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Europeana Travel

Infrastructure for quality control

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eContentplus

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¹ OJ L 79, 24.3.2005, p. 1.

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Executive summary

This is the first of two documents to be prepared and published as a result of the “Implementing digitisation” (WP2) work package within the *Europeana Travel* project. This document deals with quality assurance in digitisation and is aimed at participating partners as a resource and guidelines for carrying out the digitisation of library content on the topic of travel and tourism.

The document title “Infrastructure for quality control” refers to recommendations for participating partners on quality assurance in the processes of library content digitisation. The document contains a description of the options for quality assurance in keeping with the goals of the project, the basic principles of quality assurance in the processes of library content digitisation and a summary of the content to be digitised by partner libraries as a part of the project. The document also contains the partners' answers to the survey that formed the basis for the WP1 workshop and, lastly, the minimum digitisation requirements for each type of library content.

This document is aimed at people in charge of carrying out the planned digitisation project.

1. About this document

1.1. Purpose of this document and its relationship with other Europeana Travel documents

This is the first of two documents to be prepared and published as a result of the “Implementing digitisation” (WP2) work package within the *Europeana Travel* project. This document deals with quality assurance in digitisation and is aimed at participating partners as a resource and guidelines for carrying out the digitisation of library content on the topic of travel and tourism.

The document title “Infrastructure for quality control” refers to recommendations for participating partners on quality assurance in the processes of library content digitisation. The document contains a description of the options for quality assurance in keeping with the goals of the project.

The main part of the document is divided into four parts. Part one, “Basic Principles”, contains the basic principles of quality assurance, based on Stephen Gray's “Quality assurance and digitisation projects” (2008), published by JISC [Joint Information Systems Committee [of the UK]] Digital Media, a JISC Advisory Service, which provides advice, guidance and training to the UK's Further and Higher Education community on creating and managing digital resources.

Part two is entitled “The material to be digitised for WP2” and contains an overview of the content to be digitised, ordered by type (text – manuscripts – images – sound – other), in accordance with project documentation. Changes sent in by partner institutions following an appeal by WP1 have been taken into account in this overview. The overview contains information on the content, amount, format, quality, metadata and language, ordered by the type of material and content providers.

As part of preparations for the WP1 “Planning Digitisation” workshop (London, 15-16 June 2009), a survey was compiled that included a question on quality assurance in the digitisation processes in individual partnering organisations. The question was: “What quality control mechanisms do you intend to use?” Part three of the document, entitled “In-house quality control: methods summary”, sums up the answers to this question, as well as the results of the London workshop.

Part four, “Minimum digitisation quality requirements”, lists the minimum requirements that partners must take into account when digitising individual types of material. This chapter also contains specifications of technical parameters for digitisation, ordered by the type of material (text – manuscripts – images – sound – other).

This document is aimed at people in charge of carrying out the planned digitisation project.

This document is linked to a deliverable to be prepared within WP2 – “Best practice examples”. Quality assurance in the digitisation processes and the application of standards,

guidelines and instructions in this field are the foundations for good practice in managing digitisation processes. The contents of this document are also linked to deliverables from WP1, namely D1.1. "Report on minimum standards required for participation in EuropeanaTravel", D1.2. "Synthesis of digitisation and metadata plans including standards to be applied" and D3.1. "Report on metadata standards".

1.2. Input for this document

As previously mentioned, the basic principles are from Stephen Gray's "Quality assurance and digitisation projects" (2008).

The overview of material to be digitised in this project is based on Annex 1, Description of Work, ECP-2008-DILI-538002, EuropeanaTravel, eContentplus (2009).

The information on the procedures for quality assurance in the digitisation processes at partnering institutions comes from the survey (preparations for the workshop) and the discussion of answers at the WP1 workshop in London.

Additional information comes from other projects, such as the TELplus project (eContentplus, 2007-2009), Digitisation on demand (eTEN, 2006-2008) and IMPACT (FP7, 2008-2012).

In the preparation of this document, documents from partner organisations were also taken into account, such as "Digital Resources and Imaging Services, Digital Imaging Standards Policies V.6«, prepared at the Trinity College Library in Dublin.

Last but not least, some information was also collected through desktop research, using the sources listed at the end of the document.

2. Basic principles²

Quality assurance is an indispensable part of the efficient management of library content digitisation. The quality assurance procedures should be established during the planning stages of digitisation and implemented throughout the entire duration of the project.

The quality of the digital objects acquired in the process of digitisation can only be defined with regard to the intended use. A digital object that is suitable for a certain purpose is not necessarily also suitable for other purposes. There are a number of issues influencing the choice of standards for a digitisation project. One of the main issues is whether the project aims to create a perfect replica of the original or merely to represent and convey the informational content of the original. Another important question is how the digital object will be accessed. It is therefore impossible to set a single general standard to ensure the highest or most acceptable quality. Considering that each individual digitisation project will have its own unique goal, standards of quality assurance in the digitisation processes will have to be set in accordance with the goal of each project. While it is true that, in the digitisation of similar collections, similar standards of quality assurance are used, these standards only apply to most of the projects, never to all of them. In the case of *EuropeanaTravel*, all partners plan to make the digitised objects accessible to their own customers and those of Europeana which will harvest the related metadata, not the objects themselves.

Quality assurance is not only limited to the production of digital objects. Quality metadata that is correct and useful should also be produced and maintained even after the project is completed.

The accepted criteria and standards of quality should be determined, quantified and unanimously accepted in the planning stage of digitisation. They should be based on the assessment of user needs and the initial test of the work progress. The accepted criteria must be documented and included in the project specifications.

There are a number of factors that can influence the quality of digital objects, such as:

- the condition of the original
- the equipment used in the digitisation processes
- the skill of the operator

² Based on: Stephen Gray, Quality assurance and digitisation projects. Published in: *Managing a project / Digitising analogue media*, 14 November 2008 (JISC Digital Media, <http://www.jiscdigitalmedia.ac.uk/crossmedia/advice/quality-assurance-and-digitisation-projects/>) (15.7.2009)

- resolution
- the post-digitisation procedures (the optimisation or re-mastering of digital objects)
- the choice of format or the compression algorithms used.

Quality standards are often the result of a compromise between options to ensure a high level of quality and expenses. For example, a higher resolution will result in a larger file, requiring more storage space and a longer period of time for data transfer. Similarly, quality checks of individual digital objects will give better results than batch checks of content samples, but it will also result in higher expenses.

Gray's four-layer approach to quality assurance

S. Gray (2008) on quality assurance: »Quality assurance (QA) can be considered to be an attitude to work, rather than an external testing system. Everyone involved in the project needs to take responsibility for ensuring quality at all times. QA should be pervasive and can usefully be considered in four-layers:

1. Process QA
2. Automated QA
3. Personal Checking
4. User-fault reporting.«

The following is a summary of Gray's four-layer approach to quality assurance.

Quality assurance in digitisation processes

Errors in the digitisation process are usually out of the digitisation operator's control and should be addressed by the head of the project. Errors in the process usually relate to one process or several processes documented within the project. The entire digitisation project should conform to documentation that was prepared in advance and should include:

- project specifications – details on the level of project management that relate to the project results and are derived from previously determined user needs;
- selection criteria – a plan for the selection of materials for digitisation;
- workflow manual with descriptions of work processes – instructions for the implementation of each process, including digitisation, file processing and handling metadata;
- selected thesauruses and glossaries – the use of terminology and standards for recording names, dates, places, etc.

Automated quality assurance

The system for quality assurance must be as objective as possible. The digitisation equipment must be calibrated in accordance with the specified standards and the workflow

should be automated wherever possible. Calibration and automation are particularly important for maintaining consistency in projects that include several digitisation operators and/or cataloguers. While the complete automation of the operator's work would be counterproductive, it is also absolutely clear that the human factor is the greatest source of errors. We should therefore strive for an appropriate level of automation that would improve the quality of the product wherever possible. The successful automation of quality assurance can be established in the following fields:

File management – a digital management system can be used to name and trace digital objects and related metadata. The system can also provide an audit trail and notes on what changes were made to the file, as well as when and by whom.

The creation of surrogates – for delivery purposes, files can be combined into batches.

Metadata collection – some metadata can be automatically collected from the management system. If certain data already exists in an electronic form, it should be copied, rather than entered anew, in order to avoid new errors. If new data must be entered, typing errors can be avoided by using check-boxes, drop-down lists and spellchecking tools.

Personal Checking

Despite well-planned quality assurance processes and regardless of the amount of automated processes, the results must still be checked before they are handed in. Errors are inevitable and the quality assurance system should be regarded as a filter, gradually improving the quality of the material until the specified standards are met. As with proofreading, quality checking should not be carried out by the same person who processed the file or metadata in question.

User fault reporting

Despite the best efforts, a few errors will always find their way into the digital collection. Once the work has been handed in, it is considered good practice to provide users with a way to report any faults to the digital collection manager so they can be amended. Details of any exceptions that fail to meet the quality assurance standards should be recorded so that any similarities between them or any recurring patterns can be determined. All exceptions must be mentioned in a report that will serve as the basis for a revision of the digitisation and cataloguing processes.

3. The material to be digitised for WP 2

The amount and topics of the material to be digitised have been determined and are a part of project specification (Description of Work). The following library content will be digitised in this project:

- text
 - o books
 - o periodicals
 - o manuscripts
- images
 - o maps
 - o other
- sound
- other (ephemera).

Text – Books

Eight partners will digitise approx. 5,217 books in 19 complete units or collections. These collections include travel journals, tourist guidebooks, pilgrim diaries, scientific expedition logs and other travel literature. The exception is the collection from the National Library of Finland, which includes the earliest travel-related fairytales with rich illustrations.

Provider	Additional comments	Quantity & Definition	Descriptive Data Records Number (approx.)	Format & Quality						Existing Metadata	Language
				Master copy		Access copy		OCR			
				format	resolution	format	resolution				
DE	Travel books compiled by Hungarians abroad and foreigners in Hungary, including Greek Catholic pilgrims. From the 17th to 19th century.	400 books, 46.000 pages	400	JPEG, PDF	JPEG	/	PDF	/	/	Approx. 10 % described in the online catalogue	Hungarian, Latin, German, Russian
NLP	Travel diaries, tourist guides, albums.	at least 2,000 books	2.000	JPEG, 300 dpi. Could be OCRed	JPEG	300 dpi	/	/	yes	MARC21	Polish
NLP	Travel diaries, tourist guides, albums	at least 200 books	200	JPEG, 300 dpi	JPEG	300 dpi	/	/	/	MARC21	French
NLP	Travel diaries, tourist guides, albums	at least 150 books	150	JPEG, 300 dpi	JPEG	300 dpi	/	/	/	MARC21	German
NLP	Travel diaries, tourist guides, albums.	at least 150 books	150	JPEG, 300 dpi	JPEG	300 dpi	/	/	/	MARC21	English
NLP	Travel diaries.	at least 30 early printed books	30	JPEG, 300 dpi, OCR impossible	JPEG	300 dpi	/	/	impossible	MARC21	Polish, Latin, German, French, English*

NUK	A collection of historical travel logs, tourist guides and ethnographic descriptions of European countries. Relatively unknown to general public. Covers the time period from 16th to 19th century.	700 books	700	PDF, HTML, access files 71-120 dpi, archive 300-600 dpi	JPEG	300-600 dpi	PDF, HTML	71-120 dpi	yes	None	Slovenian, German, English, Latin, Italian
SNK	Travel books.	500 books	500	TIFF, JPEG, 600 dpi, 24 bit PDF	TIFF, JPEG	600 dpi	PDF	/	/	MARC21, partially	German, Latin, Slovak
UCL	Books from 1557 to 1860 with a focus on travels in Eastern and Central Europe, incl. Russia.	199 books	199	JPEG2000, Colour/greyscale, 300-400 dpi	JPEG 2000	300-400 dpi	/	/	/	MARC21	English
UCL	As above	38 books	38	JPEG2000, Colour/greyscale, 300-400 dpi	JPEG 2000	300-400 dpi	/	/	/	MARC21	French
UCL	As above	17 books	17	JPEG2000, Colour/greyscale, 300-400 dpi	JPEG 2000	300-400 dpi	/	/	/	MARC21	German
UCL	As above	9 books	9	JPEG2000, Colour/greyscale, 300-400 dpi	JPEG 2000	300-400 dpi	/	/	/	MARC21	Hungarian
UCL	As above	6 books	6	JPEG2000, Colour/greyscale, 300-400 dpi	JPEG 2000	300-400 dpi	/	/	/	MARC21	Italian
UCL	As above	9 books	9	JPEG2000, Colour/greyscale, 300-400 dpi	JPEG 2000	300-400 dpi	/	/	/	MARC21	Latin
UCL	As above	2 books	2	JPEG2000, Colour/greyscale, 300-400 dpi	JPEG 2000	300-400 dpi	/	/	/	MARC21	Polish

UCL	As above	7 books	7	JPEG2000, Colour/greyscale, 300-400 dpi	JPEG 2000	300-400 dpi	/	/	/	MARC21	Russian
UH.NLF	First travel tales from Finland from 17th to 19th century. Mainly books with various pictures and maps attached to them	20,000 pages of books and book attachments (ca 100 books)	100	Master files: JPEG 2000 Access copies: JPEG, PNG, 300-400 dpi	JPEG 2000	/	JPG, PNG	300-400 dpi	/	MODS (Object level metadata) / MICHAEL Collection Description Schema (Collection level) / METS (Structural Metadata)	Swedish, Latin, French, German, English, Dutch
UIBK	Classical descriptions of the Alps from the point of view of culture, history, geography and tourism. Time period 1500–2008.	200-300 books, app. 100,000 pages	250	b/w: TIFFG4, colour/greyscale : JPEG, 300-400 dpi, OCR, PDF, METS	/	/	/	/	yes	MAB2, Dublin Core, partially	German mainly, English, Italian
UREG	Botanical excursions and expeditions in the 19th century. Travel guides and diaries from the Middle Ages until the 20th century	400 books	400	2-layer PDF (image over text), 300 dpi, 24 bit colour	/	300 dpi	PDF (2-layer, image over text)	/	/	MAB2	German (mainly)

Text – Periodicals

Three partners will digitise approx. 215,000 pages of periodicals. These are local newspapers (University and National Library of Debrecen) offering a great deal of information on the development of tourism in the region, especially on the beginnings of spa tourism. Periodicals from the Austrian partners (Austrian National Library and University of Innsbruck) mainly deal with the Alpine world and activities in the mountains (hunting, sports, etc.).

Provider	Additional comments	Quantity & Definition	Descriptive Data Records Number (approx.)	Format & Quality						Existing Metadata	Language
				master		access					
				format	resolution	format	resolution	OCR			
DE	Local periodicals covering regional tourism, city culture and travelling habits in general.	10,000 pages of periodicals	3	JPEG, PDF	JPEG	/	PDF	/	/	None	Hungarian
ONB	More than 30 titles of travel, hunting and sports journals with a focus on Austria and the Alps.	ca 155,000 pages of journals	30	TIFF, 300 dpi, colour/greyscale	TIFF	300 dpi	/	/	/	None	German
UIBK	Journals covering travel in the Alps. Time period 1850–2008.	1-2 journals, app. 50,000 pages	2	b/w: TIFFG4, colour/greyscale: JPEG, 300-400 dpi, OCR, PDF, METS	/	/	/	/	yes	None	German

Manuscripts

Eight partners will digitise approx. 100,000 pages of manuscripts, mostly travel journals.

Provider	Additional comments	Quantity & Definition	Descriptive Data Records Number (approx.)	Format & Quality				Existing Metadata	Language	
				master		access				
				format	resolution	format	resolution			
KB	Alba Amicorum (Books of Friendship) collection featuring the travel diaries of scholars, lavishly illustrated with pencil drawings and gouaches. Covers the time span from the late 16th to the early 19th century.	30,000 pages of texts and drawings from manuscripts	100	JPEG	JPEG	/	/	/	Dublin Core Extended, stored in XML	French, Dutch, Latin
LNB	Travel diaries and journals to support cartographic material.	5,000 pages	50	JPEG, 300 dpi	JPEG	300 dpi	/	/	Dublin Core based	Latvian
MZK	Unique original 20 volume baroque handwritten catalogue of the Moll's map collection, describing the maps and vedute as well as places depicted on them and complemented by drawings.	ca 29,370 manuscript pages	20	JPEG, colour, 300-400 dpi	JPEG	300-400 dpi	/	/	None	German
MZK	5 travel related 17th century manuscripts e.g. diary with messages of moving Swedish army in Moravia.	ca 1,700 manuscript	5	JPEG, colour, 300 dpi	JPEG	300 dpi	/	/	MARC21, TEI/MASTER	German

NLW	Drawings of landscapes in Wales in wash, watercolour, ink, gouache, pencil and pen. Contains both works of famous artists as well as sketches made by wealthy travellers. Covers the time period from 18th to 20th century.	30,000 pages from 500 albums and sketchbooks	500	Master files: TIFF, 400 dpi, colour control included. Access files: JPEG, PNG, 750 pixels across longest edge. Thumbnail images: 150 pixels along longest edge. Zoomify PFF files: derived from master files for Adobe Flash web based image zooming.	TIFF	400 dpi	JPEG, PNG	750 pixels along longest edge	None	Not applicable
SNK	Travel logs from 16th to 20th century.	1,000 pages	50	PDF	/	/	PDF	?	Structured text (biographic entries)	Slovak
TCD	Travel journals from the 18th-19th century covering trips to continental Europe.	ca 2,250 pages of journals	10	/	/	/	/	/	None	English
UCL	Travel logs of world-famous archaeologist Arthur Evans, recording his trips to South-Eastern Europe in the 19th century.	2 volumes of manuscripts with photographs and sketches	2	JPEG2000, Colour/greyscale, 300-400 dpi	JPEG 2000	300-400 dpi	/	/	EAD	English
UCL	Diaries of Arthur Evans' wife Margaret.	2 volumes of mss diaries	2	JPEG2000, Colour/greyscale, 300-400 dpi	JPEG 2000	300-400 dpi	/	/	EAD	English
UIBK	Quantity depends strongly on willingness of institutions to contribute and cannot be guaranteed.	Some dozens of guest books from rescue huts and summit books	40	b/w: TIFFG4, colour/greyscale: JPEG, 300-400 dpi, METS	/	/	/	/	None	German mostly

Images – Maps

Seven partners will digitise approx. 51,857 general and topical maps.

Provider	Additional comments	Quantity & Definition	Descriptive Data Records Number (approx.)	Format & Quality				Existing Metadata	Language	
				master		access				
				format	resolution	format	resolution			
DE	Military, school and geological maps from the 18th to 20th century.	200 maps	200	JPEG, PDF	JPEG	PDF	/	/	None	Hungarian, Latin, German
LNB	Maps from the cartographic collection of the library covering English period from 16th to 21st century.	200 map sheets	200	JPEG, 300-400 dpi, colour/grayscale	JPEG	300-400 dpi	/	/	AACR2, Dublin Core based	Latvian, German, Russian
MZK	Map collection of B.P.Moll - One of the largest baroque map collections in central Europe, contains maps and vedute of Holy Roman Empire and hereditary Habsburg lands. Includes mostly printed but also manuscript maps from 16th to 18th century.	ca 15,000 images	15.000	JPEG 2000, colour, 600 dpi	JPEG 2000	600 dpi	/	/	MARC21. Approximate geographic bounding box coordinates but no precise georeferencing metadata.	German (in some cases French, Latin and other languages, depending on map origin).
MZK	17th – 18th century atlas collection. Most of the atlases cover Europe but include also world maps.	ca 2,000 pages from bound atlases	2.000	JPEG, 300 dpi (text pages) and JPEG 2000, 600 dpi (maps)	JPEG (text) / JPEG 2000 (maps)	300 dpi (text) / 600 dpi (maps)	/	/	MARC21	German (in some cases French, Latin and other languages).
NUK	Historical maps of Slovenian territory from 17th to 19th century.	50 historical maps	50	JPEG, access files 71-120 dpi, 300-600 dpi archive	JPEG	300-600 dpi	JPEG	71-120 dpi	None	German

SNK	Historical and contemporary maps of Slovakia, the Czech Republic and Austro-Hungarian Empire.	3,400 loose sheets	3.400	TIFF, JPEG, 600 dpi, 24 bit	TIFF, JPEG	600 dpi	/	/	MARC21, partially	Slovak, Latin, Hungarian, German
UCL	Maps of Central and Eastern Europe from 15th to 19th century, supporting the fore-mentioned travel books	207 maps	207	JPEG2000, Colour/greyscale, 300-400 dpi	JPEG 2000	300-400 dpi	/	/	MARC21	/
UREG	Botanical excursions and expeditions in the 19th century. Travel guides and diaries from the Middle Ages until the 20th century	200 maps	200	TIFF, 400 dpi, 24 bit colour	TIFF	400 dpi	/	/	MAB2	German (mainly)

Images – other

Eleven partners will digitise approx. 82,083 units of pictorial material (postcards, photographs, glass plates, negatives, etc.). These are mainly images of tourist attractions, landscapes, panoramic views, various sketches, ethnographic records, images from expeditions to Africa and Asia, pictures from botanic excursions and various illustrations.

Provider	Additional comments	Quantity & Definition	Descriptive Data Records Number (approx.)	Format & Quality				Existing Metadata	Language	
				master		access				
				format	resolution	format	resolution			
DE	Tourist attractions of the Austro-Hungarian Empire with a special focus on popular springs and spas of Hungary.	2,000 postcards	2.000	JPEG, PDF	JPEG	/	PDF	/	None	Hungarian
LUB	Marten Sjöbeck's collection of landscape photos from southern Sweden in the	3,000 photos	3.000	TIFF	TIFF	/	/	/	None	Swedish

	years 1920–1960.									
MZK	This collection of views of Southern Moravia contains numerous 17th-19th century vedute (old photographs, litographs and engravings).	ca 1,400 images of vedutes	1.400	JPEG or JPEG2000 (depending on the size of the original), colour, 600 dpi	JPEG / JPEG 2000	600 dpi	/	/	MARC21	German, some inscriptions in Czech
NLP	Postcards, photos, drawings.	ca 6,000 documents	6.000	JPEG, 300 dpi	JPEG	300 dpi	/	/	MARC21, Dublin Core	not applicable**
NUK	A collection of vedutes from 17th to 19th century depicting the development of settlements in Slovenia.	50 historical vedutas and 400 images (photographs, postcards, etc)	450	JPEG, access files 71-120 dpi, archive 300-600 dpi	JPEG	300-600 dpi	JPEG	71-120 dpi	None	None
ONB	Ethnography and travel from years 1900–1960.	ca 1,000 glass plates and film negatives	1.000	JPEG, 4000*6000 pixels	JPEG	4000*6000 pixels	/	/	Archival descriptions, Dublin Core qualified	German
ONB	Austrian photographers, World Travel – Harry Weber and Joe Heydecker. Europe, Palestine, India, South America, etc.	30,000 film negatives	30.000	JPEG, 4000*6000 pixels	JPEG	4000*6000 pixels	/	/	Archival descriptions, Dublin Core qualified	German
ONB	Expeditions in the 19th century	600 photographic objects	600	JPEG, 4000*6000 pixels	JPEG	4000*6000 pixels	/	/	Archival descriptions, Dublin Core qualified	German
ONB	Austrian monarchy, ethnography, as well as topographic views from years 1860– 1918.	ca. 500 photographic objects	500	JPEG, 4000*6000 pixels	JPEG	4000*6000 pixels	/	/	Archival descriptions, Dublin Core qualified	German
ONB	Austria 1918–1960. Lothar Rübelt archives. Bilarchivaustria: Travel, Vues, People, Rural Austria, Alpine Scenes.	5,000 photographic objects	5.000	JPEG, 4000*6000 pixels	JPEG	4000*6000 pixels	/	/	Archival descriptions, Dublin Core qualified	German, English
RR	Half-closed archive collection of historical postcards, comprising a tour of Estonian cities in the 19th and 20th	16,000 images of 8,000 double-sided postcards	8.000	JPEG, colour, 24 bit	TIFF	600 dpi	JPEG	150 dpi	None	Estonian

	century.									
SNK	Historical drawings of landscapes and city views.	300 graphical sheets and engravings	300	JPEG	JPEG	/	/	/	MARC21	Slovak, Latin, Hungarian
SNK	Images of various places, mainly in Austro-Hungarian Empire. Towns, landscapes, mountains and buildings of 19th and 20th century.	15,000 geographic postcards	15.000	TIFF, JPEG, 600 dpi, 24 bit	TIFF, JPEG	600 dpi	/	/	MARC21, partially	Slovak, Hungarian
TCD	Items from Major R.W.G. Hingston's collection from his travels in Asia and Africa dealing with local fauna, history and archaeology.	133 glass slides	133	/	/	/	/	/	None	English
TCD	Items from Major R.W.G. Hingston's collection from his travels in Asia and Africa dealing with local fauna, history and archaeology.	100 photographic negatives	100	/	/	/	/	/	None	English
UIBK	Illustrations to the "anonymous" history of tourism in the Alps. Time period 1850–2008.	Some hundreds of postcards, posters, tourist maps, pictures and photos	300	b/w: TIFFG4, colour/greyscale: JPEG, 300-400 dpi, METS	/	/	/	/	None	German
UREG	Botanical excursions and expeditions in the 19th century. Travel guides and diaries from the Middle Ages until the 20th century	600 graphic sheets	600	TIFF, 400 dpi, 24 bit colour	TIFF	400 dpi	/	/	MAB2	German (mainly)

Sound

Only one partner, the Austrian National Library, decided to digitise old sound recordings – 200 folk songs on the topic of travel.

Provider	Additional comments	Quantity & Definition	Descriptive Data Records Number (approx.)	Format & Quality						Existing Metadata	Language
				master		access		OCR			
				format	resolution	format	resolution				
ONB	Folk songs related to travelling.	200 titles on 100 shellacs	100	BWF, 96KHz, 24 bit	BWF	/	mp3	/	/	MAB, Dublin Core qualified	German

Other (ephemera)

One partner, the National Library of Poland, will digitise other material (advertisements, leaflets, etc.).

Provider	Additional comments	Quantity & Definition	Descriptive Data Records Number (approx.)	Format & Quality						Existing Metadata	Language
				master		access		OCR			
				format	resolution	format	resolution				
NLP	Advertisements, flyers, other nonbook materials.	at least 80 documents	80	JPEG, 300 dpi	JPEG	300 dpi	/	/	/	MARC21	Polish

4. In house quality control: survey summary

As part of WP1, a survey was carried out prior to the London workshop. One of the questions dealt with the mechanisms for quality control that individual partners intended to use in the digitisation process. We received sixteen answers to the question “What quality control mechanisms do you intend to use?”

In-house quality control is the domain of partner institutions and depends on the digitisation policy of each library. The survey shows several differences among partners regarding the quality control processes and key parameters for quality assurance. Systems of quality assurance vary from highly complex systems (e.g. Trinity College Dublin) to systems that are either still under development (National Library of Estonia)³ or that will be developed in future (University and National Library of Debrecen)⁴. University College London is outsourcing the digitisation process, so the external partner is also responsible for quality assurance⁵.

Some partners regard the examination of material before digitisation as an integral part of the quality assurance process. At the National and University Library of Slovenia, all the material is examined prior to digitisation in order to determine its physical state, completeness and any defects⁶.

One of the most frequent procedures in quality control is comparing scanned material with originals. This procedure is used in the National Library of Poland⁷ and the Moravian Library in Brno⁸.

Many of the partners focus a lot of attention on examining the scanned materials onscreen. There are several motives for using this method. In Innsbruck, all digitised material is

³ Answer to the question on quality assurance, National Library of Estonia: We plan to establish own quality assurance procedures. First identify key points, at which stadiums quality checks have to be made. Then monitor the quality of the work, find spot problems, ensure that digitised objects are suitable for intended purposes. Also establish a clear work timeline (helps to fulfil the plan). During the scanning process it's important to compare the digital copy with the physical original to identify changes and ensure accuracy (colour comparison). Quality check will be done also after the scanning process, when the content is sent to the digital archive.

⁴ Answer to the question on quality assurance, University and National Library of Debrecen: We have no standards and pre-set mechanisms for our digitisation projects here in Debrecen.

⁵ Answer to the question on quality assurance, University College London: As we are outsourcing our work for this project [i.e. Europeana Travel] we will not be carrying out the quality control ourselves. In our last project, where the work was carried out at the University of Southampton's BOPCRIS centre, this is what they did about quality control: "In the BOPCRIS workflow, images are created and checked by scanning technicians, OCR'd, and then passed to indexers who apply a further check and then apply metadata. Images and metadata are also sampled regularly by production managers. As described in WP6, JSTOR undertake further QA of images and OCR."

⁶ Answer to the question on quality assurance, National and University Library, Slovenia: Apart from that, one important element contributing to the final quality of digitisation is also a thorough examination and analysis of material to be digitised (above all of its physical characteristics and defects).

⁷ Answer to the question on quality assurance, National Library of Poland: There are two levels of control: one is the controller who (object in hand) looks for mistakes in scanning, unreadable scans, missing pages etc. ...

⁸ Answer to the question on quality assurance, Moravian Library in Brno: ... check the result against original.

examined onscreen to ensure it is complete and complies with the specified standards⁹. In Regensburg, visual and technical control is performed by a person who was not involved in the scanning process¹⁰. Some libraries use specialised software for examining scanned material. At Koninklijke Bibliotheek (National Library of the Netherlands), licensed software is used to examine a sample of scanned material¹¹. At the National Library of Poland, they have developed their own software for the same purpose¹².

At the National Library of Wales the control of the digital images is done immediately after the scanning process is finished. First they check a 10 percent sample, randomly selected by computer, while in the second phase the metadata are examined by comparing them to the whole.¹³

At the Slovak National Library the quality is reviewed directly after each individual phase of the digitisation by examining a randomly selected sample of material.¹⁴

At two partners' libraries – the National Library of Latvia and the Lund University Library – they check the quality of all digitised documents without sampling.¹⁵

At the Austrian National Library, they have established shared control of digitisation quality between the supplier and the contracting authority. Suppliers are obliged to check all the data to guarantee its quality prior to delivery. Only correct data is accepted by the contracting authority. When it comes to periodicals, the contracting authority checks the

⁹ Answer to the question on quality assurance, University of Innsbruck: Each work (book/journal/postcard collection) is controlled image by image for the completeness; each image is controlled on the screen to comply with the standards mentioned above.

¹⁰ Answer to the question on quality assurance, University Library of Regensburg: All scans are approved by visual and technical control by a second staff member.

¹¹ Answer to the question on quality assurance, National Library of the Netherlands: We use software that, at random, is monitoring whether the digital objects comply with the determined measurable values of tonal reproduction, sharpness, reliability of colours and so on. We use software programmes like IMCheck, IE Analyzer, Photoshop CS.

¹² Answer to the question on quality assurance, National Library of Poland: In the software described above [we have our own software designed for us by our IT people (we call it System of Digitized Collections) which supports the work flow of the documents, from the moment of selection for digitization to the publication.], there is a red dot next to each document, which has to be checked off by a controller in order to show that the document was verified. In addition to that, we have an editing device displayed above the document which accounts for every page of the document, just as it looks in the original. By going through it, one can see if everything was scanned properly.

¹³ Answer to the question on quality assurance, National Library of Wales: Master digital images go through a quality assurance stage immediately after the scanning process. Our workflow tool randomly selects 10% of images, which are checked for tonal range, colour and focus. The metadata unit will then check 100% of the derivative files for naming and sequencing errors, using the original volume as a guide.

¹⁴ Answer to the question on quality assurance, Slovak National Library: Quality Control after each step – transport, scanning, OCRing, structuring and layout, publication, most probably by means of random checks or user input (the entire programme concerns 200 pages). The idea is to set the processes to provide quality in the beginning rather than to correct errors. This also includes motivating the staff and good and regular trainings.

¹⁵ Both libraries' answer to the question »Will you check?« in the questionnaire was »all digitised material«.

data using specially developed software, as well as visually. Images are also checked visually for completeness by the contracting authority¹⁶.

The National Library of Finland has a highly developed methodology for quality assurance in the digitisation processes. Their answer was very detailed and we have decided to quote it in its entirety:

“Quality Control Measures as per Workflow and Process under development and operational in 2009:

- a. Image quality – colour targets, IT8, McBeth colour checker, resolution targets, per each start of shift incorporated as digital provenance in METS package for long term preservation, including operator name and technological environment.
- b. File Verification Process – JHOVE. MD5.
- c. Scanning Quality Checks – incorporated in workprocess while postprocessing with docWorks.
- d. Structural Analysis Quality – consistency of structural mark up checks to be conducted by sample quality checks of two operators.
- e. OCR Quality - challenge, material includes other languages
- f. Persistent ID’s Quality – (vital for trustworthiness, ability for authenticity, citation of source material) physical objects assigned bar code ID’s, 1:1 relationship to digital objects, digital objects IDs by NBN:URN resolved by National URN resolver (maintained by National library of Finland). NBN:URN’s assigned to granularity level defined in structural mark up.
- g. Physical Object Quality and Tracking– Care&Handling Instructions and documentation under way, scanning damage (if any) conservation processes for repair, Physical items (originals) tracked through digitisation process (security, loss, transport).
- h. OCR Quality – can be improved. Is a challenge considering material and languages. Incorporating expert contribution during digitisation process or enrichment after under consideration for other material.”

The most extensive and well documented system for quality assurance in the digitisation processes was developed at Trinity College Dublin. The document “Digital Resources and

¹⁶ Answer to the question on quality assurance, Austrian National Library: Journals, newspapers, pictures: a) suppliers – The supplier is obliged to check all data on completeness and quality before delivery. Only absolute correct data may be supplied; b) contracting authority – Journals, newspapers: The contracting authority will check the delivered data with specially developed software tools as well as optically. Pictures: The contracting authority will check the delivered data on completeness as well as optically.

Imaging Services”¹⁷ encompasses every aspect of digitisation, from descriptions of image structure, file structure and calibration to metadata, the processing of copies and the workflow. Here is the answer we received from Trinity College Dublin: »We currently have a variety of quality control functions integrated within our digitization workflow to ensure consistent, efficient, error free work processes. Additionally we have a dedicated quality assurance program (based loosely on six sigma process) which reside completely outside of the digitization and metadata cataloguing workflows. This quality assurance activity includes random audits on a statically significant portion of each imaging project and measures image quality attributes, file and system structure errors, metadata accuracy and completeness, and a variety of other relevant attributes. Audit failure mediation includes not only file error correction but also workflow and process reviews and corrective actions.«

¹⁷ *Digital Resources and Imaging Services. Digital Imaging Standards Policies V.6.* Trinity College Library Dublin, The University of Dublin, June 2009.

5. Minimum digitisation quality requirements

5.1. General recommendation

The digitisation process needs to capture the complete information making up a 3D or analogue object. That means all the semantic and visual information in the library material must also be in the digital counterpart. It should be possible to read all the text in the digital copies of books, periodicals or manuscript, including books and periodicals that are bound very tightly. It should be possible to see all the details in photos, illustrations, charts and maps that are necessary to understand the intrinsic message contained in the material. Sound recording should be completely digitised.

Before digitisation, it is necessary to examine the material's condition and to check if it needs repairing or restoration treatment. In the case of damaged material (damaged pages, scratches on images, scratches on vinyl records, etc.), we recommend that restorers prepare the material for digitisation and restore it after digitisation. It is good practice in such cases to search for any additional copies in other libraries and use them for digitisation.

5.2. Text

5.2.1. Books¹⁸

Books must be scanned complete. In no case is it suitable to only digitise parts of books (particular chapter(-s) or volume(-s)). Empty pages must also be scanned. The book structure, including all pages, frontmatter and backmatter must be transformed into digital format. Any missing pages in the book must be recorded in the metadata description.

It is also recommended to digitise the covers; however, it is up to each partner library to decide whether they will digitise the covers or start the digitisation process with the first printed page of the book.

Any appendixes should be included in the digitisation and linked to the relevant bibliography unit in the metadata.

Resolution

Minimum: 300 dpi

Recommended: 400-600 dpi, (600dpi for A6 or smaller formats)

For very small fonts typically found in small formats (i.e. A6 [148 × 105 mm] or smaller). A rule of thumb: if the x-height of the font (height of letter x) is ≤ 5 pt, higher resolution is needed for good OCR results.¹⁹

¹⁸ Recommendations have been prepared on the basis of EOD project results and EOD project document „Common requirements for EoD ebooks – quality standards“, Digitisation on demand (eTEN, 2006-2008).

¹⁹ 5 pt \sim 1,755 mm. For size relations and unit conversions see: <http://www.ntg.nl/doc/eijkhout/ruler.pdf>. lb.

Colour depth

Minimum:

- 1 Bit for text pages and half-tone illustrations where possible (very good print): good results with this configuration depend very much on the nature of the book as well as the capabilities of the scan operator; else, 8 bit is recommended;
- 8 Bit greyscale for digitisations in greyscale;
- 24 Bit (or higher) colour for digitisation in colour.

Recommended: 24 Bit (or higher) colour

General recommendation: Books before 1800 should be scanned in colour. Also, covers should be scanned in colour.

Image formats

Recommended formats:

- TIFF Group IV for 1 Bit images
- TIFF,
- RGB,
- JPEG,
- JPEG2000,
- PNG.

Compression

With .tiff files, we recommend using lossless LZW compression. With .jpg files, the maximum compression should not exceed 10%. If the document is of electronic origin with 100% OCR, we recommend TIFF Group IV (1bit).

Image processing

It is necessary to split double pages into individual pages. The complete text must be visible in each image.

Exceptions: maps, articles that span two pages, etc. Cropped pages should have the same size.

The following processes should be carried out on all scans: deskewing, trim and shift.

Recommended: other image enhancement.

File naming

File naming is the responsibility of the partner libraries according to their digitisation policy.

OCR

Books after 1800 should be processed using OCR. Books between 1700 and 1800 should be checked on a case by case basis.

Delivering formats

A single PDF Book (or a series of in case of multivolume books) must contain the complete content of the book. PDFs have to be a minimum of 150 dpi b/w, greyscale or colour. The image resolution of the output PDF should be equal to the image resolution of the input files.

Images must be a minimum of 90% JPEG Quality if the images in the PDF are JPEG compressed.

Recommended: lossless compression of images within the PDF; bookmarks within the PDF.

5.2.2. Periodicals

Periodicals must be scanned complete. In no case is it suitable to digitise only parts of periodicals (particular page(-s) or volume(-s)). Empty pages must also be scanned. The periodical structure with all pages must be maintained in the digital format. Missing pages in a particular volume must be recorded in the metadata description.

It is also recommended to digitise the covers; however, it is up to each partnering library to decide whether they will digitise the covers or start the digitisation process with the first printed page of the periodical.

Any appendixes should be included in the digitisation and linked to the relevant bibliography unit in the metadata.

Resolution

Minimum: 300 dpi

Recommended: 400-600 dpi

Colour depth

Minimum:

- 1 Bit for text pages and half-tone illustrations where possible (very good print): good results with this configuration depend very much on the nature of the material as well as the capabilities of the scan operator; else, 8 bit is recommended;
- 8 Bit greyscale for digitisations in greyscale;
- 24 Bit (or higher) colour for digitisation in colour.

Recommended:

24 Bit (or higher) colour

General recommendation: Periodicals before 1800 should be scanned in colour.

Image formats

Recommended formats:

- TIFF Group IV for 1 Bit images
- TIFF,
- RGB,
- JPEG,
- JPEG2000,
- PNG.

Compression

With .tiff files, we recommend using lossless LZW compression. With .jpg files, the maximum compression should not exceed 10%. If the document is of electronic origin with 100% OCR, we recommend TIFF Group IV (1bit).

Image processing

It is necessary to split double pages into individual pages. The complete text must be visible in each image.

Exceptions: maps, articles that span two pages, etc. Cropped pages should have the same size.

The following processes should be carried out on all scans: deskewing, trim and shift.

Recommended: other image enhancement.

File naming

File naming is the responsibility of the partner libraries according to their digitisation policy.

OCR

Periodicals after 1800 should be processed using OCR. Periodicals between 1700 and 1800 should be checked on a case by case basis.

Delivering formats

A single PDF must contain the complete content of the periodical number. PDFs must be a minimum of 150 dpi b/w, greyscale or colour. The image resolution of the output PDF should be equal to the image resolution of the input files.

Images must be a minimum of 90% JPEG Quality if the images in the PDF are JPEG compressed.

Recommended: lossless compression of images within the PDF; bookmarks within the PDF.

5.3. Manuscripts

Manuscripts must be scanned complete. In no case is it suitable to digitise only part of a manuscript (particular page(-s) for example). Empty pages and the reverse sides of pages must also be scanned, too. But exception can be made in the case of many empty pages in the row. The manuscript structure with all pages must be preserved and maintained in the digital format. Missing pages in the manuscript must be recorded in the metadata description.

It is also recommended to digitise the binding; however, it is up to each partnering library to decide whether they will digitise the binding or start the digitisation process with the first written page of the manuscript.

Any appendixes should be included in the digitisation and linked to the relevant bibliography unit in the metadata.

Resolution

Minimum: 300 dpi

Recommended: 400-600 dpi

Colour depth

- 8 Bit greyscale for digitisations in greyscale
- 24 Bit (or higher) colour for digitisation in colour

Recommended: 24 Bit (or higher) colour for all digitization

General recommendation: Manuscripts should be scanned in colour, including the binding.

Image formats

Recommended formats:

- TIFF,
- RGB,
- JPEG,
- JPEG2000,
- PNG,
- GeoTIFF.

Compression

With .tiff files, we recommend using lossless LZW compression. With .jpg files, the compression should not exceed 0% – no compression.

Image processing

It is necessary to split double pages into individual pages. The complete text must be visible in each image.

Exceptions: maps, articles that span two pages, etc. Cropped pages should have the same size.

The following processes should be carried out on all scans: deskewing, trim and shift.

Recommended: other image enhancement.

File naming

File naming is the responsibility of the partner libraries according to their digitisation policy.

OCR

Usually not applicable.

Delivering formats

A single PDF must contain the complete manuscript or manuscript volume. PDFs must be a minimum of 150 dpi b/w, greyscale or colour. The image resolution of the output PDF should be equal to the image resolution of the input files.

Images must be a minimum of 90% JPEG Quality if the images in the PDF are JPEG compressed.

Recommended: lossless compression of images within the PDF; bookmarks within the PDF.

5.4. Images

Resolution

Minimum: 300 dpi

Recommended: 400-600 dpi

Colour depth

- 8 Bit greyscale for digitisations in greyscale
- 24 Bit (or higher) colour for digitisation in colour

Recommended: 24 Bit (or higher) colour for all digitization

Image formats

Recommended formats:

- TIFF,

- RGB,
- JPEG,
- JPEG2000,
- PNG,
- GeoTIFF.

Compression

With .tiff files, we recommend using lossless LZW compression. With .jpg files, the compression should not exceed 10%.

Image processing

An image should be on a single scan if possible (probably not possible when scanning large A1 format maps or bigger).

The following processes should be carried out on all scans: deskewing, trim and shift.

Recommended: other image enhancement, at least one image in series should have a colour scale scanned at the bottom of the image.

File naming

File naming is the responsibility of the partner libraries according to their digitisation policy.

OCR

Usually not applicable.

Delivering formats

- TIFF,
- RGB,
- JPEG,
- JPEG2000,
- PNG,
- GeoTIFF.

5.5. Sound

Master files

Minimum: mp3, at least 192 kbps (vbr) or another lossy encoding scheme for digital audio (ogg vorbis, AAC).

Recommended: WAV; Flac; BWF, 96KHz, 24 bit.

Sound formats

Recommended formats:

- WAV,
- Mp3.

Compression

Normally, no compression should be used (wav file).

If compression is used, lossless compression algorithms are preferred over lossy ones (flac).

Mp3 must have at least 128 kbps (vbr).

Recommended: mp3, at least 160 kbps (vbr). The best solution: flac lossless audio data compression.

File naming

File naming is the responsibility of the partner libraries according to their digitisation policy.

OCR

Not applicable.

Delivering formats

- Mp3,
- AAC,
- Ogg Vorbis,
- Flac,
- Wav.

5.6. Other

Resolution

Minimum: 300 dpi

Recommended: 400-600 dpi

Colour depth

- 8 Bit greyscale for digitisations in greyscale
- 24 Bit (or higher) colour for digitisation in colour

Recommended: 24 Bit (or higher) colour for all digitization

Image formats

Recommended formats:

- TIFF,
- RGB,
- JPEG,
- JPEG2000,
- PNG,

- GeoTIFF.

Compression

With .tiff files, we recommend using lossless LZW compression. With .jpg files, the compression should not exceed 10%.

Image processing

An image should be on a single scan if possible.

The following processes should be carried out on all scans: deskewing, trim and shift.

Recommended: other image enhancement.

File naming

File naming is the responsibility of the partner libraries according to their digitisation policy.

OCR

Usually not applicable.

Delivering formats

- TIFF,
- RGB,
- JPEG,
- JPEG2000,
- PNG,
- GeoTIFF.

5.7. Metadata

All metadata must be in compliance with the *Specification for the Europeana Semantic Elements*²⁰. It is recommended that bibliographic entries of digital objects include the URN (Uniform Resource Name) and, if possible, the URI of the entry in the local OPAC.

In addition, it is recommended to indicate in a uniform way which scan is to be displayed as the thumbnail picture. That would eliminate the possibility of blank pages in the thumbnail previews and allow us to provide the “europeana:object” element without difficulties.

²⁰ *Europeana Semantic Elements Specification*. Version 3.2, 07/08/2009, Europeana v1.0
<http://version1.europeana.eu/web/europeana-project/provide-content> (20.8.2009).

6. Summary

The main goal of this document is to establish the minimum requirements for the digitisation of materials in the Europeana Travel project to ensure the quality of the digitisation processes. The document is based on the viewpoint that the quality of digital objects, acquired through the process of digitisation, can only be determined in accordance with the intended use of these objects. The infrastructure for quality assurance is defined as an approach to work, not an external system for testing the quality of digitisation results.

The document lists the collections to be digitised during the course of the project, ordered by type of material. The list of collections was the basis for determining the minimum requirements for the digitisation of individual types of material.

The document also contains a summary of quality assurance procedures in partnering institutions. The summary is based on a preliminary survey that was carried out during preparations for the London workshop and contained a question on quality assurance in the planned digitisation processes. The answers are collected in a separate chapter.

In the last part, the document contains the minimum requirements for quality assurance in the digitisation processes. The requirements are presented in accordance with the types of library content. They are intended for all the partners of the Europeana Travel project to use as guidelines in the planning stage of digitisation and as the minimum common denominator of quality assurance in the digitisation processes.

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