



Public Record Office Victoria
PROS 11/07
Capture Standard

PUBLIC RECORD
OFFICE

Specification

2

Digitisation: Image Requirements

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<i>Version</i>	<i>Version Date</i>	<i>Details</i>
1.0	01/01/2010	Released
1.1	12/09/2011	Content unchanged. New version issued to renumber the document. PROS number updated to new Capture Standard number; updated to new Specification template styles; expiry date adjusted to five years; disclaimer wording adjusted to updated version.

1 Introduction

This Specification details the *minimum* set of technical requirements that images must satisfy when digitising source records in order to destroy the physical originals after digitisation. The requirements are designed to ensure that a digitisation effort results in the creation of a full and accurate copy of the physical original.

It is expected that agencies will adopt more stringent requirements than those contained in this Specification for records whose loss would have significant consequences.

Agencies are allowed to set lower requirements than those given here for temporary records, but only after a thorough analysis has confirmed that the resulting images are suitable for all business purposes.

1.1 Purpose

The purpose of this Specification is to provide a detailed and exact set of measurable requirements that define the criteria that images must satisfy when digitising source records with a view to using the digitised copy as the record and destroying the physical original.

This Specification will assist agencies in the implementation of PROS 10/02 *Capture Standard* through the provision of clear principles and the specific requirements to be met in order to implement them. The implementation of these principles will enable your agency to effectively manage their records management activities. This includes ensuring that the digitisation of images is undertaken effectively for the use of those images as the record within the agency, allowing for the destruction of the physical original.

Each principle within this Specification has a number of related requirements. These are individually numbered and described under the appropriate principle. The evidence of compliance is detailed against the appropriate requirement. Appendix 1 provides a self-assessment checklist for your agency against the requirements within this Specification.

1.2 Scope

This Specification applies to digitisation projects that are either:

- Digitising source records as they are received by an agency, where the digitised copy is placed in a document management system and then used as the record on which the action officers perform their work.
- Digitising existing records (back file conversion).

It applies to both permanent and temporary digital records.

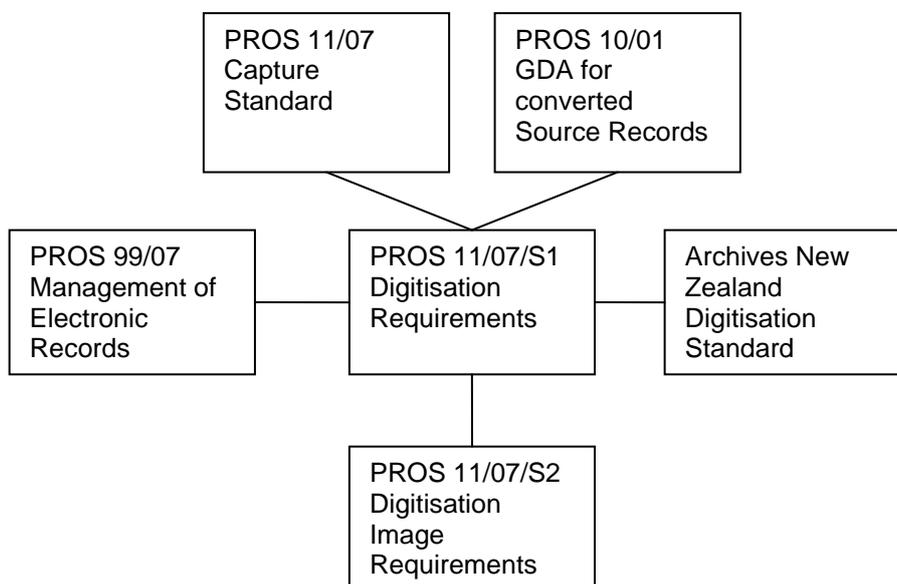
It does not apply to 'born digital' records; that is records that were originally created in a digital format and are held in that format.

This Specification only covers principles from the Standard that are of relevance to this area. For a full list of all the principles within this Standard, please see the relevant Standard. These can be accessed online at: www.prov.vic.gov.au

1.3 Related Documents

- Public Record Office Victoria, General Retention and Disposal Authority for converted Source Records (PROS 10/01);
- Public Record Office Victoria, Capture Standard (PROS 11/07);
- Public Record Office Victoria, Digitisation: Image Requirements (PROS 11/07/S2);
- Public Record Office Victoria, PROS 99/007 Management of Electronic Records.
- Archives New Zealand, Digitisation Standard (<http://continuum.archives.govt.nz/files/file/standards/s6.pdf>)

The diagram on this page shows the relationship between these documents and this Specification.



1.4 Acknowledgements

PROV would like to acknowledge the archives in other Australian and New Zealand jurisdictions for ideas used in drafting this Specification. We would also like to acknowledge the California Digital Library Guidelines for Digital Images as the source for our document categories.

PROV would also like to thank the following individuals and organisations that provided feedback on the draft versions:

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2 Requirements

This Specification states the digitisation requirements for each type of source document.

It contains a separate section for each type of source document (e.g. documents, photographs and negatives). Each section details:

- The resolution required (in dpi (dots per inch));
- The type of image (bi-tonal, greyscale, colour);
- The bit-depth (when greyscale or colour);
- Colour management; and
- Compression algorithm mode.

2.1 Lower specifications

Agencies may choose to relax the requirements in this Specification *for temporary records*. The requirements cannot be relaxed for permanent or unsentenced records.

The requirements may only be relaxed after a thorough usability analysis has confirmed that the resulting images are adequate for all reasonable business purposes. The usability analysis must:

- Identify all reasonable business uses of the records. Note that reasonable business uses of the records are broader than day-to-day business uses, and include, for example, use in legal action, investigations and Freedom of Information requests.
- Confirm that it can be reasonably expected that all images at the lower specification are usable for all of the identified reasonable business uses. This confirmation must be based on usability tests and include stakeholders for all the reasonable uses.

The usability analysis, and the evidence on which the analysis is based (e.g. usability tests) must be retained for as long as the digitised records. Both the analysis and evidence must be available to PROV.

It is not necessary to conduct this usability analysis where the requirements stated in this specification are adopted.

2.2 Higher specifications

Agencies may use higher standards than that given in this document if desired.

Retrospectivity

If a record has been digitised to the requirements in this specification and the technical requirements are subsequently changed, PROV will not require agencies to re-digitise to the new requirements.

Output formats

These requirements do not specify an output file format (e.g. TIFF or PDF/A). An agency may choose any output file format that satisfies the image requirements and the agency's purposes.

However, it is a requirement of the PROS 10/01 *General Retention and Disposal Authority for converted Source Records* that permanent converted records must be managed in compliance with PROS 99/007 *Management of Electronic Records* (the VERS standard). It is consequently recommended that agencies choose output file formats that are compliant with the VERS standard.

The compliant formats are TIFF, PDF/A, JPEG, and JPEG2000. Agencies should only use JPEG where the digitisation device *only* produces JPEG images.

Lossy compression

Some digitisation devices (e.g. digital cameras) only produce images using lossy compression (e.g. JPEG). In this case, this lossy compression technique can be used in the final image. Extreme care must be taken when processing images using lossy compression to prevent degradation of the image.

Where the digitisation device can produce images using lossless compression, this compression mode must be retained in the final image.

Multi-page records

It is recommended that agencies do not use multi-page TIFF files to store multi-page records. This is because multi-page TIFF images are not widely supported in viewing software. Agencies should store multi-page records in PDF/A files. If necessary, tools can be obtained to combine single image PDFs into a multi-page PDF/A.

Generation of images

These requirements specify the final output required. The intermediate images generated by the digitisation device, or stored during processing, are not specified. However, intermediate images must not be of lower quality than the final output. For example:

- The resolution of intermediate images must be at least that of the final output
- Lossy compression must not be used for the intermediate images unless the digitisation device (e.g. digital camera) only produces images using lossy compression.

2.3 Full and Accurate Records

Victorian agencies must maintain full and accurate records

Requirements	Evidence of Compliance
<p>1. For clean, high contrast, documents with text or graphics for which colour is either not present or not essential and any images are line art agencies must produce images conforming to the following specification:</p> <ul style="list-style-type: none"> • Resolution: 200 dpi • Type of image: bi-tonal • Bit-depth: 1 bits • Colour management: not applicable • Lossless compression (Lossy compression is acceptable if this is the only representation available from the digitisation device) <p>Generally use this specification for documents (including maps and plans) unless any of the following conditions apply:</p> <ul style="list-style-type: none"> • The document contains coloured information that must be retained to preserve the meaning (see R1.2) • The document has a low contrast (e.g. faded text, browning paper, or coloured paper) (see R1.2) • The document includes photographs (see R1.2) • Photographs (see R1.3 or R1.4) or negatives (see R1.5 or R1.6) 	<p>Testing of the images for resolution, image type, bit depth, and compression algorithm</p>
<p>2. For documents where colour is present and is important, or for documents with low contrast (e.g. faded text, coloured background) agencies must produce images conforming to the following specification:</p> <ul style="list-style-type: none"> • Resolution: 200 dpi • Type of image: colour • Bit-depth: 24 bits • Colour management: embedded ICC colour profile • Lossless compression (Lossy compression is acceptable if this is the only representation available from the digitisation device) <p>Use for all documents that do not fall under requirement R1.1 except Photographs (see R1.3 or R1.4) or negatives (see R1.5 or R1.6)</p>	<p>Testing of the images for resolution, image type, bit depth, colour management profile, and compression algorithm.</p>

Requirements	Evidence of Compliance
<p>3. For black & white photographs agencies must produce images conforming to the following specification:</p> <ul style="list-style-type: none"> • Resolution: 600 dpi • Type of image: greyscale • Bit-depth:8 bit • Colour management: embedded ICC colour profile • Lossless compression (Lossy compression is acceptable if this is the only representation available from the digitisation device) 	<p>Testing of the images for resolution, image type, bit depth, colour management profile, and compression algorithm.</p>
<p>4. For colour photographs agencies must produce images conforming to the following specification:</p> <ul style="list-style-type: none"> • Resolution: 600 dpi • Type of image: colour • Bit-depth: 24 bit • Colour management: embedded ICC colour profile • Lossless compression (Lossy compression is acceptable if this is the only representation available from the digitisation device) 	
<p>5. For black & white negatives agencies must produce images conforming to the following specification:</p> <ul style="list-style-type: none"> • Resolution: 2400 dpi • Type of image: greyscale • Bit-depth:8 bit • Colour management: embedded ICC colour profile • Lossless compression (Lossy compression is acceptable if this is the only representation available from the digitisation device) 	<p>Testing of the images for resolution, image type, bit depth, colour management profile, and compression algorithm</p>
<p>6. For colour negatives agencies must produce images conforming to the following specification:</p> <ul style="list-style-type: none"> • Resolution: 2400 dpi • Type of image: colour • Bit-depth: 24 bit • Colour management: embedded ICC colour profile • Lossless compression (Lossy compression is acceptable if this is the only representation available from the digitisation device) 	<p>Testing of the images for resolution, image type, bit depth, colour management profile, and compression algorithm</p>
<p>7. Where it is required to relax the requirements of this Specification for temporary records, agencies must conduct a usability analysis conforming to the following specifications:</p> <ul style="list-style-type: none"> • Identification of all the reasonable business uses of the records. • Evidence to confirm that it can be reasonably expect that all records will be usable for all identified business uses 	<p>Usability analysis and supporting evidence.</p>

3 References

Legislation

Victorian Evidence Act 2008 (No 47 of 2008), Version as at 16 September 2008 ([http://www.legislation.vic.gov.au/Domino/Web_Notes/LDMS/PubLawToday.nsf/a12f6f60fbd56800ca256de500201e54/6B8E277F6392C41BCA2574CC007A6F08/\\$FILE/08-47a001.pdf](http://www.legislation.vic.gov.au/Domino/Web_Notes/LDMS/PubLawToday.nsf/a12f6f60fbd56800ca256de500201e54/6B8E277F6392C41BCA2574CC007A6F08/$FILE/08-47a001.pdf) accessed 30 September 2009).

Standards

General Retention and Disposal Authority for converted Source Records, PROS 10/01, Public Record Office Victoria, Version 1.0, January 2010, (<http://prov.vic.gov.au/wp-content/uploads/2011/05/PROS10-01ConvertedRecords-WebVersion20110107.pdf>).

Digitisation Requirements, PROV Specification PROS 11/07/S1, Public Record Office Victoria, Version 1.1, September 2011, <http://prov.vic.gov.au/wp-content/2011/09/1107s1.pdf>).

Digitisation Standard, Archives New Zealand, 29 January 2007, (<http://continuum.archives.govt.nz/files/file/standards/s6/index.html> accessed 30 September 2009).

PROS 99/007 (Version 2.0) Management of Electronic Records, PROV, 31 July 2003, (<http://www.prov.vic.gov.au/vers/standard/version2.htm>).

Other Resources

Guide to GDA for converted Source Records, PROS 10/01/G1, Public Record Office Victoria, Version 1.0, January 2010, (<http://prov.vic.gov.au/wp-content/uploads/2011/05/1001g1-20100310.pdf>).

Guide to Digitisation Requirements, PROS 11/07/G1, Public Record Office Victoria, Version 1.1, September 2011, (<http://prov.vic.gov.au/wp-content/2011/09/1107g1.pdf>).

Evidence and Electronic Public Records, PROV Advice to Victorian Agencies PROA 10/21, Version 1.0, January 2010, (<http://prov.vic.gov.au/wp-content/uploads/2011/05/PROVRMAdvice21.pdf>).

Introduction to the Uniform Evidence Act in Victoria: Significant Changes, Judicial College of Victoria, 2009, ISBN-13: 978-1-921028-84-7, (<http://www.judicialcollege.vic.edu.au/publications/uniform-evidence-resources>).

CDL Guidelines for Digital Images, Version 2.0, April 2009, Chapter 3 Requirements, (<http://www.cdlib.org/inside/diglib/guidelines/bpgimages/reqs.html#361>).

Other Resources

For more information about digitisation, contact Public Record Office Victoria:

Manager, Government Services

www.prov.vic.gov.au

agency.queries@prov.vic.gov.au

ph: 9348 5600

PO Box 2100

North Melbourne, VIC 3051

Appendix 1: Compliance Checklist

	<i>Compliance Requirement</i>	<i>Evidence of Agency Compliance</i>	<i>Met</i>	<i>Not Met</i>	<i>Comments</i>
	Record Capture				
	Victorian agencies must maintain full and accurate records				
1	For clean, high contrast, documents with text or graphics for which colour is either not present or not essential and any images are line art 200 dpi, bitonal, lossless compression (unless digitisation device can only produce image represented using lossy compression)				
2	For documents where colour is present and is important, or for documents with low contrast (e.g. faded text, coloured background) 200 dpi, 24 bit colour, embedded ICC colour profile, lossless compression (unless digitisation device can only produce image represented using lossy compression)				
3	For black & white photographs 600 dpi, 8 bit greyscale, embedded ICC colour profile, lossless compression (unless digitisation device can only produce image represented using lossy compression)				

	<i>Compliance Requirement</i>	<i>Evidence of Agency Compliance</i>	<i>Met</i>	<i>Not Met</i>	<i>Comments</i>
4	For colour photographs 600 dpi, 24 bit colour, embedded ICC colour profile, lossless compression (unless digitisation device can only produce image represented using lossy compression)				
5	For black & white negatives 2400 dpi, 8 bit greyscale, embedded ICC colour profile, lossless compression (unless digitisation device can only produce image represented using lossy compression)				
6	For colour negatives or transparencies 2400 dpi, 24 bit colour, embedded ICC colour profile, lossless compression (unless digitisation device can only produce image represented using lossy compression)				
7	Where it is required to relax the requirements of this specification for temporary records, agencies must conduct a usability analysis that identifies all reasonable business uses of the record and confirms that it can be reasonably expected that all records will be usable for all identified business uses.				