

# Germany

Axel Ermert  
Monika Hagedorn-Saupe  
Frank von Hagel  
Institut für Museumsforschung

Hans Jörg Lieder  
Staatsbibliothek zu Berlin

Gerald Maier  
Landesarchiv Baden-Württemberg

Angelika Menne-Haritz  
Bundesarchiv

In this short report, an exemplary approach has been taken to show ongoing activities in digitisation of Cultural Heritage in Germany. Several, still ongoing projects could not be named here as this would exceed the capacity of this report. So, please refer also to the reports we did in the last years.

The European Commission's advocating of the creation of a European Digital Library (EUDL) was unanimously welcomed in Germany. It was understood that efforts need to be undertaken to provide the national input of the EUDL in a comprehensive way. The EUBAM group <<http://www.eubam.de>> has instigated discussions between political stake holders, the German Research Council (DFG) and experts from all cultural heritage sectors.

Presently the political working group "Digitisation of cultural heritage materials", comprising representatives from local authorities, the "Länder" and the federal government is working on a joint position statement describing the key points of a national German digitisation strategy. Within this group the financial, legal and organisational framework for the German part of the EUDL will be outlined. This process is accompanied by the professional advice of the EUBAM group and major cultural heritage organisations.

## A. Users and content

### **What are the main materials/categories of objects being digitised?**

#### ***In museums***

In a variety of projects digital representations of museum objects are created and made available. Efforts are undertaken to provide accompanying high-quality descriptive data about the objects and their contexts. The fact that more and more museums use IT-based documentation systems fosters the availability

of such data. Specific object types that were or are being digitised include beside typical 3-D museum objects, large-sized architectural plans, historic photographs, glass plate negatives and audio-visual materials.

#### ***In libraries***

The availability of bibliographic records via library OPACs is the rule. More and more special collections – e.g. Western and Oriental manuscripts, historical government publications, publisher archives, single-sheet materials, historical maps – are being digitised and made accessible via the Internet. A variety of catalogue enrichment projects integrate additional information like full-text resources, digital images, etc. The German Research Council (DFG) plans to use the national bibliographies VD 16 and VD 17 (Register of prints of the 16<sup>th</sup>/17<sup>th</sup> century published in German speaking areas) as starting points for a mass digitisation programme in libraries. The feasibility of a similar project covering the 18<sup>th</sup> century is currently investigated.

#### ***In archives***

The online access to finding aids and archival collections in Germany in general has improved significantly in the last years. The Bundesarchiv, most state archives and some municipal archives already offer all of their holdings information online. To a lesser extent archives are presenting digitized finding aids which at the same time allow online access to the description of archival items. Many archives are presenting digitized archival material as well, mostly photographs, posters, maps and architectural plans, but also charters, records, websites and digital records.

### **How is the digitised CH content being distributed?**

Digitised CH resources as well as scientific information are made available via a variety of means. Some major examples are presented in the following.

### *TEL Network – MICHAELPlus*

<<http://www.theeuropeanlibrary.org/portal/index.html>>

<<http://www.michael-culture.org>>

On the international level the German National European Library is partner of the TEL network and seven large cultural heritage institutions became partner in the MichaelPlus project.

### *BAM-Portal*

<<http://www.bam-portal.de>>

On the national level the BAM-Portal is one of the access points for digitised CH and scientific materials from all kinds of institutions. As a huge data providing service – around 40 million data records are currently available for searching – the BAM-Portal supports and advocates the use of metadata standards and authority files among its many partner organisations.

### *DigiCult Museums Schleswig-Holstein*

<<http://www.digicult-sh.de/>>

On the regional level DigiCult Museums Schleswig-Holstein is an example for a domain-specific portal. This initiative makes museum collections accessible and also concerns itself together with other partners of the German community with the development of data exchange formats.

### *DigiCult Museums Schleswig-Holstein*

<<http://www.landesarchiv-bw.de>>

Another domain-specific, also regional, portal is provided by the DigiCult Museums Schleswig-Holstein, offering online access to 3,000 finding aids with 1.2 million titles and to digitised archival material (approx. 55,000 images of photographs, political posters, maps, charters, architectural plans and websites).

Further to these, a number of material-specific access points are available.

### *Rheinisches Industriemuseum und Medienzentrum Rheinland*

<<http://www.rim-lvr.de/wir/industriefotografie.htm>>

The Rheinisches Industriemuseum und Medienzentrum Rheinland owns a collection of more than 15,000 glass plate negatives. During the digitisation of the entire

collection valuable insights regarding aspects of preservation, cataloguing, and the technical execution were gained that are relevant for comparable digitisation projects.

### *Architectural Museum of the Technical University Berlin*

<<http://www.ub.tu-berlin.de/architekturmuseum/index.html>>

The Architectural Museum of the Technical University Berlin owns one of the oldest collections of architectural drawings worldwide. Due to its special character – mostly large formats on fragile paper – the collection is difficult to handle and prone to damage. About 80,000 objects will be digitised within two years (2006–2008) with two large-format-scanners able to scan objects up to 122 x 180 cm with a resolution of 300 dpi.

### *Portal to archival material produced by the Socialist Unity Party of Germany (SED)*

<<http://www.bundesarchiv.de/sed-fdgb-netzwerk/>>

The new Portal to archival material produced by the Socialist Unity Party of Germany (SED), run by the Bundesarchiv, combines the descriptions of relevant holdings of 13 archives.

### *Aufbau-Archiv Digital*

The Aufbau-Archiv Digital is a collection of about 1.2 million digital images covering the entire history of the East German publishing house Aufbau from its beginnings in 1945 until 1990. Kept by the State Library Berlin, this collection of major national and European significance, though for legal reasons only available within the library, is a first-rate resource for historical and literary research.

### *Retrospective digitisation of historic press cuttings on paper, microfilm and microfiche*

<<http://webopac0.hwwa.de/digiview>>

Within the framework of the DFG-financed project Retrospective digitisation of historic press cuttings “on paper, microfilm and microfiche” the historic press materials in the archives of the Zentralbibliothek für Wirtschaftswissenschaften (ZBW) and the Hamburgisches Welt-Wirtschafts-Archiv (HWWA) from the period of 1826 to 1949 were digitised. Included are a large variety of materials of global coverage. About 5.7 million documents will be provided at the completion of the project.

*ethnoArc - Linked European Archives for Ethnomusicological Research* <<http://www.ethnoarc.org>>

It is a European research project in the 6<sup>th</sup> Framework Programme incorporating a number of German organisations, and will establish a common access point for distributed field collections from different sources. The system will conduct multi-archive searches over differently structured archives. At the same time a set of low-cost tools for small and medium size music archives will be developed.

In the area of monument protection the Berlin State Office for the Protection of Historical Monuments has created a publicly accessible database about the city's architectural, archaeological and garden monuments. The database contains information on all official monuments, in total approximately 12,000 datasets. The original data is increasingly being augmented with additional texts and photographs.  
<<http://www.stadtentwicklung.berlin.de>>

#### **Are there any eLearning or creative industry uses for the digitised CH material?**

Most of the digitised cultural heritage materials are freely available for all sorts of use, with educational needs clearly being one of the most prominent ways of usage. A number of projects and initiatives have entered into targeted cooperations with a view to providing specific eLearning environments and tools.

##### *DISMARC*

<<http://www.dismarc.org>>  
The DISMARC portal is funded by the European Commission and compatible with the EU's i2010 Digital Libraries Initiative. It develops a common metadata format for all sorts of resources kept in European music archives. It puts particular emphasis on the investigation of new models of usage: partners from the educational sector are incorporated and the work schedule includes the integration of the DISMARC portal into already existing educational software.

##### *Prometheus*

<<http://www.prometheus-bildarchiv.de>>  
It is a distributed digital picture archive for research and teaching which provides access to its members not

only to around 250,000 images from numerous image databases focussing on art history and archaeology, but also to a great variety of distributed learning resources, ranging from text and images to 3-D animation and interactive elements.

##### *"Jugendopposition in der DDR"*

<<http://www.jugendopposition.de>>  
It is an eLearning web resource with digitised archival material regarding the life of young people opposed to the GDR government. It was developed by the Robert-Havemann-Archiv in cooperation with the Bundeszentrale für Politische Bildung and offers a wide range of archival material: archival records, other paper documents, audio and video material etc.

#### **Are there any special issues that deal with the general accessibility of the digitised cultural content?**

Legal constraints are the most common reasons for access restrictions to CH and scientific information since copyrighted materials and materials associated with intellectual property or personal rights may not be made freely available through the Internet. Commercial interests of publishers of scientific digital journals often restrict free access, too. The DFG has spent 18.3 million Euros in 2006 for national licences for digital publications, be these bibliographic or full-text databases, digital journals or eBooks. These licensed digital resources are accessible for all members of German universities and publicly funded research organisations, either on-site or via controlled remote access.

A further difficulty is posed by orphan works, i.e. works that are legally protected but the holders of these rights cannot easily be identified. Efforts are undertaken to create provisions for the reasonable use of orphan works in German legislation.

## **B. Technologies for digitisation**

#### **What common standards are most commonly used in digitisation?**

The use of international standards has become increasingly important and common in Germany during the last years. The participation of numerous German

CH organisations in international projects has been helpful in advocating international standards. The standards and best practice recommendations which have been developed within the MINERVA network were published in German and were well received in the professional communities. The DFG has recently published a comprehensive manual comprising detailed rules and regulations applicable to digitisation projects that receive DFG funding ([http://www.dfg.de/forschungsfoerderung/formulare/download/12\\_151.pdf](http://www.dfg.de/forschungsfoerderung/formulare/download/12_151.pdf)). The use of open standards and non-proprietary software is an important point of these recommendations which support archives, libraries and museums in their digitisation efforts. Next to standards for actual digital images, a variety of international metadata standards are in use. In archives the most important of these are ISAD(G) (International Standard for Archival Description (General)), EAD (Encoded Archival Description), EAC (Encoded Archival Context) and METS (Metadata Encoding & Transmission Standard). The Bundesarchiv has not only explored these standards in international projects, but also supports their use in German archives. In libraries the most important change of standards concerns the migration of German libraries from the German data exchange format MAB to MARC 21. Based on a decision from 2004, major progress was made in 2006. The use of MARC 21 will further enhance possibilities of international data sharing. So far in the museums sector there is not a single one widely used standard in application. Overall about 25 different museum documentation systems are in use beside a wide range of in-house developments. Only recently German museums started to co-operate also in data-sharing networks and thus have to agree about more common standards. "Museumdat" is a harvesting format based on CDWALite, developed by Getty, which has been generalized by a German Working Group to be in concordance with the CIDOC-CRM (ISO 21127). In this more generalized version it is capable of being used also to harvest data from natural history and science museums. A growing number of networks and portals will implement this format. Several Museum Software suppliers are prepared to implement it, thus enabling easy data delivering to portals.

The Institute for Museum Research in Berlin (IfM), the Konrad-Zuse-Institute, DigiCult-SH and the Special Interest Group "Museum Documentation" at the Deutscher Museumsbund (German Museum Association) are responsible for this development. For the description of museum objects several authority files are available but so far not widely in use. Well-known examples are the thesauri of the Getty Foundation (TGN, AAT, ULAN) and the authority files for subject headings, names of persons and of corporate bodies of the German speaking library community (SWD, PND and GKD). Further specialised "authority files" for Ethnology, Egyptology and other branches are available. The use of structured controlled vocabularies relevant to museum documentation requires a corresponding format to implement authority files. "Museumvok" was developed for this purpose by the consortium also responsible for the "Museumdat" initiative. This format is based on international standards, especially SKOS Core vocabulary for the description of concept schemes and Dublin Core for the corresponding metadata. "Museumvok" is the basis for a web service gateway that will be implemented in 2007.

#### **What technologies and tools are most commonly used in digitisation?**

While a variety of technical solutions is available in archives, libraries and museums for the actual digitisation process, such tools for 3-D digitisation and digitised sound and video files are still in the early stages.

#### **How is interoperability ensured?**

The most important means to ensure interoperability is the use of open international standards in the different kinds of memory institutions and the willingness to cooperate in the distribution of CH information in a common environment. Such standards, combined with the use of authority files, will also improve retrieval results by 'translating' professional vocabulary to common speech.

#### **Have any research needs emerged?**

Major research efforts will have to be invested for the creation, mapping, exchange and appropriation

of specific controlled vocabularies and for the implementation and contextualisation of these in authority files. Further research on the benefits of domain-specific and cross-domain ontologies needs to be applied. The development of tools that support multilingual access is another area requiring increased research activities. The benefits of grid computing need to be investigated at the national level, a number of relevant projects in this area were already started. With respect to the digitisation of resources, the appropriate handling of special materials – e.g. glass negatives, 19<sup>th</sup> century paper, photograph cylinders – needs to be explored. Finally, research has to consider cost reducing and accelerating factors in the digitisation process.

**What funding models and funding sources are most commonly used in digitisation?**

The most common funding sources for digitisation in the public scientific sector are the DFG (the German Research Council) and, to a lesser extent, the BMBF (Federal Ministry of Education and Research). There is also a considerable amount of different private funding sources, large-size examples are e.g. the Volkswagen Foundation and the Siemens Arts Programme.

**Have you any examples of cost-reduction?**

Integrating digitisation activities into the CH organisations' normal workflow opens up significant potentials for cost reduction. Shared use of data, be these digitised images or descriptive metadata – often created by shared use of authority files and controlled vocabularies – also helps minimising costs. Thus the consolidation of existing services and increased networking are the basis for sustainable digitisation efforts.

The Institute for Museum Research currently runs a project to develop and evaluate work-flow and strategies to optimise the digitisation of photographic collections in German museums. (<http://www.sepiadigital.de>).

**Have you any examples of national competence centres in digitisation of cultural content?**

There are two digitisation centres providing services to libraries (in Göttingen and in Munich). Some larger CH organisations run IT service centres resp. centres of excellence which mainly support smaller organisations. Initiatives like "museumdat" and "museumvok" support the digitisation process and the use of digitised materials in the museum sector. Within the archival sector larger organisations like the Bundesarchiv, the Landesarchiv Baden-Württemberg or the Landesarchiv Nordrhein-Westfalen act as competence centres.

**D. Digital preservation**

**Are there national policies for digital preservation?**

*nestor (Network of Expertise in Long-Term Storage of Digital Resources*

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

It is a national German project that will provide a platform for information exchange, criteria for trusted digital repositories, recommendations for certification procedures, recommendations for "collecting guidelines" and selection criteria of digital resources to be archived, assorted guidelines and policies etc. Its long-term vision is a permanent distributed infrastructure for long-term preservation and long-term accessibility of digital resources in Germany.

Next to the published digitisation strategy of the Bundesarchiv

<<http://www.bundesarchiv.de/imperia/md/content/abteilungen/sapmo/27.pdf>>,

recommendations of the Federal Conference of Municipal Archives, also adopted by the Convention of Municipal Authorities

<[http://www.bundekonferenz-](http://www.bundekonferenz-kommunalarchive.de/empfehlungen/)

[Empfehlung\\_Digitalisierung.pdf](http://www.bundekonferenz-kommunalarchive.de/empfehlungen/Empfehlung_Digitalisierung.pdf)> are available.

The DFG-guidelines ([http://www.dfg.de/forschungsfoerderung/formulare/download/12\\_151.pdf](http://www.dfg.de/forschungsfoerderung/formulare/download/12_151.pdf)) and, internationally, the MINERVA recommendations (see: <http://www.minervaeurope.org/>) are other important sources for policies and best practice.



### Can you give examples of tools or technologies used for digital preservation of CH content?

#### *kopal*

<http://kopal.langzeitarchivierung.de/>  
Within the kopal project a technological and organizational framework ensuring the long-term availability of electronic publications is being developed. By using international standards for long-term archiving and metadata both sustainability and the ability to further develop the system are guaranteed.

As part of the project, massive amounts of digital materials of all types from two partner organizations, the German National Library and the Göttingen State and University Library, will be deposited. The materials will range from digital documents in the form of PDF, TIFF, or TeX files to complex objects like digital videos. In 2006 kopal published the Universal Object Format (UOF), a format for the archiving and exchange of digital objects and meta-data that is based on the *Metadata Encoding and Transmission Standard* (METS) and the *Long-term preservation Metadata for Electronic Re-sources* (LMER).

#### *Arche*

<http://www.landesarchiv-bw.de/arche>  
In a special archival project – ARCHE – the copying of born digital objects to colour microfilm is investigated, a complete digitisation workflow and a concept for the re-digitisation of the colour microfilm will be developed. The combination of digital and analogue media is expected to be useful for many CH objects.

#### *Boa*

<http://www.boa-bw.de>  
The BOA project takes care of the accessibility and long-term preservation of websites mainly from government agencies in Baden-Württemberg and websites with related content. Since mid-2006 23 websites have been archived in a cooperative effort of the Bibliotheks-Service-Zentrum (BSZ), the two Landesbibliotheken of Baden-Württemberg and the Landesarchiv Baden-Württemberg.

#### *Politisches Internet Archiv*

<http://www.fes.de/archiv/spiegelung>  
It is an archive for websites of political parties in Germany that was developed between 2004 and 2006 in a DFG-funded project and is now maintained by the archives of four German political parties.

### E. Monitoring progress

Presently there is no central registry or, indeed, access point to digitised materials in Germany available. Therefore it is rather difficult to provide a comprehensive overview. A variety of joint access points exist, e.g.: the BAM-Portal, the journal union catalogue portals ZDB <http://www.zeitschriftendatenbank.de> and EZB <http://ezb.uni-regensburg.de>, the manuscript portals Kalliope <http://kalliope.staatsbibliothek-berlin.de>, ZDN <http://www.bundesarchiv.de/zdn/>, Manuscripta Mediaevalia <http://www.manuscripta-mediaevalia.de/> etc. The zvdd <http://www.zvdd.de/> aims at providing access to all digitised books in Germany, while vascoda <http://www.vascoda.de/> enables access to a variety of different types of digital content of high quality. These and other access points document the considerable mass of digital content created during the last years.

In 2006 EUBAM in co-operation with the Digital Library Forum <http://www.dl-forum.de> started the project “kulturerbe-digital” <http://www.kulturerbe-digital.de> resp. <http://www.digital-heritage.de>. This information server is intended to serve as the central reference point for the coordination of digitisation activities and projects, for presenting digitisation guidelines and for documenting the national digitisation policy. It is hoped that “kulturerbe-digital” will improve the possibilities to monitor overall progress in the digital arena in Germany.