rules, cultural institutions stress that change in the present copyright framework is needed for efficient digitisation and digital preservation. Many replies highlight the need for appropriate levels of investments in digitisation and digital preservation as well as in the underlying technologies. The need for more coordinated efforts at European level is also underlined. The multilingual aspects are seen by many as being at the heart of the European digital library. Several replies draw the attention to the crucial role that cultural institutions at the local and regional levels could play in the European digital library. Some indicate the necessity to ensure the accessibility of the European digital library for people with disabilities, in particular the visually impaired. Several organisations signal their interest in the forthcoming Communication on digital libraries of scientific information.

Coming from a wide range of stakeholders from all horizons and interests, the replies to the consultation can be considered as representative and meaningful. Indeed, the replies contain a wealth of useful suggestions that have contributed to the elaboration of the Recommendation, especially in areas such as orphan works and web harvesting.

1.3.   Further consultations

The Commission has been holding workshops to debate extensively about the technological, legal and economic issues touched by the Recommendation. In preparation to the online consultation, workshops with legal specialists and the library constituencies and contacts with publishers informed the early thinking of the Commission. After the online consultation, the outreach towards communities was maximised by exchanges with and presentations to European archives representatives, ICT technology firms, cinema experts, publishers, etc. Three workshops explored where EU FP7 research programme has to encourage innovation in this field. The Commission has drawn lessons from the work of the **High Level Expert Group on Digital Libraries** bringing together stakeholders from cultural institutions, rightholders and information technology industry. The group advises the

Commission on how to tackle key challenges in making Europe's cultural heritage available online[2].

2. **P**ROBLEM **DEFINITION**: **W**HAT **CONCERNS HAVE TRIGGERED THE RECOMMENDATION?**

2.1. **Current situation: EU citizens and organisations are confronting a wave of deep changes**

Broadband Internet is being deployed exponentially: now that the Internet reaches 65% of European citizens and 23% of European households have broadband, 43% of EU25 citizens use Internet daily. Mobile phones are now universal in Europe, where mobile penetration is as high as 85%[3]. On top of these pervasive networks, a myriad of digital content-based services is emerging. Ultimately, **digital content is literally transforming the way we study, work, create knowledge and entertain ourselves all over the world.** The "Millennials", born from baby-boomer parents in the 1980's to 2000, are the first generation to have grown up with interactive media. More than half of American teenagers using the Internet have contributed to online art, photos, videos, audio files, or pieces of creative writing. They are the first generation with this distinct profile of Internet use, one which they will carry over to their working environment[4]. **Technological and commercial opportunities to bring both analogue and born digital cultural content online on a massive scale represent a turning point for European citizens and organisations alike**. Cultural heritage organisations in particular are facing disruptive changes: whereas the number of visits to the reading rooms of the British library (BL) has stabilised at around 400000, the BL website recorded an additional 30% hits in 2004-2005 compared to the previous year with its very popular virtual exhibitions such as "Silk road"[5].

These trends constitute a **critical phase for the EU, the most important market for the content and creative industries**[6]. The conclusions of the Austrian Presidency on the EU Expert Seminar "Content for Competitiveness" in March 2006 emphasized that "the possibilities and opportunities for Europe's content and creative industries arising from the digital revolution can only be taken advantage of if Europe moves quickly; if this is not the case, there is a danger that Europe might fall further behind other world regions in the global economy".

While the opportunities arising from this digital content revolution must be seized, **some of the driving forces of this phenomenon, if not harnessed appropriately, could bring negative consequences for the EU and for specific groups of stakeholders**.

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[2]   http://europa.eu.int/information_society/actvities/digital libraries/high_level_expert_group/index_en.htm

[3]   Eurostat – Statistics in focus: Use of the Internet among individuals and enterprises - Issue number 12/2006 (KS-NP-06-012). And Eurostat data - Mobile phone subscriptions (per 100 inhabitants) 2004

[4]   Pew Internet & American Life Project (2006) Life Online: Teens and technology and the world to come. Speech by Lee Rainie at Public Library Association conference.

[5]   The British Library Annual Report and Accounts 2004/2005

[6]   Conclusions of the Austrian Presidency on EU Expert Seminar "Content for Competitiveness", March 2006

2.1.1. An information overloaded world

The Internet is now the information source of first resort and increasingly only resort, with 8 billion pages indexed and easy to retrieve with a generalist search engine. "Deep web" hidden resources represent much more information accessible only from specific gateways and platforms. But studies have shown that most users don't go beyond the first 10 references retrieved by search engines[7].

Will our reliance on digital information flows create "information black holes" in our minds (and the minds of future generations)?

In fact, while 50% of students and teachers search information on the web for educational purposes, only 9% still go to the library for the same reason[8]! These users rely on the web because **a lot of relevant public domain material is now online**. For example, the Perseus digital library developed in part by a joint EU-US consortium, gives direct user-friendly access to 225 Gigabytes of texts in Ancient Greek, Latin and Old Norse. In 2004, this reference portal served 300000 http requests a day at its Boston site and at European mirror sites in Oxford and Berlin. In addition, commercial encyclopaedias and hundreds of course sites at universities and secondary education institutions around the globe link to it[9]. But this wealth of knowledge may mask a dangerous and growing information gap: **cultural content not highly visible online may become non-existent for intensive web users**. Some initiatives are specifically raising awareness of the need to close these information gaps and the benefits of doing so: "The European Navigator" (ENA) provides access to a unique collection of multimedia documents on the political construction of the European Union, heavily used by school students[10]; the "Digital Library Academy", an online database of full-text Hungarian contemporary literature, is accessed by Hungarian speakers and interested readers (one book by the Nobel Prize's winner, Imre Kertész, was downloaded, in its original version, 35000 times in 4 months)[11]. Both projects are based on innovative partnerships with right-holders: ENA was able to bring online copyrighted 20th century press material by setting up cost-effective mechanisms for the collective management of rights; the Hungarian ministry of Culture supports the DLA programme by offering subsidies to the authors or their right holders. Nevertheless, information gaps will multiply if the win-win effects of enhancing online access to copyrighted material are not captured on a larger scale by public and private initiatives.

2.1.2. Personalisation, real or empty promise to users?

There are a **huge number of niches where the demand for specific content is not satisfied in the physical world**. For example, it is very costly to store books after their distribution and the costs of keeping out-of-prints material cannot be recovered by printing and selling it on-demand. In contrast, the storage costs of digital media are low, the costs of reproducing a digital work are negligible and small-transaction

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[7] Real life, real users, and real needs: a study and analysis of user queries on the web, Jansen et al. (2000)
[8] Dimension and Use of the Scholarly Information Environment, Digital Library Federation and Council on Library and Information Resources (2002)
[9] IST Results about CHLT: Modern tools to unlock Ancient Texts and http://www.perseus.tufts.edu/
[10] www.ena.lu
[11] http://www.irodalmiakademia.hu/

payment services are cost-effective online. It thus becomes economically viable to sell rarely demanded products in digital form. An economic study[12] has demonstrated that while approximately 60% of Amazon book sales are at the expense of existing bookstores, as much as 40% of its sales are supplementary. A significant proportion of Amazon sales consist of titles ranked below 130000 in the bestseller lists. A brick-and-mortar bookseller could not store them at reasonable cost. Moreover, Amazon's new service "Search inside the book" has boosted its sales by an additional 8%[13]. The **digital switch clearly opens up new opportunities to serve this "long tail" of niches and not only the best-sellers**.

Will scattered digitisation initiatives satisfy the specific demands for rare content?

Rapid progress in the digitisation methods gives us a unique chance to access very rare material. Fragile Egyptian papyrus scrolls in the British Museum or papyrus scrolls entombed in Herculaneum under Vesuvius lava cannot be read in analogue form without causing major damage. But research on non-invasive penetrating scans has produced readable images of inaccessible texts[14]. Similarly, large-scale digitisation initiatives, by both from public and private organisations, provide unprecedented access to a comprehensive body of materials[15]. Yet, the **scale and scope of digitisation is still dwarfed by the huge demand by users for cultural content**. The British Library, one of the richest libraries in the world, houses 13 million books, 7 million manuscripts, 4.5 million maps, 3.5 million sound recordings and 58 million newspapers and receives 100000 books and 300000 journals each year from legal deposit alone. Visitors to the library express their satisfaction at being able to access these extremely large collections[16]. In general, the OCLC estimates that 90% of users demand to see 20% of the collections held in physical libraries. Making available this proportion of collections thus provides a quantified benchmark for user satisfaction[17]. But just 0.3% of the BL collections have already been digitally converted, representing 750000 of the 4.5 million manuscripts selected for digitisation in the short term[18]. Even at this exceptional digitisation pace, it is challenging to satisfy the patterns of demand common in the analogue world. In consequence, **increasing digitisation efforts and coordinating digitisation initiatives is the only way to begin to satisfy actual demand.**

Will the Internet talk the language of its users?

The web is written in 220 languages, yet nearly 70% of web content is written in English, the lingua franca of the net[19]. Accordingly most EU countries are "net importers of digital content": Italians represent 4% of global web surfers but produce only 1% of content in their native language, while the 7% of web surfers who happen

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12   Internet Exchanges for Used Books: An Empirical Analysis of Product Cannibalization and Welfare Impact, Ghose A. et al (2005).

13   Wired 12.10: The Long Tail, Anderson C. (2005)

14   Opaque document imaging: building images of inaccessible texts. Y. Lin, W. B. Seales. IEEE proceedings ICCV'05 (2005)

15   "The real death of print" Nature Vol 438, 1 December 2005

16   The British Library – user satisfaction Key indicators 2004/2005

17   Libraries and the network platform: a new cooperative context. OCLC/Lorcan Dempsey. (2006)

18   http://www.bl.uk/about/policies/digital.html

19   "English next" report (2006) http://www.britishcouncil.org/files/documents/learning-research-english-next.pdf

to be German can find only 6% of web content in their own language while even 15 to 20% of web pages edited in Germany are in English[20]. **Multilingual tools and functionalities need to be further developed.** Moreover, **the lack of large-scale collections in lesser-used languages slows the development of innovative technologies**: current search engine like Google, FAST or AllTheWeb have been developed for English, and their treatment of the special characteristics of other languages is questionable. Accurate search technologies for German or Hungarian not to mention Arabic or Russian, with their inflexions, prefixes and declinations, would require new retrieval algorithms. And major search engines designed for English do not handle Chinese queries as well as search engines specifically designed for Chinese[21]. Furthermore, users querying in these languages poorly analysed by current technologies are not even aware of their limitations and the wealth of information they miss[22].

2.1.3. *Cultural content online: a motor for creativity?*

Will the Rip/Mix/Burn phenomenon spur creativity in the long run?

Accessing content online changes the nature of the relationship between users and cultural objects. On the British Library website, it is now possible for anybody to virtually turn the pages of Mozart scores once owned by Stefan Zweig, whereas in the physical world, visitors can at best see snippets through the glass of an exhibition case[23]. This **new proximity is creating a special relationship with cultural artefacts, extremely favourable to creation.** A large-scale US study of Internet uses by artists reveals that 90% of musicians use the Internet to get ideas and inspiration for their work[24]. Furthermore, the web is also crucial for kick-starting the careers of creative artists: the independent site Entropy8zuper.org, created by two artists based in Ghent, is a virtual art gallery of the highest aesthetic quality also visited by museum curators. Ultimately, **any user can now become producer of new content**: on Channel 4, the FourDocs portal invites users to watch classics from its archives and encourages them in turn to create and upload 4-minute documentaries, then reviewed by professional editors[25]. In a bold step, the BBC opened its "Creative Archive" service[26] in 2004, establishing a pool of high-quality content that can be legally drawn on and exploited by any user for non-commercial re-use. Furthermore the BBC has undertaken to showcase the most exciting re-uses of its archives. **Two-thirds of current and prospective broadband users in the UK say they are interested in the Creative Archive service**.

The need for interoperability

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[20] OECD conference "The Future Digital Economy - Digital content creation, Distribution and Access" (2006) www.oecd.org/sti/digitalcontent/conference.

[21] How do search engines handle non-English queries? A case study, J. Bar-Ilan et al.http://www2003.org/ and How Do Search Engines Handle Chinese Queries?, Moukdad, H. et al. (2005).

[22] Language technology and the Semantic Web - experiences and future plans at CST, Bolette Sandford Pedersen Center for Sprogteknologi Lund (2002) states that 23 % of all search words are ambiguous; 10% of all proper names searched on are ambiguous.

[23] Turning the pages http://www.bl.uk/onlinegallery/ttp/ttpbooks.html

[24] Pew Internet and American Life project http://www.pewinternet.org/reports.asp

[25] http://www.channel4.com/fourdocs/

[26] http://creativearchive.bbc.co.uk/

It is not easy to view printed material and films at the same time in the analogue world. In the digital information space, however, images, texts and sounds are equally represented by streams of bits, equally distributed between servers across the web and equally retrieved on the same screens of the users. Yet, **interoperability is still needed to make genuine make sense of disparate information objects**. The DELOS project, co-funded under the IST programme in 6th EC Research Framework Programme, highlighted a telling example of how information objects can stay isolated from one another in the digital information space despite the complementary knowledge they carry[27]. The Yalta Conference in February 1945, the event officially marking the end of WWII, is one of the better-documented in history. The State Department of the United States holds a copy of the Yalta Agreement and the Bettmann Archive in New York holds a world-famous photo of this same event. Under the current mainstream standards for describing objects in a digital library, these two documents are both commonly described by a "Dublin Core" record. But these two metadata records, used to search and retrieve these objects, have nothing more in common than the year 1945, hardly a distinctive attribute. The linking piece of information would come from the Getty Thesaurus of Geographic Names. This example demonstrates a fundamental problem: in order to retrieve information on the one specific subject sought by the user, information from multiple sources, including background knowledge must be virtually integrated. But services to semi-automatically index and classify objects in order to render them available for cross-searching in heterogeneous collections, and services to map relationships between these objects are still at the stage of prototypes. Similarly, cross-cultural bibliographic indexation of electronic documents along with multilingual thesauri is not widespread. **Keeping online content in non-interoperable silos of information is at odds with the actual expectations of users and diminishes the value of complementary documents**.

2.1.4. *"Mind the gap": the compelling need for digital preservation*

Preserving digital resources for the long term is a big issue, isn't it?

Experts estimate that our society have created and stored 100 times as much information since 1945 as in the whole of human history up to that point[28]. One study indicates that the world's total yearly production of print, film, optical, and magnetic content would require roughly 1.5 billion gigabytes of storage, i.e. 250 megabytes per capita[29]. This study quantifies the avalanche of information our societies are producing estimating that 1 Megabyte is a small novel; 5 Megabytes are the complete works of Shakespeare or 30 seconds of TV-quality video; 2 Gigabytes (1000 Megabytes) correspond to 20 meters of shelved books; 1 Terabyte (1 million Megabytes) will hold all the X-ray films in a large hospital; 10 Terabytes are enough for the printed collection of the US Library of Congress or what the UK National Archives are expecting to acquire in digital format between 2004 and 2007; 100 Terabytes will store the simulation data produced by global climate models run on supercomputers; 8 Petabytes (1 billion Megabytes) will suffice for all the information

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27   DELOS D.5.3.1 Semantic interoperability in Digital Library Systems (2005)
28   A Strategic Policy Framework for Creating and Preserving Digital Collections, Beagrie N. (2001)
29   How Much Information, Lyman, P and Varian, H. (2003) - http://www.sims.berkeley.edu/how-much-info

available on the Web. Even if not all this information will be stored forever, printed documents of all kinds comprise only .003% of the total in this calculation. Whereas long term safeguarding strategies for printed formats have been designed, tested and employed on a large scale by public and private archives, this is not at all the case for information held on digital carriers, even though national archives are working on solutions in many countries. For example, fewer than 20% of UK business organisations have some kind of digital preservation strategy in place. While 80% of these companies say they need to preserve their digital information for at least 50 years for legal or contractual reasons, 50% of them still print out documents to preserve the hard copy because they have not defined an adequate digital preservation chain[30]. **Born-digital information is growing exponentially across all sectors, but adequate strategies to preserve access to this valuable content are far from widespread**[31].

Can we really wait for digital preservation solutions?

The media carrying this enormous amount of information are all endangered. Even if there is nothing comparable to sixteen millimetre film in terms of format stability (film made in the last 30 years, if properly stored, can be expected to last a century or more), acetate-based film can turn to acetic acid and once the "vinegar syndrome" sets in, something must be done to rescue the film. The master tapes for rock classics like the Eagles' "Hotel California" and REM's "Automatic for the People" suffer from 'sticky shed syndrome', meaning that the tape literally sticks together as the chemicals in it degrade. When films, music or printed texts carrying the memory of major European events and everyday life are lost and cannot be recovered from sticky tapes or brittle paper[32], the fundamental economic and moral rights of artists are affected and the public good transmitted to the future generations is diminished. Worse still, born-digital information is disappearing the fastest of all: the life of an average website is estimated to be around 44 days, about the same lifespan as a housefly[33]. Furthermore, digital media do not have a particularly long lifespan (CD lifespan can be as low as 10 years) and storage and access medium get obsolete quickly (e.g. most new machines no longer have a 3.5" floppy disk drive), whereas, say, digital radiology images or taxpayers' electronic documents should be stored over a person's lifetime. A majority of electronic documents do not hold a permanent unique identifier. Many digital objects are only identified by their Internet pointer, this ephemeral location-based identification do not allow recording the fundamental attributes of these digital objects like the rights attached to its use.

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[30] Mind the Gap: Assessing digital preservation needs in the UK. DPC report by Martin Waller and Robert Sharpe. (2006) http://www.dpconline.org/docs/reports/uknamindthegap.pdf

[31] The National Council on Archives "Your Data At Risk Why you should be worried about preserving electronic records". (2005) http://www.ncaonline.org.uk/materials/yourdataatrisk.pdf

[32] About 25% of the books in general library collections are already brittle and corrosive inks threaten 60% of Leonardo da Vinci drawings according to research by Ljubljana National Library.

[33] Mind the Gap: Assessing digital preservation needs in the UK. DPC report by Martin Waller and Robert Sharpe. (2006) http://www.dpconline.org/docs/reports/uknamindthegap.pdf

2.2. Issue requiring action: make the best of digital content for EU competitiveness, now.

To create, exchange and keep their data, information and ideas, organisations and individuals are now giving up analogue formats and going over to digital formats on an unprecedented scale. The British Library is expecting to have 90% of published material deposited in digital format in the coming year. **Confronted with this massive switch to digital content and the questions it raises, the challenge for the EU competitiveness is twofold**:

– The EU has to **make digital cultural content a major contributor to EU growth** and creativity, securing EU competitiveness both now and in the long term.

– The EU must **not be outpaced or marginalised in the current global transition** towards accessing and creating knowledge predominantly in the online information space.

New business models are indeed being explored by content and service providers and suppliers, and leading positions on these global markets are up for the taking. European publishers, like many other private operators in the field, are at the forefront in strengthening European competitiveness in this sector. Combining the wealth of their back catalogues with major investments in new services, European publishers are already extracting hitherto hidden value from the variety of content they distribute. For example, the 'Volltextsuche Online' (full-text search online) initiative by the Deutsche Börsenverein, the German association of publishers and booksellers, aims to provide central access to the digital full texts of German-language books. All data will be available in distributed form on the servers of the participating publishers. For each title, publishers can decide whether and to what extent its content can be searched, displayed, read and sold electronically. While other search engines, (public) libraries and retailer relations can also offer customised search and use facilities through "Volltextsuche Online", the German publishers will keep complete control over the accessibility of the titles while guaranteeing the protection of author rights. Over the next 3 years, "Volltextsuche Online" aims to secure the participation of 500 participating publishers and offer around 100 000 digital copies of recent publications or other publications still in print. Such commercial initiatives are needed to allow rightholders to benefit from the new commercial potential of their now digitised works.

However, several non-European countries also enjoy strong competitive advantages that will make them big players in this growing sector: the Financial Times quoted Prannoy Roy, NDTV's chairman, as saying that 70% of the global media and entertainment industry could be digitised, of which 70% could potentially be outsourced offshore to India. **And global competitors are investing massively to stay ahead in this race to unlock the value of cultural content online**. To name but one example, the bold vision of the Universal Digital Library is: "Getting the right information to the right people, in the right timeframe, in the right language, with the right granularity"[34]. Research organisations in the US, India and China are

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[34]   http://tera-3.ul.cs.cmu.edu/

doing intensive research to build a free, searchable digital library in the languages most spoken worldwide such as Hindi, Chinese and Arabic. The National Science Foundation awarded Carnegie Mellon University €2.8 million over four years to fund the equipment and administration for this Million Book Project, while India is providing €19 million annually to support language translation research projects and the Ministry of Education in China is providing €6.6 million over three years. By the end of 2005, over 600 000 books had been scanned (170 000 in India, 420 000 in China, and 20 000 in Egypt), auguring well for the target of "one million book digitised by 2007".

For Europe to benefit fully from the rapidly growing impact of content digitisation on growth, competitiveness and quality of life, it needs more than ever to get its policies and strategies right to catch up with our major global competitors.

2.3.   Issue requiring action: ensure digital content plays a key role for the EU knowledge economy

Combining the potential of new information technologies and of cultural content for the creation of new services and products would indeed deliver major benefits for European citizens in terms of economic growth, job creation and quality of life.

2.3.1.   Cultural and social benefits of a digital European cultural heritage

First of all**, cultural content is one of the principal vectors for conveying the Union's common and fundamental cultural values**. The cultural heritage institutions have always been collecting the memories that embody national identity, conserving precious or historic objects, studying, interpreting and keeping alive the ideas embedded in these cultural artefacts, exhibiting collections to give all citizens an opportunity to enjoy their heritage, etc. There is no disputing that they have done an excellent job in the physical world. Museums, libraries and archives help people of all ages learn and gain new skills, they contribute to community building, social inclusion, dissemination and the strengthening of civic values, they enable every citizen to become involved in the exploration of the past and the invention of the future, and they give citizens the access to the information they need to shape their lives. As Brendan Howlin, MP, observed in the Irish Parliament: "Libraries are an extraordinary community resource. Libraries are not just repositories of books which people take out and return within a week or a fortnight. For many communities, libraries are now a historical, cultural and artistic hub. We need to acknowledge that in a way we have not done up to now and allow libraries to develop to their full potential."[35]

Now, European cultural heritage institutions are gearing their efforts to the online environment in order to enable anyone, anywhere, anytime to **tap into Europe's collective memory and use it for education, learning, work, leisure and creativity**. Building on their achievements of the analogue era, the cultural heritage institutions are going digital. Supporting their efforts to become the intellectual crossroads of the online environment will help develop Europe's cultural diversity, protect European cultural assets from irretrievable loss and help reinforce *eInclusion*.

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[35]   Bloomsday: Copyright estates and cultural festivals, Rimmer M. (2005).

First, **tackling digitisation and the digital preservation challenge at EU level will strengthen European cultural identity**. Creating a large volume of visible digital cultural content will bring Europe's cultural diversity to non-European audiences. Indeed, the digital library Biblioteca Miguel de Cervantes is highly popular in Latin America, where it is considered to be the reference point for Spanish classical literature. The Gallica digital library in partnership with the Russian National Library also features a virtual exhibition of original Voltaire works held in Russia together with the works of Voltaire in BNF collections. This digitisation project and the tools developed to give user-friendly bilingual access stem from the determination of the French national library to highlight how much the philosophical developments of the Enlightenment period were a European phenomenon[36]. Furthermore, creating a multilingual common access point to Europe's distributed cultural heritage will **promote inter-cultural dialogue**, **increase mutual awareness amongst Europe's cultures and enrich European identity with cross-cultural shared references**. **Virtually linking together resources dispersed over the largest possible number of European cultural heritage institutions yields a higher European value than the mere sums of the values of isolated collections**. For example, despite their complementary role in understanding European history, physical collections containing documents about Poland in the 18th century are scattered and difficult to perceive as a whole corpus, as they are catalogued following Poland's extension, boundaries and legal status according to the (inconsistent) perception of other European states at that time. The efforts at EU level to produce interoperable descriptions of the digital objects held by European cultural heritage institutions provides an unprecedented opportunity to create a new understanding of these objects. Moreover, fostering the emergence of innovative online access services will help **bring European cultural assets closer to the younger Internet-savvy generations.** And setting clear framework conditions for the accessibility and re-use of digital cultural content will **create a space where creativity and interactivity among European citizens can blossom**. New "Web 2.0" applications provide ways of fostering community and user interaction with cultural content. For example, the "Every Object Tells A Story" website[37] allows people to share their stories using podcasting, a distribution channel extremely popular among the younger generations. Led by the Victoria and Albert Museum in partnership with Channel 4, Ultralab and three regional museums, the project focuses on the art of storytelling. The site includes contributions from museum and gallery curators and explains the personal meanings and histories behind objects.

2.3.2. *Solid economic legacy from the analogue era*

Books, films and audio recordings not only add spiritual, educational and cultural value to the quality of life of European citizens, they are also at the core of major economic sectors. **Producing and distributing new cultural content was an active industry long before the emergence of digital media**. A comprehensive study[38] of the contributions of copyright-based industries to the EU15 economy has revealed that the total gross value added by these industries represents more than 5.3% of the

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[36]   http://expositions.bnf.fr/lumieres/index.htm.
[37]   www.everyobject.net
[38]   The Contribution of Copyright and Related Rights to the European Economy, Media Group Turku (2003).

total EU15 value added. This study also found that this sector is a major employer with particularly high levels of productivity. Moreover, the EU is a leader on global markets for analogue cultural content. In 2002, the EU15 was the leading exporter of cultural goods, with 52% of global exports, while accounting for only 40% of global imports[39].

The digital cultural content industry is building on those strengths and adding a new dimension. Various methodologies exist to cluster industries concerned with digital content. But **whatever the statistical definition of this group of industries, their macroeconomic impact on GDP and growth is always significant.** For example, European online paid content (music, games, video and other publishing) is a nascent market, yet already turned over €10 billion in 2004[40].

Furthermore, cultural heritage institutions providing on-site and online access to collections add substantial tangible economic value to EU economies. The existing system for collecting quantitative data on archives, museums and libraries is patchy and incomplete. However, several studies have quantified the value of the direct and indirect benefits brought about by cultural heritage institutions. Around 30% of the EU25 population are registered users of libraries, while €14 billion are spent on libraries. An impact study conducted by the British Library for all its services, both online and on-site, has revealed that every £1 of public funding translates into £4 of benefits for the UK economy.

2.3.3. *Great demand for digital content*

Cultural content has played a key social and economic role in the past, during the analogue era. Consequently, **the demand for digital content, to access it and to safeguard it for the future, is already very much present among individuals and organisations.**

Internet users are eager to access information held by European cultural heritage institutions. When the British Library first made its Gutenberg Bible available on the web in November 2000, the pages received one million 'hits' in the first six months. The appetite for unique cultural content online has grown constantly since then: the Gallica website was attracting 1 million hits a month in 2004, the highest rate of any online national library collection. And its users spend 12 minutes viewing the pages, a remarkable length for browsing a website. In 2006, INA restored and preserved 200 000 hours of audiovisual archives and plans to process another 600 000 hours by 2015. 10 000 hours are now accessible on INA.fr (twice that number will be searchable by 2009), of which 80% are accessible for free while the rest can be rented or bought for less than 12€. INA expects usage to grow from 350 000 users a month to 1 million. In the first few days, 6 million hits overloaded the service! People want to see the news that happened on their birthdays, or journalists or historians may wish to view the comprehensive recording of the Maurice Papon trial for crimes against humanity, as only part had previously been broadcast on a cable channel[41]. Online access to cultural content in digital libraries

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[39]   UNESCO report International trade of cultural goods (2003).
[40]   IDC study for the European Information Technology Observatory.
[41]   Le Monde 27 avril 2006. And: http://www.ina.fr/archivespourtous/index.php.

offers new ways in which new audiences can ask new questions about new ideas they would otherwise never have been able to explore. **This demand for 'curated' cultural content drives traffic[42] as well as the emergence of additional services to use and re-use such material for professional or personal needs.**

Furthermore, there is **a willingness to pay for high-quality digital cultural content**. The Scottish Archive Network, or SCAN project, an initiative in part supported by a £4 million grant from the Heritage Lottery Fund, has put Scotland's archival heritage on the Internet[43]. It has created a virtual archive service, combining a complete archive resource in digital form, i.e. 2.5 million images of all Scottish wills from 1500 to 1901, with a suite of reference services aimed at both the beginner and the experienced archive user. The project has developed an efficient system for high-volume, high-quality image capture from the original archive documents. The project was launched on the untested assumption that there would be a ready market for digitised wills. While the experience of the National Archives of Scotland (NAS) was that around 1000 copies of wills were produced every year for personal and postal enquirers, the project sponsors hoped that more visible and easier access would increase this number. SCAN is now a thriving e-commerce business, selling as many images of wills per month as the NAS sold in a year, and with every sign of a continuing growth in sales.

2.3.4.   *Digitisation and preservation services, a dynamic industry*

Both anticipating and responding to this great demand for digital content, digitisation and digital preservation services are knowledge-intensive activities that are likely to grow considerably in the coming years. Producers of digital-content products and services span the culture, technology and business sectors, as the following diagram shows.

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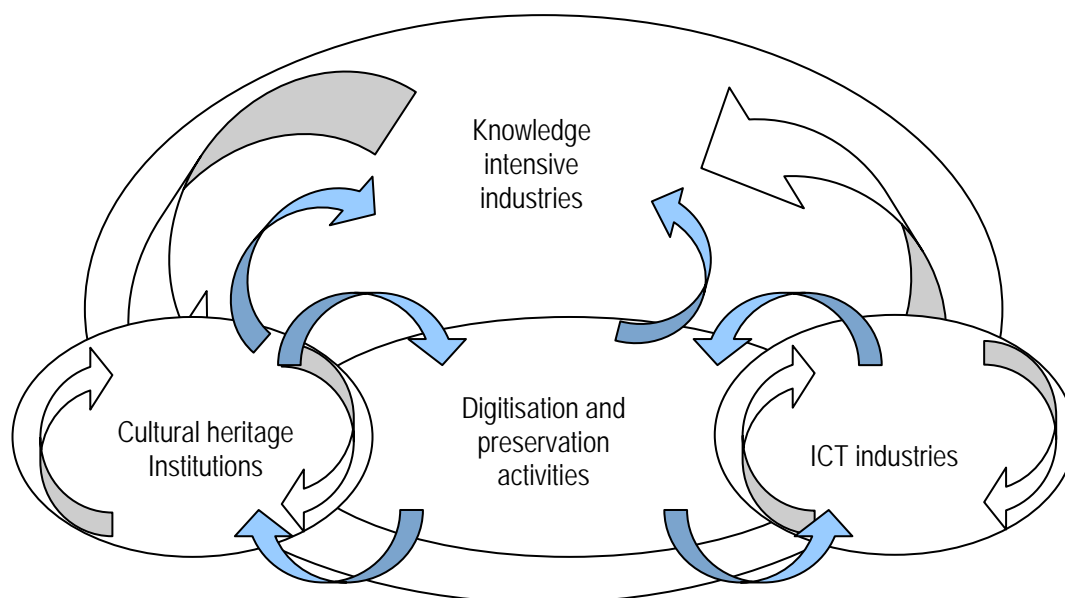
[42]   A prospective study - Business Study of Mobile Peer-to-Peer Content Distribution – Matuszewski M. (2005) — foresees that entertainment will generate a 1000-fold increase in Internet traffic in the next 5-10 years.

[43]   http://www.scan.org.uk/.

The **scale of the costs involved and the quest for cost-efficiency has led to the need to establish "industrial" production lines to serve the growing demand**. For example, 100 million hours of analogue audiovisual material exist in Europe and it would cost €13 billion to preserve it all with available technologies. Major broadcasters across Europe are investing roughly €20 million a year on digitising their archives[44]. At this pace, in 20 years 60% of these assets will have decayed before any preservation has occurred. The initial focus of the PRESTO and PRESTOSPACE projects co-funded by the EC IST research programme, bringing together major European broadcasters and technology providers, was therefore to deliver significant economies of scale to secure our audiovisual heritage. These projects have developed a cost-effective workflow to bring down costs significantly. While most archives still employ human specialists for annotating material, the "Richnews" system adds annotations automatically to 40% of content[45]. The whole "digital preservation factory" set up under the projects has thus cut the traditional costs of preserving audiovisual materials through digital conversion by a third.

For preservation services, there is an unsatisfied demand that will soon represent a big, highly valuable market. In 2006, the Digital Preservation Coalition (DPC) conducted an across-the-board study of UK business needs for digital preservation. Respondents to the 2005 DPC survey felt a strong sense of urgency: 87% recognised that a failure to address the issue of digital preservation would lead to the loss of corporate memory. Over 60% felt that their organisation could lose out financially — either through loss of income or through increased operational costs. Indeed, in the private sector, 70% of UK companies now use email for contract negotiations, human resources letters and financial transactions. Many organisations possess valuable intellectual assets that are held fully or partially on digital records. 64% of respondents to the survey preserve digital data to protect intellectual property and 22% do so to support patent applications. Beyond the cultural and publishing sector, there is a growing interest in content management, archiving and digital preservation services. This growth is driven by legal requirements affecting the financial sector (e.g. Sarbarnes-Oaxley act) and other sectors of activity (e.g. records of drug testing to be kept by the pharmaceutical industry). A 2006 survey conducted by the AIIM[46], covering more than 1200 organisations in industrialised countries (US, Canada, Germany, UK, Benelux, Australia and Brazil), found that 70% of respondents considered the management (and preservation) of electronic information to be of critical importance for future litigation. While reasons such as compliance with regulations are given by 33% of the respondents, improved efficiency and productivity appears to be the main driver for 61% of the survey participants. About 20% of the respondents were planning to invest more than €1 million in electronic content management and preservation technologies, though this percentage increased to 47% and 53% for the government and financial sectors, respectively. The dynamism of the document electronic management service sector can be seen from the overall growth in revenues and profits (only 6.2% of respondents indicated a decrease in revenues while 46% reported net profits exceeding 10%). This also seems to be having a positive impact

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[44]   Digital preservation of audio, video and film, R. Wright, VINE (2004).
[45]   Semantic Analysis for Tomorrow's Audio-Visual Digital Archives. C. Ursu et al. IEEE - EWIMT (2005).
[46]   AIIM – Association for Information and Imaging Management – www.aiim.org.

on employment, with 38% of companies anticipating an increase in staff numbers of more than 10% in the following year[47].

2.3.5. *Digital cultural content boosts many downstream economic activities*

Media convergence and the global use of the Internet have turned digital content into an extremely valuable asset in itself, at the core of a dynamic digitisation and preservation industry. Furthermore, this asset can trigger growth in many other sectors. **High-quality digital content is a key driver for large-scale, industrial ICT activities** (hence the interest of the major search engines).

Cultural content is an important basic economic resource that **catalyses growth in related high value-added sectors such as tourism, education and media.** For example, with some £15 million in government pump-priming, the Scottish Cultural Resources Network's SCRAN has digitised a critical mass of local cultural assets for educational purposes (more than 1 million references). Access for schools and individuals is via subscription and local museums or private archives benefit from having their digitisation activities externally funded (they obtain an "interoperable" copy of their data in return), and preserve other rights (they grant SCRAN the right to use the material for educational purposes only). All the primary schools in Scotland are now subscribers and the SCRAN site received about 1.5 million hits every month in 2003. Similarly, the LATCH project supported by the eContentPlus programme is assessing the viability and profitability of building and running a multilingual, geographically oriented online repository of cultural heritage information, accessible via mobile services with extensive location-based features. This project has found that, once cultural institutions have made their digital assets interoperable, many stakeholders can gain through offering post-production, database and software tools, billing and digital rights management services, communications transmission services, media and local publicity and also classical accommodation or transport services. As millions of European schoolchildren make trips each year to cultural sites, and cultural tourism is a growing global trend, packaging cultural content for re-use in mobile applications has profitable market prospects.

Delivering interoperability for a large body of heterogeneous objects also brings tangible economic benefits in the form of spin-off activities[48]. Ensuring that digital cultural assets are sharable, reusable and combinable allows users to focus on their own productive re-use of resources rather than on the messy mechanics of interaction with data. For example, the eCHASE project co-funded by the eContentPlus programme is working on the needs of international multimedia publishing organisations operating in several countries across Europe. The project will create a new service enabling such organisations to search the digitised assets of the National Gallery in London, the Uffizi in Florence and the Louvre in Paris as well as eCommerce sites like the Alinari photo library, and to re-use these digital assets for their own purposes.

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[47] State of the Document Management Service Provider Industry - http://www.aiim.org/article-industrywatch.asp?ID=30742.

[48] Lorcan Dempsey – The value of recombinant potential ARLIS (2004).

Finally, **research into digitisation and preservation is blazing the trail for new services of interest to other organisations**. Following the digitisation of its archives, RAI has seen the re-use of its audiovisual material increase by 85% over three years[49]. The success of this effort has encouraged RAI to develop innovative services, such as Ritrove RAI, to extract language-neutral semantic metadata on a large scale[50]. This system, developed for the PRESTOSPACE research project co-funded by the EC IST research programme, was trained on the digitised archives held by major European broadcasters. It enables content queries to be made in English, but processes the search in a language-neutral manner and delivers cross-language results in both Italian and English. This system is feasible proof of a new generation of multimedia information-brokering systems over the web, to be utilised first by the media industry, then by many other organisations.

2.4. Action at EU level

2.4.1. *A coherent intervention logic*

The i2010 initiative, aimed at optimising the use of information technologies for economic growth, job creation and quality of life[51], is the overarching key policy initiative under which efforts to optimise the use of cultural content in digital information spaces are undertaken. The digital libraries initiative is one of the flagship projects of i2010. The need and urgency of the three strands of action identified in the Commission Communication 'i2010: digital libraries' have been confirmed by the public consultation and the discussions held with stakeholders. The steps currently being taken by the Commission are informed by the experience accumulated in projects and initiatives developed with cultural institutions, public and private organisations and Member State authorities. The Commission and Member States are now considering steps to enhance political coordination in order to make the benefits of digitisation and digital preservation tangible for European citizens. In their letter of 28 April 2005 to the Presidents of the European Council and of the Commission, six Heads of State and Government advocated the creation of a virtual European library. In his letter of 7 July 2005, Mr Barroso gave a positive reply to this suggestion, indicating the willingness of the Commission to work towards such a virtual European library and pointing to the work already undertaken in this area at European level.

The Recommendation of the European Parliament and of the Council of 16 November 2005 on film heritage and the competitiveness of related industrial activities (2005/865/CE)[52] and the Recommendation of the Council of 14 November 2005 on priority actions to increase cooperation in the field of archives in Europe (2005/833/EC)[53] are examples of policy coordination in related areas.

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[49] UER report on archives (2003).
[50] RitroveRAI: A Web Application for Semantic Indexing and Hyperlinking of Multimedia News, R. Basili et al. ISWC (2005).
[51] "i2010 – A European Information Society for growth and employment", Communication of the Commission of 1.6.2006, COM(2005) 229 final.
[52] OJ L323, 9.12.2005, p. 57.
[53] OJ L 312, 29.11.2005, p. 55.

2.4.2. *Legal basis*

The present Commission Recommendation on the digitisation and online accessibility of cultural material and digital preservation is based on Article 211 EC. This article stipulates that the Commission may formulate recommendations on matters dealt with in the Treaty if the Commission considers it necessary.

The first section of the IA highlighted the driving forces that are making of digital cultural content a potential major driver for the growth and cultural enrichment of EU knowledge economy. And the first section also depicted European citizens and organisations in the midst of a global migration of any kind of knowledge to the digital format. During this transition, digital content represents a key asset for the competitiveness of European stakeholders, as digital cultural content is a key input for large scale ICT industry and a driver of high value added sectors, such as media, tourism and education industry, all of which are likely to grow considerably in the coming years. The Commission considers it therefore necessary to foster better exploitation in the EU of the socio-economic potential of digital cultural content.

2.4.3. *Subsidiarity and proportionality test*

Political, legislative and strategic interactions at European level are required to offer citizens and organisations a supportive framework for them to seize the opportunity of European cultural content going online. **Co-ordinated action at EU level is necessary in view of the European scale of the challenges, the cross-border nature of the underlying issues and the transnational dimensions of the technological, economic and organisational options to deliver the expected outcomes.** In fact, an overwhelming majority of the stakeholders expressed such view during the consultation process.

Making Europe's considerable cultural heritage available online and preserving digital content are formidable challenges. Yet the EU is not starting now from scratch. In all Member States, initiatives exist to bring their national cultural heritage online, but the intensity and focus of efforts may vary and even within countries the picture is fragmented. Since 1990, the Commission has been instrumental in mobilising Member States to continuously exchange information and work together on these challenges. In particular, the eEurope 2002 Action Plan recommended the creation of a mechanism to coordinate digitisation programmes across Member States. In 2001, representatives and experts from Member States met under the Swedish Presidency, supported by the European Commission, and agreed the "Lund Principles", which established priorities for adding value to digitisation activities in ways that would be sustainable over time. The accompanying Lund Action Plan recommended actions to provide support for the period up to 2005. On 14 November 2005, the Council reaffirmed the validity of the Lund Principles, and recognised that the digitisation of cultural and scientific heritage was of strategic importance. An update of the action plan was then adopted under the UK Presidency[54]. In addition, numerous EU-funded projects have dealt with the technological and organisational challenge of getting Europe's cultural heritage to thrive in the digital world. For example, the eContentplus programme provides funding of €60 million from 2005

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[54] http://www.minervaeurope.org/publications/dap/dap.pdf.

until 2008, though not for financing digitisation but to support the networking of already digitised national collections. Under the "Scientific support to policies" activity, EC research programmes support the innovative use of digital media to enhance the users' experience of European historical buildings and monuments[55]. In 2005, Community FP6 research programmes under the IST priority devoted €36 million to co-funding research into innovative methods of retrieving cultural and scientific resources and digital preservation.

But moving European cultural heritage to the digital environment requires profound changes in organisation, skills, business models, technologies and even attitudes. Clearly, specific European and national initiatives have already removed some concrete barriers. But this multiplicity of individual initiatives also means that European citizens face a huge jigsaw of different services, collections and resources. **Putting together the different pieces of the jigsaw is the only way to fully reap the benefits of digital content for growth, competitiveness and quality of life. And this can only be done efficiently at Community level.** Co-ordinated action at EU level will avoid duplication of effort in the Member States and lead to synergies between national collections. It will scale up national digitisation initiatives, and leverage fragmented investments. A critical mass in digitisation efforts throughout the Union based on clear quantitative targets set by the Member States will trigger private investments in digitisation technologies and applications. Furthermore co-ordinated action will lead to economies of scale in implementing test beds, to combining scattered know-how and to sharing best practices in digitisation and digital preservation.

Finally, digital content based goods and services are essentially trans-national by nature. **The individual issues addressed in the Recommendation have a strong cross-border character**: interoperability of digital collections between Member States, a common multilingual access point, licensing of material under copyright for online use etc. To increase ultimately the access of citizens and professional re-users to the cultural content from other Member States, a common effort at EU level is the best route to take. Overall, the form and the level of intervention of the present Recommendation are tailored to the severity and urgency of the challenge the EU is facing. The present Recommendation, firmly rooted in national and local efforts to digitise and preserve digital content, takes action only where necessary to achieve European added value.

3.   **POLICY OBJECTIVES: HOW WILL THE RECOMMENDATION MAKE A DIFFERENCE?**

3.1.   **General objective: Unlocking the potential of Europe's cultural heritage**

The general objective of the policy intervention follows from the context analysed in the first part of the IA. **The massive and growing reliance of users on digital content for sharing information and ideas opens up new opportunities for spreading and using our rich cultural heritage to the benefit of all Europeans. The challenge is to concretise this potential and not be outpaced by the**

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[55]   For example, EC-FP5 project VITRA has developed a process to collect digital images wall-paintings, tapestries, friezes, stained glass windows in European heritage buildings. Images captured will nourish a digital library of special interest for restorers, museums curators and also architects.

developments in other continents. Collaboration at EU level and a joint effort by the Member States to digitise their cultural heritage, to make it available online and to safeguard digital content for the future can make a significant contribution to achieve this goal.

3.2. Specific objectives

3.2.1. *Fostering greater interest in investment by public and private organisations*

Connecting European citizens with the objects of their own national histories dispersed across Europe or indeed the treasures of other European cultures can only be done in an online environment. For this dream of a new relationship between European citizens and their European heritage not to recede into an uncertain future, parallel investment is required at local, regional and national level. To trigger a virtuous investment cycle around digital cultural content, a critical mass of European heritage content first has to be constituted. And to catalyse public and private investment that will add value to digital European cultural content, stable framework conditions and bold innovation strategies are necessary. EU action is therefore needed to facilitate the creation of a critical mass of content, e.g. by preventing the duplication of work. For example, national libraries have built their collections not only through national legal deposit schemes but also by purchasing major works created in other countries. When collections are digitised, multiple versions of the same works may possibly be digitised several times over. For example, digital representations of the major philosophical work by Erasmus "Elogio della follia" are available on the websites of French, Italian, English and Dutch cultural heritage institutions. A clearer overview[56] of efforts at EU level is thus needed. Similarly, clearer technological landscapes will lower the operational costs of digitisation. Accordingly, a supportive network of competence centres is to be co-funded by the European Commission to boost innovation in digitisation and preservation across the EU. The centres will house the skills and expertise needed to achieve excellence in digitisation and preservation processes. They will integrate and build on existing know-how in technology companies, universities, cultural institutions, and other relevant organisations. **Increasing political, legislative and operational transparency throughout the European Union will encourage private investors by improving their understanding of the industrial potential of the sector.**

3.2.2. *Avoiding fragmentation and managing growing complexity*

Digital content activities take place against a background of a proliferation of formats, standards, organisations, etc. Fragmentation needs to be overcome because it raises costs and stifles the emergence of new services. Organisational complexity can also be a problem. In Germany, there are 6 500 museums, 6 000 archives, and 12 500 libraries under the control of 16+1 governments and numerous municipal authorities. Initiatives to give online access to their collections have come about independently. Now, the German national digitisation strategy will be steered by EUBAM, a focal point for sharing experiences and know-how with European

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[56] Europe-wide overviews would consist in an analysis of quantitative data on digitisation input (investments) and output (scope of cultural heritage covered) to be able to better identify the total European effort, make international comparisons, and stimulate further digitisation where most appropriate.

counterparts. In addition, users want to cross-search and view multiple media types and re-use objects independently of their format[57]. However, the wide range of standards across Europe creates a complex landscape for collections, institutions and content developers. There is an urgent need for commonly agreed meta-models to map disparate materials from a wide range of cultural content providers and subject domains. Bridging the differences between the many different de facto, de jure and custom-made standards used by institutions all over Europe on an ad hoc basis is expensive and time-consuming. **Collaboration at EU level on the mapping of standards is the only way to maximise the effectiveness of national and local digitisation efforts.**

3.2.3.   *Creating synergies with a common access to Europe's distributed digital cultural heritage*

A multilingual common access point to a critical mass of digital content at EU level will help in competing for the user's attention on the global marketplace. Coordinating Europe's R&D visions and strategies and thus maximising the impact of investments will also be more effective than a piecemeal approach to protecting EU competitiveness in this domain. Europe's richness is rooted in the diversity of its cultures and languages. But to translate this wealth into the digital world for both current and future generations, it has to be made truly visible. For example, a joint pilot project by the Biblioteca Nazionale Centrale, the Istituto e Museo di Storia della Scienza, both in Florence, and the Max Planck Institute for the History of Science in Berlin has devised an online navigation tool for Galileo's notes on motion and mechanics, predominantly in Italian[58]. This exceptional collection of 200 loose sheets, a chaotic mixture of texts, calculations and drawings, had never previously been translated in full or even been adequately published. Yet the editorial choices made limit what visitors to this website can view. In parallel, Gallica[59] offers a user-friendly search and retrieval service for many items related to Galileo's works and other major 17th century astronomers, which historians tend to prefer. Giving all European citizens multilingual access to items of European culture physically distributed over different regions will **deliver greater social and economic value than that gained by citizens from access to only the cultural treasures of their own country**.

Indeed, **the added value here resides in the European dimension of the digital whole constituted by bringing together scattered physical objects.** The cultural holdings of public institutions and commercial organisations represent the history, diversity and identity of European countries, but this heritage is physically scattered across Europe. For example, the most complete versions of major European films are not necessarily held by their respective national archives: the Czech National Film Archive holds an uncensored copy of a German film that the German Film Institute possesses only with censorship cuts; the best quality masters of a film co-produced by organisations based in several Member States may be obtainable only by collating parts of copies held in different archives. Technological breakthroughs in digitisation

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[57]   Towards remixing any content from any source with any service, Yee R. Berkeley Open Education (2005).

[58]   GalileoThek@ - http://moro.imss.fi.it:9000/struts-aig/primoIngresso.do.

[59]   www.gallica.bnf.fr.

and online access now offer the unprecedented hope of bringing together these interlocking parts of European history and culture. Yet significant investment, political leadership and operational collaboration are still needed to give shape to this vision of easy access to this dispersed heritage. And the only cost-effective way of locating cultural heritage objects scattered across Europe or identifying their various European copyright holders is through coordination at EU level. Favourable conditions need to be provided at EU level for virtually "federating" collections so that artists can gain inspiration from European works, the media and entertainment industry can re-use these works in the European market, and citizens can learn more about their European heritage.

3.3. Operational objectives

To achieve these three strategic objectives – fostering investing, overcoming fragmentation, creating synergies – operational ways must be found. Available operational ways encompasses: creating critical mass of cultural content, creating synergies in European R&D strategies and public investments, improving framework conditions in all Member States for related initiatives. The following table gives an overview of the relationships between operational objectives retained in this policy intervention and its specific and general objectives.
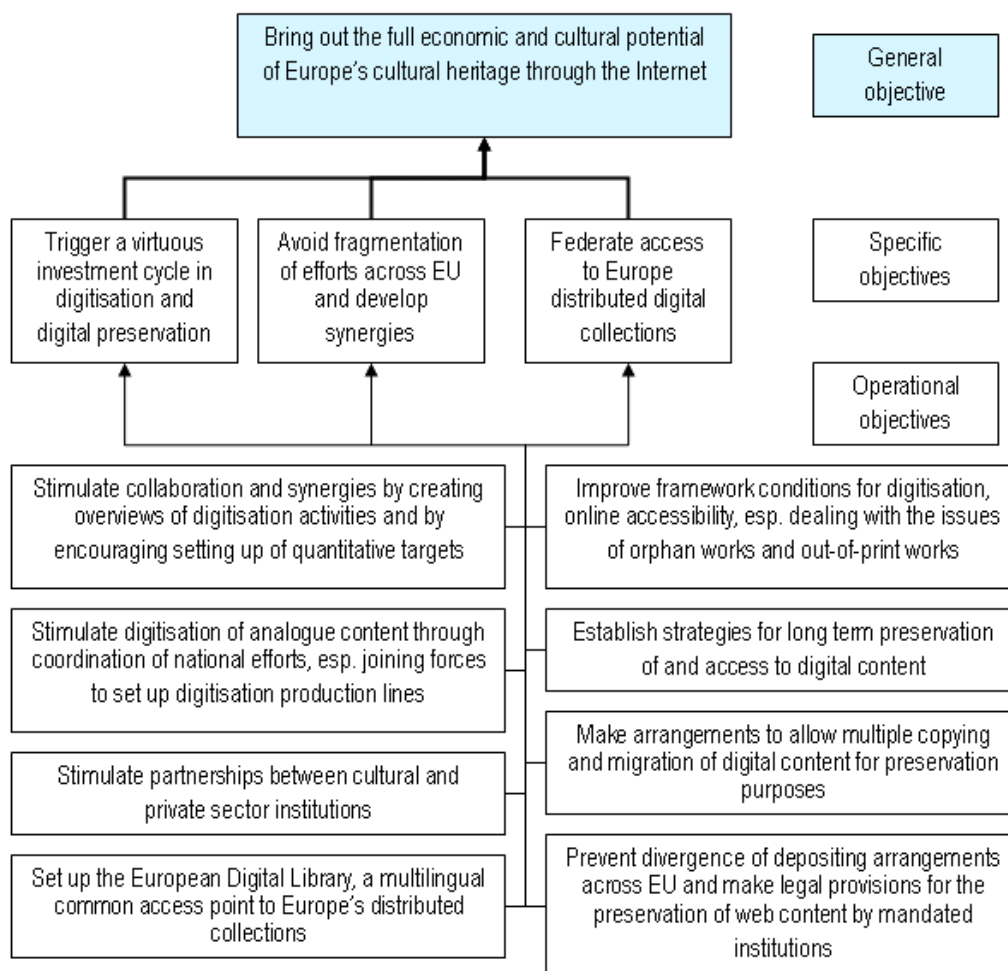
4. POLICY OPTIONS

Now, considering this context, three modes of Community policy intervention are considered to unlock the potential of digital European cultural content. Each would apply the political, regulatory, organisational and financial instruments available at EU level to a different extent and degree:

4.1. Wait and See

This option would aim to:

– Observe current digitisation initiatives by publishers, content industries and Member states cultural institutions, and informally encourage coordination between national initiatives;

– Co-fund research on enhancing online accessibility to digital content in continuity with the past;

– Observe current preservation initiatives and co-fund research on the digital preservation in continuity with the past.

Under this option, no specific incentive would be provided at Community level; coordination between cultural heritage institutions would not be formally supported at Community level; initiatives demonstrating a significant European added-value would continue to be funded under general EC programmes, without being given specific priority; coordination between national initiatives to avoid redundancy and enhance European synergies would rely on the National Representative Group and other networks.

4.2. Flexible coordination

This option would combine operational measures to:

– Accelerate the digitisation of analogue collections by fostering the deployment of cost-effective digitisation chains, creating synergies between actions in the Member States, including by building on the current work of the National Representative Group, fostering the establishment of strong digitisation policies, creating favourable conditions for sound public private partnerships

– Stimulate online accessibility by creating a common multilingual access point to Europe's distributed digital cultural heritage, including dealing with interoperability issues,

– Address the framework conditions for digitisation, online accessibility and digital preservation,

– Stimulate preservation and storage at EU level, by raising awareness and supporting experimentation with innovative frameworks.

Under this option, there would be coordination at EU political level to stimulate joint efforts by Member States towards commonly agreed objectives and to clarify the legislative context of national initiatives; coordination between EU cultural heritage

institutions would be supported by the EU at strategic and organisational level; calls for proposals under regular EU funding instruments would prioritise projects devoted to issues of common European concern in this domain; and there would be a certain degree of coordination to address the framework conditions for digitisation, online accessibility and digital preservation.

4.3. Strong top-down coordination

This option would combine operational measures to:

– Stimulate the digitisation of analogue collections by coordinating the selection of content and setting mandatory targets for digitising this content;

– Stimulate online accessibility by imposing, at European level, the mandatory implementation of one or more open standards by public and private organisations;

– Stimulate preservation and storage at EU level by imposing mandatory digital preservation strategies (e.g. the legal deposit of born-digital material, OAIS standards, etc.).

Under this option, coordination at EU political level would be required to reach harmonised targets, define harmonised strategies and agree on common legislative and organisational instruments; Member State administrations would coordinate the implementation of harmonised initiatives in collaboration with cultural heritage institutions; calls for proposals under regular EU funding instruments would prioritise projects devoted to specific issues of common European concern in this domain; the Commission would monitor progress towards realising the harmonised vision defined by the Member States and assess the impact of standards implementation on the EU economy.

5. ANALYSING THE IMPACTS OF THE DIFFERENT OPTIONS

5.1. What are the likely impacts?

The main social and economic impacts of each policy option are summarised in the following table. Positive and negative effects are denoted by (+) and (-). To take account of uncertainties, combination of symbols (+)/(-) are also used to illustrate the impact depending on the "worst/best case" evolution. The table highlights the trade-offs associated with each option and the extent to which each policy option fulfils the specific outcomes expected from an intervention.

	Raising interest in investing	Overcoming fragmentation	Federating access	Creating new opportunities
Wait and see	**(--)** - lack of public and private seed investments - no economies of scale	**(-)** - ad hoc linkages of organisations and initiatives, with the risk of doing overlapping efforts - national supply of content do not take significant advantage of connections with other cultural areas - know-how remains largely scattered without taking advantage of synergies of competences at EU level	**(-)** - risk of lack of online visibility for European content - partial satisfaction of demand - audience of European content and international adoption of European technologies limited	**(-)** - risk of artistic, technical and business creativity being underutilised - slow experimentation with and adoption of innovative services and products
Flexible coord.	**(+)** - clearly identified national and European strategies are securing investments - public private partnerships can build on firm grounds	**(++)/(-)** - commitment of policy-makers at the right level - strong linkages ensured between creative, educational, and commercial initiatives enabled - strong support for initiatives with major EU added value - constitution of critical mass/scope depends on the commitment of all stakeholders	**(++)/(+)** - heightened awareness of European content drives strong local and global demand - major initiatives by international competitors requiring less co-ordination effort may eclipse an EU network of initiatives - online visibility for European content enhanced only if the complexity of co-ordinating heterogeneous collections is managed	**(+)** - cross media innovation raises capabilities and enables efficient re-use of ideas and content - access to diversified content of high quality is an important plus for the education, tourism and media sectors

Top down coord.	(+)/(-)	(++)/(-)	(++)/(-)	(++)
	- mandatory rapid adoption of a clear organisational, legal and strategic framework creates early opportunities for partnerships between organisations - economies of scale	- strong technological convergence may favour economies of scale/scope - strong political commitment may favour cohesion between local, national and EU level and especially avoid overlap of efforts - EU added-value secured - cultural institutions may not accept the technological and standardisation choices of policy-makers	- harmonised technological and legal conditions across the EU will builds a strong internal market - if standards harmonised at EU level are interoperable with those used worldwide, experience gained in constituting a critical mass at EU level is a definite advantage for EU organisations	- high entry costs for small organisations - economies realised in large-scale standardised production lines will liberate resources for developing innovative spin-off services - access to diversified content of high quality is an important plus for the education, tourism and media sectors

6. COMPARING THE OPTIONS

6.1. Assessment of overall impact

As users are rapidly and massively switching from analogue to digital content when they create, store or disseminate information, the "wait and see" option is suboptimal. **It would not bind efforts at EU level tightly enough,** and there is a high risk that it would fail to pool resources, competences and impulses on the necessary scale and would not clarify the legal and organisational context. Failing to deliver synergies at EU level would leave an untapped cultural, commercial and social potential.

Strong top-down coordination could deliver significant benefits in the best-case scenario, where all stakeholders subscribe to the framework as they regard it as the best model. This option would be driven by a strong political commitment and would channel substantial human and financial resources into the task at hand. Such a wide effort at EU level would, for example, speed up the establishment of cost-effective production lines for digital preservation or the deployment of new services to access semantically heterogeneous collections. This option, by clarifying the legislative and organisational context, would give a boost to all public and private initiatives in the field. Nevertheless, the effort needed to implement it is disproportionate, since flexible coordination would lead to similar results. It presupposes strong top-down intervention at EU level and could therefore be at odds with the principles of subsidiarity and proportionality (e.g. the selection of content is best done by Member States, although synergies can be sought at European level). Furthermore, the adoption of recommended standards and the definition of a "European model" would not be driven primarily by the cultural institutions. Without full ownership of digitisation and digital preservation solutions by European cultural heritage organisations, the sustainability of such activities would not be secured, a risk expressly mentioned in the course of the consultation. Finally, this excessively *dirigiste* option is at odds with the current pluralism of public and private initiatives, whereas the diversity of ways of tackling the complex challenges of digitisation and digital preservation is one of Europe's strengths. **The strong top-down coordination option cannot therefore be retained.**

The flexible coordination option will provide an enabling context for initiatives by public and private partners and efficiently balance the needs of the producers and users of content, while minimising regulatory intervention. Clarifying the context is a necessary prerequisite for any stakeholder investment in the field. This option also provides room for stakeholders to experiment with innovative technologies and new business models, and creates opportunities for a fruitful exchange of experiences and competences across Europe. This cross-fertilisation of knowledge and know-how, highly beneficial for European organisations in a thriving global market, can be fostered only by intervention at Community level. Finally, this option would give an impetus of the right intensity to common efforts by Member States to provide sustainable access to digital content. **Flexible coordination is thus the best option in the current context.** The present Commission Recommendation on the digitisation and online accessibility of cultural material and digital preservation best fits this scenario.

6.2. Added-value of the combined and individual measures

The positive impacts of the Flexible Coordination scenario will only materialise if action is taken on all three fronts: digitisation, online accessibility and digital preservation and by combining efforts at community level on the political, strategic and financial side. The measures set out in the Recommendation should be considered in this context: each of the measures contributes to the overall impact identified in the previous section, while taking one element out of the package could have a negative impact on the effectiveness of the Recommendation and the flexible coordination policy as a whole.

– **Impacts of proposed key measures to support efficient Digitisation**

At present, there is no **Europe-wide overview of planned and ongoing digitisation activities or digitisation needs**, which leads to the risk that the same work may be digitised several times over and **makes it more difficult to have a coordinated approach and realise any EU added-value**. Since 2001, the Member States and the Commission have loosely monitored digitisation activity through qualitative country reports and assessments of specific projects. The efforts to be undertaken by the Member States to map the characteristics, volume and growth of what has been digitised at national level will be complemented by a study financed by the European Commission This study will measure the input and output of the digitisation efforts in the EU. Quantifying input and output of ongoing digitisation efforts will in turn give tools for the private investors to precisely identify the market trends and secure their investments. At low cost for the Member States, overviews can drive new investment and bring down the overall cost of digitisation.

Public-private partnerships and private sponsoring are necessary to pool efficiently technical and managerial expertise and large-scale resources. The "Biblioteca virtual Miguel de Cervantes" is an example of a successful public-private partnership in Spain. The Santander Central Hispano bank is sponsoring almost 70% of the project costs (€1 million a year), while Alicante University is providing expertise and know-how and has concluded a collaboration agreement with more than 150 public and private organisations at local, regional and global level. The global popularity of this digital library of public-domain Hispanic classics is huge, with 2.5 million users every month viewing an average 4 pages per visit. The sponsoring of such projects is encouraged under Spanish legislation by tax rebates for organisations embarking on digitisation to safeguard national cultural assets. In the UK, Microsoft has engaged in a large-scale digitisation partnership with the British Library and the Open Content Alliance, based on the finding that over 50% of online queries to search engines go unanswered. The aim of the partnership is to digitise 100 000 out-of-copyright books.[60] Initiatives involving the private sector are necessary to deliver Europe's digitisation goals. The EC policies and programme will support exchanges of best practices on crafting public-private partnership agreements.

Large-scale cost-effective production lines will significantly increase the cost-effectiveness of digitisation projects. The pilot experiences of some Member States have proven that this approach brings considerable benefits. For example, the Nordic

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[60] British Library press release (2005) and MSN press release (2005).

Project Tiden on historical newspapers coordinated by Finland from 1998 to 2001, in which the national libraries of Sweden and Norway and the Århus library in Denmark participated, developed an innovative production line for the digitisation of micro-film with full-text searching. The system was tested on texts using Gothic fonts and featuring a lot of typographical errors. In 2001, the Nordic digital newspaper libraries were opened to the public with 400 000 pages. Now 1.6 million pages are accessible — in 2004, 150 000 visitors viewed almost 2 million pages. In 2007, 165 press titles will be available online. Great effort has been put into developing a robust production line and now this digitisation service based in Mikkeli is strong enough to handle over 1 million pages. This expertise has also led to a partnership with Sanoma Oy, one of the main newspaper publishers in the world: in only one and a half years, 1.2 million pages from the period 1890-2000 were digitised and processed for access. Another example is that of the National Library of the Czech Republic. With the Czech Ministry of Culture funding up to 70% of total digitisation costs, the National Library acts as a centre of expertise and has developed a cutting-edge digitisation production line after 10 years of continuous research. The economies of scale achieved have led to further investments and the Czech Republic now has the largest digitised corpus in the new Member States[61].

– **Impacts of proposed key measures to enhance Online accessibility**

The **vision of a European Digital library as a common multilingual access point to Europe's distributed digital cultural heritage** is a key building block in the proposed strategy. The European Commission envisions that by 2008, the user will be able to search in a minimum of 2 million digital works (books, pictures, sound files, etc.) originating from the various collections of different cultural institutions (libraries, archives, museums), through one common multilingual access point in the form of a web portal. By 2010, the European Digital Library will have expanded to a minimum of 6 million digital works by federating access to digital collections of a number of archives, museums, other libraries and possibly publishers[62]. This collaboration will obviate the need to find and visit multiple sites. The contents of the European digital library will grow at the same speed as the underlying digital collections in the participating institutions. The replies to the online consultation indicate that the European Library (TEL)[63], which started from the TEL project and was co-financed under the EU's 5th framework research programme, would be a very good starting point for the European digital library. At present, the TEL portal provides a gateway to the catalogues of the collections of European libraries and to digitised resources of the participating libraries. Indeed, TEL is recognised at global level for the quality of its innovative design. The US Cornell University Library[64] evaluated various systems providing federated access to multiple digital collections in 2004 in order to define the specifications of its own framework to allow integrated access to highly dispersed resources. The approach adopted in the TEL project and prototype proved to be a great source of inspiration for its specifications[65]. The TEL approach is novel in that it combines a distributed search model with the Open

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61   TEL-ME-MORE report.
62   MEMO/06/102 The European Digital Library : Frequently Asked Questions
63   www.theeuropeanlibrary.org already federates access to more than 150 collections.
64   With more than seven million volumes, Cornell University Library is among the ten largest academic research libraries in North America.
65   An integrated framework for discovering digital library collections, Calhoun K. (2005).

Archive Initiative (OAI) model for federating access, enables existing digital collections to be accessible within the framework without the need for significant transformation, and eliminates the need for a central portal based on a single platform. This highly modular architecture also encourages collection builders to provide interoperable sets of structured metadata following OAI standards, while allowing other valuable resources to be incorporated as well, making it a scalable framework open to future innovative solutions for describing content.

The European Digital Library scheme offers unique solutions for the interoperability of heterogeneous sources at a relatively low cost. TEL already provides an organisational framework in which a number of European libraries collaborate and experiment on ways of improving the online accessibility of their digital assets. The more European public and private organisations join this framework, the better. The success of this common access point, its cost-effectiveness and the ability to attract private investment will depend on large-scale participation by cultural institutions from all Member States. Therefore, Member States should encourage their cultural institutions to bring their content into the European digital library, and to adopt digitisation standards to ensure interoperability at European level. Building on TEL as an organisational framework is fully in line with the wish expressed by several ministers in the Culture Council of 14 November 2005 to build the European digital library on existing initiatives and not to start from scratch, which would lead to much higher costs.

Favourable framework conditions

The replies to the online consultation accompanying the 'i2010: Digital Libraries' Communication[66] indicated that the **issue of orphan works is a real problem** that may be exacerbated by the convergence of digital media. This was confirmed by a recent major consultation held by the US copyright office.[67] Orphan works are copyright-protected works whose owners are difficult or even impossible to locate.[68] These works are not generally available for use and yield no economic benefit for the author, so are unproductive in both economic and social terms. The number of orphan works held by cultural institutions is considerable. The British Library[69] estimates that 50% of their works more than 50 years old fall into this category, while the CENL, the Conference of European National Librarians, indicates[70] that 19% of works published between 1900 and 1940 probably fall into this category[71].

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[66] http://europa.eu.int/information_society/activities/digital_libraries/doc/communication/results_of_online_consultation_en.pdf

[67] http://www.copyright.gov/orphan/index.html

[68] Definition also used in the consultation on orphan works by the US copyright office.

[69] http://europa.eu.int/information_society/activities/digital_libraries/consultation/replies/consult_results/britis%20_library_st_pancras_a302387.pdf.

[70] http://europa.eu.int/information_society/activities/digital_libraries/consultation/replies/consult_results/cenl_a302271.pdf, citing research by the US Carnegie Mellon University.

[71] Even within specific collections, orphan works are non-negligible and require extensive work to be isolated for other works. Finnish institute of Recorded Sound scrutinized a series of 78 rpm records issued by a single record company between 1908 and 1923. The recordings contain about 2000 musical works of different genres, mostly repertoire which is no longer current. The copyrights of 10% of the series were clearly traceable and 40% are clearly in the public domain. But for half of the series, it was either impossible to identify the author, or, if the name of the author was given on the record label, to determine his nationality and year of death.

The cost and effort of attempts to clear the rights for orphan works can be considerable. In many cases, the efforts are in vain. Procedures to deal with orphan works can thus lower transaction costs and will benefit the right owners where they can be found.

Out-of-print and works that are out of distribution (audiovisual) constitute a substantial part of the holdings of cultural institutions. Many of these works are still covered by intellectual property rights. Although they do not yield any immediate benefit to the rightholders, they may become popular once more and can then generate revenues for the rightholders. This is particularly true for audiovisual material, but can also be the case for books. At present, rights clearing for works that are out of print works or out of distribution in view of digitisation and subsequent online accessibility can entail considerable transaction costs.[72] These costs may by far outweigh the economic benefits for rightholders. Due to the number of transactions required, the total value for money of digitisation projects can be considerably reduced. In particular, the per-unit payment for a "format-shifting" licence to use copyrighted works tends to decrease as the number of works or acts included in the same transaction increase. Procedures to facilitate rights clearing, such as voluntary collective licensing for works that are out of print or out of distribution can help to bring these costs down, while fully respecting the legitimate interests of rightholders.

The comments in the online consultation suggest that the cost-efficiency of digitisation projects could be further improved by the availability of **lists of known orphan works and of public domain** works. Such lists would avoid duplication of effort by public institutions and private organisations in identifying the rightholders or the rights status of works.

Provisions in **national legislation** sometimes contain **barriers to the re-use of works that are in the public domain** for new creative efforts and for added-value services**.** Examples are the need for an administrative act for each reproduction of a (public domain) work held by cultural institutions, restrictions on the use of the material, or a requirement to deposit a sample of the resulting product with the cultural institution. Such barriers should be re-assessed in the context of the online environment in order to allow for the wider use of cultural content in the public domain for economic and cultural purposes. Maintaining these barriers can lead to administrative costs for re-users without any tangible benefits to the cultural institutions (or may even impose costs on cultural institutions, e.g. the cost of monitoring compliance).

– **Impacts of proposed key measures to foster the preservation of digital material**

National digital preservation strategies are needed. There is only **minimal perception of the importance of digital preservation,** and no systematic and organised effort to guarantee that digital material remains accessible and usable in the longer term. In fact, not linking digitisation and preservation policies can mean

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[72] The 'Institut national de l'Audiovisuel' in France employs for example a team of 30 full-time legal experts for rights identification and clearance.

having to make new investments earlier than expected. In 1986, the 'BBC Domesday' project was launched to celebrate the 900th anniversary of the original 1086 Domesday Book with the idea of capturing a massive range of information on the social, environmental, cultural and economic make-up of the UK. Contributions from researchers and thousands of schoolchildren from across the country were recorded on two 12″ videodiscs that could be viewed using a special BBC Microcomputer. The project was a landmark in terms of both its scale and its technological achievements, costing around £2.5 million. In a terrible irony, the problems of hardware and software dependence have now rendered the system obsolete. **Consequently, strong digital preservation plans with substantial resources, clear responsibilities and operational guidelines are needed** to keep digital information alive for future generations. In 2000, the US Library of Congress was asked to develop a national programme for digital preservation. Congress set aside €81.8 million for this effort, calling on the Library to spend an initial €20.5 million to develop and execute a strategic plan for a National Digital Information Infrastructure and Preservation Programme. Congress specified that €4.1 million of this amount could be spent on the acquisition and preservation of digital information that may otherwise vanish. Some Member States have also adopted a proactive approach placing them at the forefront of this global challenge. In 2002, for example, the UK's digital preservation policy[73] set out a statement of goals, a set of principles and a strategic approach to the preservation of digital information. Furthermore, the British Library, together with the Joint Information Systems Committee (JISC) and the Digital Preservation Coalition (DPC), has created a "Preservation Management of Digital Materials Handbook"[74], charting the 'required actions' and 'implementation strategies' for any organisation needing to embark on digital preservation. The UK National Archives have also set up PRONOM[75], an online source for information about file formats and software products, providing impartial and definitive technical information about the file formats used to store electronic records and the software products required to create, render, or migrate these formats. The UK's national efforts to produce and disseminate information on current research and practice is significantly helping to build expertise, accelerate learning and generally widen the pool of professionals skilled in digital preservation at EU level, through several Community-funded projects such as ERPANET or DPE. Clear government strategies in this area will lead to private investment in preservation technologies, and to the preservation of digital content that may otherwise be irretrievably lost. An exchange of information on strategies and activities will avoid duplication of effort and lead to synergies between efforts in the Member States.

Clear and favourable framework conditions for digital preservation also have a role to play. In some Member States, copying for preservation purposes is limited to one copy, making it impossible to have, for example, both a microfilm and a digital copy of a specific work. Multiple copying and migration is a key feature in the preservation of digital information. Allowing **multiple copying for digital preservation** purposes would enable different preservation pathways to be explored and ultimately better safeguard endangered material. This would be achieved without any harm to rightholders.

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[73]   http://www.bl.uk/about/collectioncare/bldppolicy1102.pdf.
[74]   http://www.dpconline.org/graphics/handbook/index.html.
[75]   http://www.records.pro.gov.uk/pronom.

In reaction to the rapid disappearance of web content, several private and public initiatives have decided to tackle the preservation of today's web for future generations. Web sites are key candidates for digital preservation, yet many basic questions remain open as to how to proceed. Some are technical, e.g. related to the size and nature of the web itself, while others concern legal or organisational issues. At present, for example, the legal environment in several countries is unappreciative of — or even inhospitable to — the potential role of web archives. Rights clearing for **web-harvesting projects** can also involve a high administrative burden. In its response to the Commission online consultation, the British Library[76] indicated that rights clearance for a web-harvesting project to capture and provide a searchable archive of selected websites took up between 25-33% of the resources allocated to the project and site owners were often very slow to respond, since the only option under current national copyright law was to seek individual permission for archiving and public access. Nonetheless, following the early examples of the Swedish national libraries, pilot web archiving initiatives have now been launched in Austria, Denmark, Finland, France, Germany and the United Kingdom[77]. These initiatives show that investments made in the past in the production of web content can be protected if concerted action is taken. In particular, the Swedish Royal Library's Kulturalw[3] Heritage project[78] started capturing all Swedish websites in 1996. Since then, in partnership with other Nordic National Libraries, this pioneer library has developed cutting-edge software, "the NWA toolset", for searching and navigating archived web document collections[79].

The current legislation for the **legal deposit of born-digital material** across Europe is not yet well established and multiple approaches are being pursued in various Member States (see Annex). The procedure followed over the last 5-10 years has mainly been based on a trial-and-error approach to test the technicalities of the issue. Better coordination in this area would encourage all Member States to cooperate on cross-country matters while avoiding duplication of effort and materials collected. It would also avoid a wide variety of different approaches resulting in companies operating at international level having to comply with diverging rules in different Member States.

6.3. Managing risks and uncertainties

The positive impacts of the "Flexible coordination" policy option may not be realised or may be limited by the risks and uncertainties listed below. Preventive measures are proposed to neutralise their effects.

(a) **Commitments to contribute to the European digital library can be withdrawn**.

A strong and continued commitment of the Member States and their cultural institutions is necessary to put in place the European digital library. If this commitment is not maintained, the project can be at risk. This risk can be tackled by

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[76]http://europa.eu.int/information_society/activities/digital_libraries/consultation/replies/consult_results/britis%20_library_st_pancras_a302387.pdf

[77]   Preserving the fabric of our lives: a survey of Web preservation initiatives, Day M. UKOLN (2005).

[78]   http://www.kb.se/kw3/ENG/Description.htm.

[79]   Nordic Web Archive, Hallgrímsson1 et al. (2005).

parallel actions at political, operational and technical level (through the co-funding of relevant projects). The cultural institutions concerned will be at the heart of the development of the European digital library and will retain responsibility for issues such as the choice of relevant standards. At Community level, financial and operational resources will be mobilised to encourage all Member States to deliver the recommended measures.

(b) **The complexity of coordinating** technological solutions, organisational settings and strategies **will be mastered at a slower pace and at a higher cost than what was expected**.

The complexity of coordinating between different types of institutions and different types of technological solutions could prove to be more difficult than expected, which could delay the implementation of the European digital library. The Commission will closely monitor the process and support it through its funding programmes (e.g. co-financing of competence centres).

(c) **The statistical basis** for monitoring and evaluating status and progress **across the EU is fragmented** and not comprehensive for the moment.

At present, it is hard to measure progress at European level, since the statistical basis for monitoring and evaluating digitisation policies and digital preservation actions is fragmented. Two studies on digitisation and the preservation of digital material, financed by the Commission, are scheduled in 2006. These studies will define a relevant statistical baseline and indicators for use by Eurostat.

6.4. **Flexible coordination with a Recommendation of the European Commission as the best option**

Overall, the "flexible coordination" policy, including a Commission Recommendation represents the best route for action in this field, ensuring the right intensity of intervention at Community level:

– The aim of **"flexible coordination"** is **the convergence of objectives**, performances and, to some extent, policy approaches (especially to increase the homogeneity of national policy regimes), but **not of means** (e.g. institutions). The instruments chosen to deliver this policy mix will entail a minimal regulatory burden and respect subsidiarity in all cases.

– The Recommendation will not pre-determine the portfolio of national actions to deliver the desired objective at EU level, but will **give room for Member States to experiment with innovative solutions** to emerging challenges and provide for the exchange of best practices between Member States. Moreover, strands of other **Community actions**, such as support for the development of European networks of competence in digitisation and digital preservation or the creation of fora where cultural institutions collaborate to federate access to their distributed collections, will **leverage such national innovations**.

– Under the flexible coordination option, the EU will emphasise its support for **best-practice exchanges and concerted development of competences**, both in

the text of the Recommendation and in the operational support by the Commission for coordination among stakeholders. This approach will be extremely valuable as it addresses a policy area **where sharing knowledge will enhance the value of individual national investments.**

– The Recommendation creates a basis for **high-level agreement on common problem definitions**. Other coordination actions under the flexible coordination option, such as Community support for technical, economic and organisational innovation in digital preservation and the fostering of strategic discussions on delivering the European digital library will **create synergies between national endeavours tackling long-term challenges specified in the Recommendation.**

7.   MONITORING AND EVALUATION

The Commission Recommendation includes a recommendation for Member States to report to the Commission 18 months from its adoption and every two years thereafter on action taken in response to the Recommendation. The first 18 months period allows the legislative and organisational landscape to evolve according to the measures put forward.

As already mentioned two studies on digitisation and preservation of digital material, financed by the EC, are scheduled to be launched in 2006. Such studies will define an assessment methodology and a relevant statistical baseline against which progress can be meaningfully measured. The following reporting exercises will make it possible to capture structural evolutions triggered by this intervention at EU and national level (for example, impact of the coordination in the implementation of national preservation policies).

8. ANNEX - OVERVIEW OF DIGITAL LEGAL DEPOSIT REGULATION AND IMPLEMENTATION IN THE MEMBER STATES

		Regulation		Implementation		
Country	**Legal Deposit Regulation**	**Mandatory Deposit of Offline Digital Material**	**Mandatory Deposit of Online Materials**	**Voluntary Deposit of Online Materials**	**Web Harvesting**	**Plans**
Austria	Novelle zum Mediengesetz, September 2000, BGBl. I 75/2000	Yes	No	Yes	Yes - AOLA project	The law is being amended to include online digital media
Belgium	1965	No	No	Since January 2005	No	Amendment to the legal deposit law is under way to include online and offline electronic media
Cyprus	N/A	N/A	N/A	N/A	N/A	N/A
Czech Republic	Non-periodical Publications Act 37/1995 Sb and Publishing Act 46/2000 Sb for periodicals	Explicitly mentions only audio CDs	No	Yes	Yes- WebArchiv	No
Denmark	Act on Legal Deposit of Published Material, No 1439, 22 December 2004, came into force 1 July 2005	Yes	Yes		Yes- Netarchive. Web archiving is covered	
Estonia	Legal Deposit Copy Act (RT I 1997, 16, 259)	Yes	No	No	Yes- ERIK@	Amendment to the current Legal Deposit Act is expected in 2006 to cover the systematic collection of electronic online documents by the NL but will not make deposit mandatory

Finland	Legal Deposit Act (420/1980) and Ordinance (774/1980)	No	No	Yes	Yes-EVA, also IIPC and NWA	Amendment to the legal deposit law is planned for 2007 while parallel discussions about changes to copyright law are ongoing. Dual approach to voluntary deposit, combining push of material from publishers and automatic web harvesting. The new legal deposit law will cover both online and offline media.
France	Loi du 20 Juin 1992 relatif au Dépôt Légal. Came into force 1 January 1994	Yes	No	Cooperation with limited number of publishers	Yes- NEDLIB, IIPC	Draft law concerning copyright and related rights (transposition of the EU Directive) is currently being discussed (January 2006) in Parliament and will legitimise automatic harvesting of the French web
Germany	The German Library Act (1969) was amended following unification.	Yes	Only for dissertations and theses since 1998	Yes	Yes	Revision of the Legal Deposit Law is under way to include online publications
Greece	Law 3149/03 concerning the National Library and the Public Libraries	Yes	Yes	No	Yes - not as a national initiative	No plans for amendment for the moment
Hungary	Government Decree No 60/1998	Yes	No	Yes	Selective	No plans for the moment for extension of the law
Ireland	Copyright and Related Rights Act (2000)	Yes, but not in force yet	Yes, but not in force yet	No data	No data	No plans for amendment for the moment

Italy	"Legal Deposit of Documents of Cultural Interest which are destined for Public Use", 15 April 2004	Yes	Yes, through web harvesting	Tested but not now implemented. Agreements with scientific libraries and universities for the deposit of their digital scientific output	This method has been favoured	
Latvia	Law on the Supply of Legal Deposit Copies of Printed and Other Publications, 16 October 1997	Yes	No	No	This method has been favoured	Amendment to the current law is under way. The new law will be generic, enabling web harvesting. Deposit will not be mandatory for publishers. Further acts will be issued on more specific issues and much of the responsibility to decide rests with the NLL (e.g. frequency of web harvesting and criteria)
Lithuania	Resolution No 1389, 22 November 1996 "Regarding the Order for the distribution of legal deposit copies of publications and other documents to Libraries".	Yes	No	Yes	Yes	Plans to amend the current law but no date set
Luxembourg	The Règlement grand-ducal of 10.8.1992 serves as the current legal deposit law. The law of 25 June 2004 regarding the status of cultural institutions provides the basis for further amendment to the legal deposit law.	Is generic, but doesn't refer explicitly to electronic media	No	No	No data	The government is preparing a "Règlement grand-ducal" to define and implement the collection of electronic publications
Malta	Legal Deposit Act (1925)	No	No	No	No	There are no explicit plans to change the law

Poland	Parliament Bill of 7 November 1996, in force since 6 March 1997	No data	No data	No data	No data	No data
Portugal	The Laws of 74/82 and 362/86 regulate legal deposit	No	No	Yes	Selective harvesting - RECOLHA	The final draft for a new proposal has been presented to the Ministry of Culture but there is no information about when it is going to be adopted. It will cover the deposit of offline publications and selective harvesting of online materials
Slovakia	Legal Deposit Act in force since 1 January 2004	Yes	No	No	No	No data
Slovenia	Legal Deposit Act of 1972	No	No data	There have been attempts to cooperate with publishers to gain their permission for the collection of electronic resources	Yes	There is a draft proposal for the extension of legal deposit to electronic media, but there is no indication as to when it is going to be adopted
Spain	Law on legal deposit: 1971 (BOE n. 276, de 18.11.71) and of February 1973 (BOE n. 54 de 3.3.73). The different autonomous communities have their own laws.	Not in Spanish law but in some autonomous communities	No	No	No data	New law on legal deposit is pending
Sweden	Legal Deposit Act of 1993, brought into effect in 1994 and amended in 1995	Yes	No	No	Yes- Kulturaw3, authorised by special decree of the Swedish Government, issued in May 2002	The government has been discussing the amendment of the law since 2003

The Netherlands	No	No	No	Yes	No	No plans for amendment
UK	Legal Deposit Libraries Act 2003, in force since 2004	Yes	Not yet implemented	Yes	Yes, both comprehensive and selective	Secondary law will introduce further specifications for the implementation of the Libraries Act