

From Analogue to Digital: Navigating Collection Digitisation

Assessing, Planning, Prioritising and Executing. And then
Managing the Digital Deluge

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About ICS

International Conservation Services is Australia's largest private fine art and heritage conservation practice.

We provide comprehensive cultural heritage and conservation services

In operation for over 30 years, in Sydney, Melbourne, Canberra, Brisbane and Perth

- Museum and Gallery Services
- Fine and Decorative Arts
- Objects, Outdoor and Built Heritage

Specialist Services

- Mould remediation
- Digitisation Services
- Built Heritage
- Industrial heritage
- Archaeological Conservation
- Public Art
- Art Security and Collection Tracking
- Disaster Planning
- Collection Management



About ICS – MGS and Digitisation Services

Museum and Gallery Services

- Museum and Conservation Planning
- Collection Management
- Cataloguing and Data management
- Art Security (with Fortecho RFID)
- Object Tracking (RFID, barcodes)
- Digitisation of collections
 - Digital preservation consulting
 - Collection digitisation assessments
 - Project management of digitisation services
 - Archiving of digital materials
 - High-resolution digital photography
 - Use of AI for enhancing collection metadata

Digitisation as a part of Conservation and Preservation

For many objects or paper-based items a digital representation of the original can:

- Reduce handling
- Reduce storage space
- Increased accessibility
- Limit exposure to light
- Improved Research and Education
- Enhanced Public Engagement
- Economic benefits



About ICS – Digitisation Services

ICS Digitisation Services include:

- Strategic Digitisation Planning
- Digitisation Policies and Plans
- Workflow and Resource Planning
- Digital Preservation Consulting
- Collection Digitisation assessments
- Collection Management System review
- Project Management of digitisation services
- Liaising with IT Departments

Cont:

- Collection preparation for digitisation – stabilisation, removing adhesives, paper clips, staples, mould treatments, tear repairs, etc.
- Archiving of digital materials
- High-resolution digital photography
- Use of AI for enhancing collection metadata
- Social Media guidelines
- Data migration from old media (CD's, DVD's hard drives, USB sticks, etc)
- Audit of digital media files (Using DROID)
- Photogrammetry and 3D modelling





Waverley Local History Collection - Photographs



Waverley Local History Collection – Maps and Plans



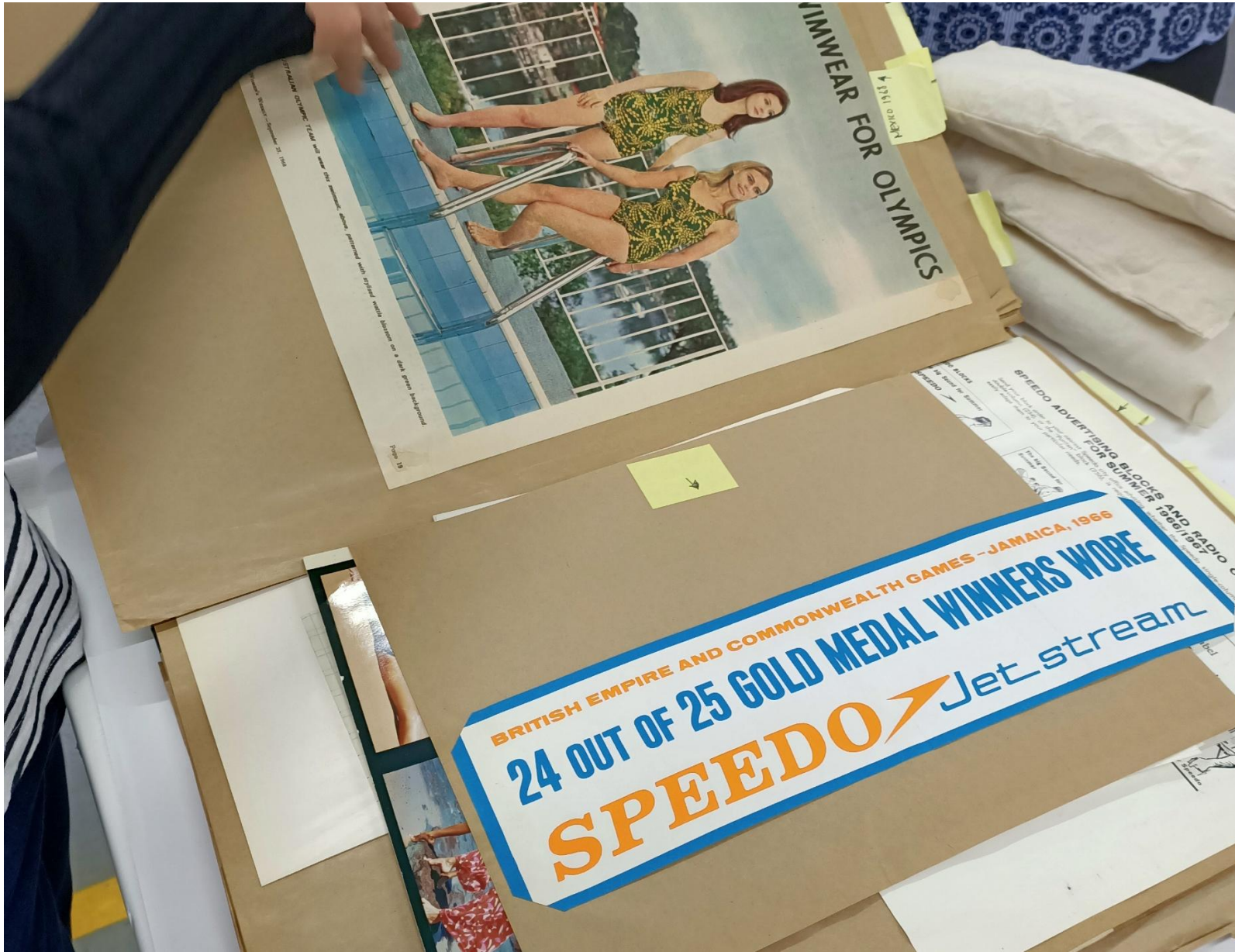
Waverley Local History Collection - Microfilm



Waverley Local History Collection – Bound Newspapers and ledgers



Digitisation of the Sydney RBG Herbarium Specimens with Picturae conveyor belt system



Powerhouse Museum – Speedo Scrapbooks



John Gorton Building – Encryption Devices and Manuals



CSIRO – Conservation of the Robert Ingpen Mural



CSIRO – Full-size digital reproduction of the mural for the Visitors Centre

What is the Digitisation process??

- Assessment and Planning
- Conservation Considerations
- Technical Considerations
- Legal and Ethical Issues
- Metadata and Cataloguing
- Managing the Actual Digitisation Process
- Access and Use
- Challenges
- Opportunities and Future Directions, incl. Social Media and AI

“The best way to preserve something is to share it widely”

Brewster Kahle, Internet Archive

Digitisation – Assessment and Planning

Needs Assessment

What collection types do you hold? This can determine the best digitisation approach.

- Vertical Files
- Monographs
- Photographs
- Posters
- Maps and Plans
- Artworks
- Ledgers – Rate Books, Cemetery Records, Council Minutes, etc
- Microfilm and Microfiche
- etc

Prioritisation

Prioritisation Matrix based on:

- Significance
- Usage / Access
- Fragility / Condition / Format

Resource Evaluation

- In-house skills and equipment
- Staff time / Volunteers

Assess Previously digitised collections

- Quality
- Formats
- Media types
- File integrity

Stakeholders

Who needs to be consulted and get buy-in?

- Staff and Volunteers
- Local Community
- Council IT
- Mayor



Digitisation – Conservation Considerations

Paper and ink deterioration

- Acidic paper
- Ink corrosion
- Brittleness
- Rips and tears

Binders and fasteners

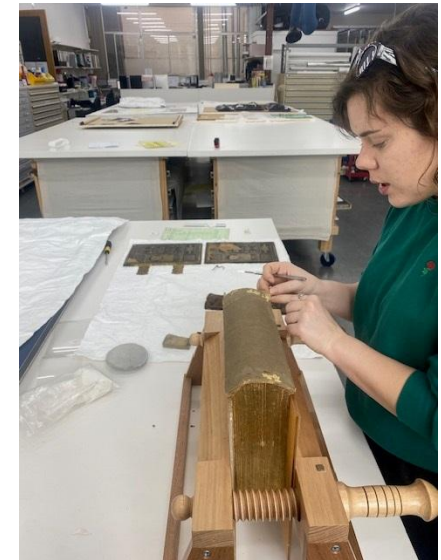
- Book binding
- Spine repairs
- Ferrous Paper clips and staples

Photographic and Film decay

- Fading
- Silvering
- Vinegar syndrome

Mould and Pests

General wear



Digitisation – Technical Considerations

Digitisation Standards (e.g. NAA)

- Adoption of Standards – reasoning and implications
- Customisation vs compliance
- Interoperability
- Training and Awareness
- Evolving Standards

Equipment and Software

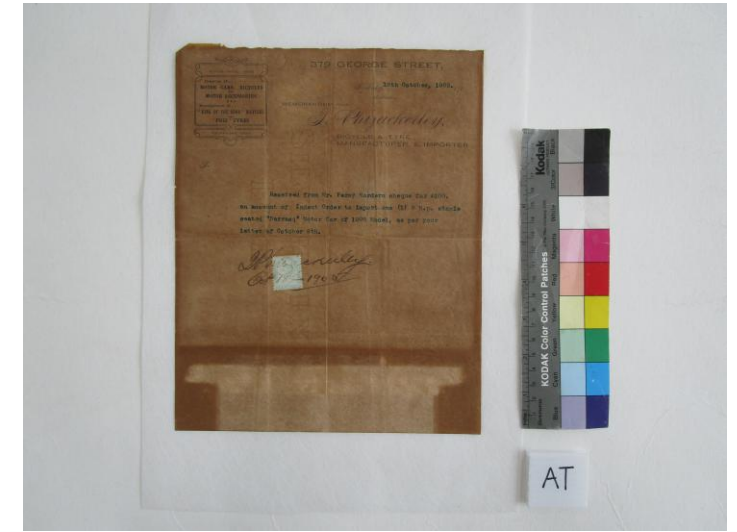
- Cost vs Quality
- Technology Obsolescence
- Open Source vs Proprietary
- Scalability
- Integration
- Sustainability

File Storage and access

- Storage Infrastructure
- Accessibility
- Metadata and Searchability/Discoverability
- Data Security
- Cost Management
- User Experience

Digital Preservation

- In-house vs Cloud
- Tape back ups
- File Integrity (Checksums, bit rot)



Digitisation – Legal and Ethical Issues

Copyright and permissions, IP

Privacy

- Sensitive personal information?

Licensing and Ownership

Cultural Sensitivities

Access Restrictions

- Donor agreements
- Digitisation for internal/admin use

Orphaned Works

- Risk Assessment approach

Sustainability

- Energy Efficiency
- Sustainable Digital Preservation



Digitisation – Metadata and Cataloguing

Consistent Metadata

- Ensuring you have consistent and descriptive metadata for searchability

Cataloguing Systems

- Ensuring the digitised items and associated metadata can be easily integrated/imported into your system

Linked Data and Interoperability

- Ensuring any digitised data and images are readily discoverable (i.e. on the web)
- Ensuring your data is linked to other sources to improve discoverability – e.g. TROVE

Use of AI and Volunteers

- Speed up and improve cataloguing
- E.g. Digivol



Digitisation – Managing the Actual Digitisation Process

Digitisation Techniques and Equipment

- Flatbed scanner
- Overhead Book scanner
- Planetary Scanners
- Sheet-fed scanners
- Drum Scanners
- Microfilm/Microfiche scanners
- Photography – copy stands
- Audio and Video digitisation
- 3D Digitisation – scanners / photogrammetry



In-house vs Outsourcing

Preparation incl conservation treatments

Workflow

- Managing the batches of material being scanned and then managing the batches of digital files created

Quality Assurance



Digitisation – Access and Use

Storage with Accessibility

Storage Capacity

Data Integrity and Preservation

Sharing digitised collections

- Linking diverse collections

What else can we do with all these digital assets?

- Research
- Education
- Community Engagement
- Preservation
- AI/Machine Learning
- Public Engagement – Social media

File Storage and access

- Storage Infrastructure
- Accessibility
- Metadata and Searchability
- Data Security
- Cost Management
- User Experience



Digitisation – Digital Preservation

In-house vs Cloud

- Tape back ups
- Server Access
- Tiers: Hot / Warm / Cold / Deep Archive Storage

Long-term viability

- Financial
- Technical

Managing Preservation vs Access

- Ethical Considerations?

File Integrity

- Format Obsolescence
- Digital Decay
- Checksums, bit rot

Example Cloud Storage Costs

Storing **1 TB (1,024 GB)** of data for one month:

- **Hot Storage:** ~\$(US)23.55 (AWS S3 Standard)
- **Warm Storage:** ~\$12.80 (AWS S3 Standard-IA).
- **Cold Storage:** ~\$4.10 (AWS S3 Glacier).
- **Deep Archive:** ~\$1.01 (AWS S3 Glacier Deep Archive).

Retrieving **1 TB** of data:

- **Hot Storage:** \$0 (no retrieval fee).
- **Warm Storage:** ~\$10.24 (AWS S3 Standard-IA).
- **Cold Storage:** ~\$20.48–30.72 (AWS S3 Glacier).
- **Deep Archive:** ~\$20.48–51.20 (AWS S3 Glacier Deep Archive).



Digitisation – Challenges

Technical

- File corruption
- File obsolescence
- Scalability
- Storage
- On-going Maintenance

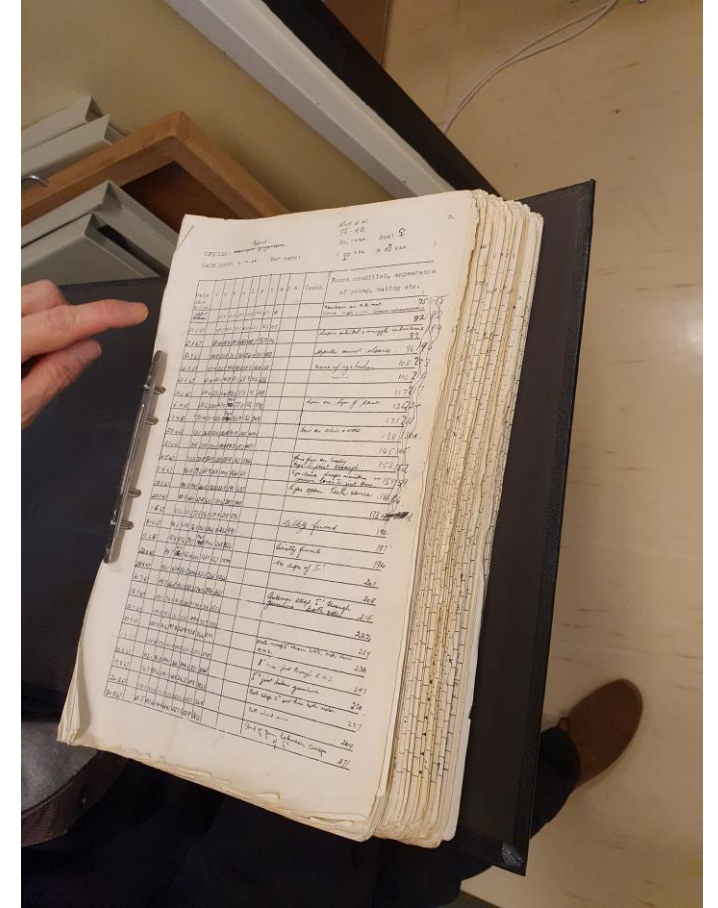
Funding and sustainability

Workflow challenges

- Material preparation for scanning
- File ingestion times
- QA Process
- Staff/Volunteer training and retention

Digital / Digitisation Bias

- Underutilisation
- Marginalisation
- Resource Allocation
- Loss of Context
- Access Inequity
- Deterioration Risk
- Bias in Historical Narratives



Opportunities, Future Directions and the Digital Deluge

Machine Learning and AI

- Automated Digitisation
- Metadata Generation
- Content Analysis
- Language Translation
- Image and Audio Recognition
- Specialised ChatGPT Engines e.g. Art Conservation, Object and Scene Recognition on Photos, etc.

Enhanced User Engagement and Personalisation

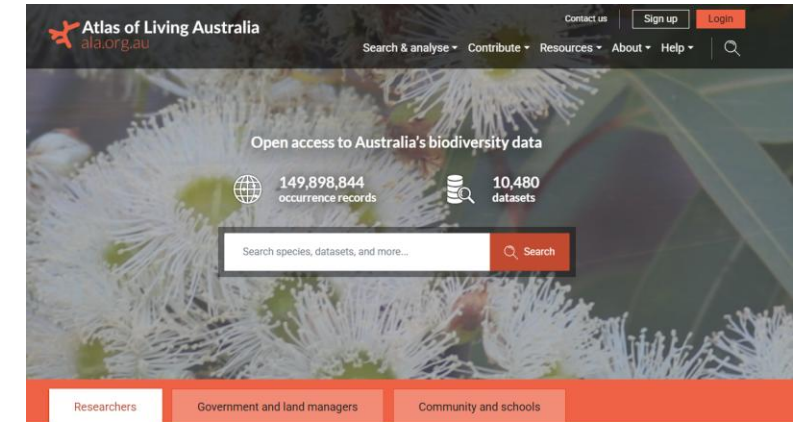
- Personalised and Immersive Experiences
- Interactive Tools and Exhibits
- Gamification
- VR/AR – Virtual Tours, Reconstruction of Historical Sites

Collaboration and Connections

- Shared Resources
- Standardisation
- Integrated Access
- Community Involvement
- Cross-Institutional Research e.g. TROVE

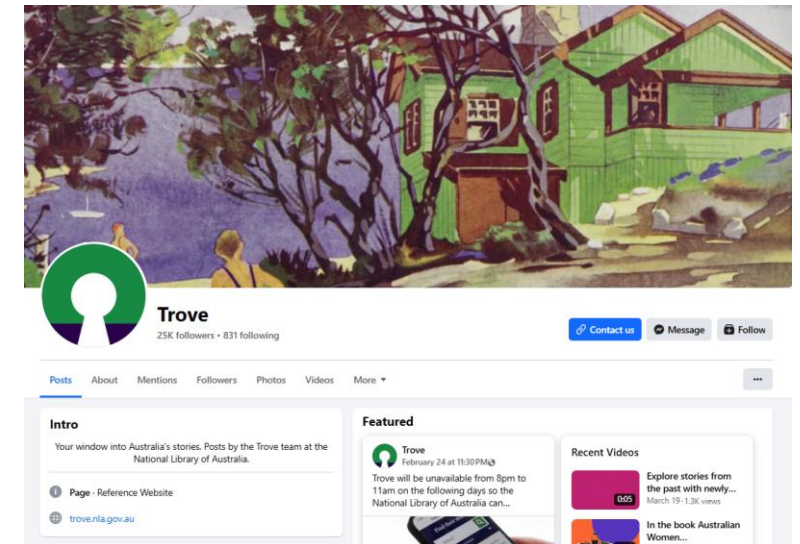
Linked Data / Aggregators

- Europeanna
- TROVE
- Atlas of Living Australia
- GBIF
- BM Collections Online
- Chronicling America
- OpenGLAM



Researchers includes ecoscientists, taxonomists, collection owners, tertiary students and lecturers.

Explore & contribute Tools More information



Social Media

Why?

- Documenting Contemporary Culture and History
- Provides a Real-time record of events
- Can reflect Cultural shifts
- Preserves Ephemeral Content
- Can be valuable Primary Source Material for Research
- Technological and Platform changes – e.g. MySpace

But how to decide what/if to collect?

State Records of NSW guidelines for record-keeping approaches:

- Leave the information where it is strategy
- Low level information management strategy
- Monitoring-based information management strategy
- Needs-based information management strategy
- Reporting as an information management strategy
- Information for reuse strategy
- Information management for accountability strategy
- Information management through broadcast systems strategy

Also guidelines published by NAA



Social Media

How can this be applied practically for Local History Society's / Libraries?

Basically comes down to 3 relevant strategies to choose from:

- Leave the Information where it is strategy
- Low-level information management strategy
- Needs-based information management strategy

All are equally viable strategies to apply

But how to capture this information?

- Platform self-archiving services
- Screenshots
- Cloud-based backup systems (e.g. Archive Social and Brolly)



The new look Aaminaby Trout is a hit!

We're thrilled to report that the people of Snowy Mountains and those who hold 'Big Things' dear are pleased with the latest paint job.

The trout was in very poor condition when ICS was first appointed to conserve the sculpture in 2023. Our conservators removed the old flaking paint by water-blasting, applying paint stripper and finally pressure washing the trout clean. ... [See more](#)



👍 You and 11 others

💬 1 comment 1 share

👍 Like

💬 Comment

➦ Share

Social Media

Brolly

- Australian-based
- Used by Australian Government bodies, such as City of Sydney
- Easy to use and set up
- Can connect to multiple social media channels and accounts
- Can perform a historic 'crawl'
- Set up schedules to perform regular snapshots
- Captures the full native record incl comprehensive metadata
- This can then be exported out to PDF, HTML or Excel.

The screenshot displays the Brolly web application interface. The top navigation bar includes a '29 DAYS REMAINING OF YOUR TRIAL' warning and an 'Upgrade your plan' button. The left sidebar contains navigation options: Dashboard, Feed, Messages, Alerts, Exports, and Settings. The main content area shows an Instagram post from 'ICS Sydney' dated 10:49:34am, 22 Oct 2021. The post text describes the restoration of a woven tapestry. Below the text are four images showing the process. The post has two comments: one from 'camilegityboeur' saying 'Amazing' and another from 'heba_saad10' saying 'Well done'. On the right, a 'Details' panel provides metadata: Source (Instagram), Action time (10:49:34am, 22 October 2021), Action type (Create), Record type (Post), Collection time (12:34:58pm, 09 December 2021), Collection type (Historic), and Hashtags (#internationalconservationservices, #textileconservation, #textileconservator, #conservation, #artconservation, #tapestry). Below the details, a 'Tags' section is visible. In the foreground, a browser window shows the HTML export of the post, titled 'Brolly export "ICS Brolly Test 1" is ready for download - Message (HTML)'. The email body contains the message: 'Your Brolly export is ready for download!', 'Hello Mei,', and 'Your Brolly export "ICS Brolly Test 1" is ready to download from Brolly.' It also includes a link to view generated exports and more details about the export (Type: Post, Format: PDF, Download size: 2.1 MB).

Examples of AI Cataloguing – Chat GPT




Chat GPT



Can you analyse these images and develop a catalogue of them

Here is a basic catalog of the images you provided, based on their visual content:

Museum Object Catalogue

Image	Object Description	Category	Condition
 IMG_95 52	Tape dispenser with a yellow plastic body and brown adhesive tape	Office Supplies	Good
 IMG_96 66	Framed painting of Jesus Christ, featuring the Sacred Heart, hanging on a floral-patterned wall	Religious Art	Fair (visible wear and slight damage)
 IMG_96 92	A worn-out pink wooden chair with chipped paint and visible wood damage	Furniture	Poor (significant wear and tear)

Message ChatGPT

Examples of AI Cataloguing – Chat GPT

Chat GPT cont.

Would you like me to refine this catalog further with additional details such as estimated time period, materials, or potential historical significance?

You said:

yes

ChatGPT said:

Here is a refined catalogue with additional details on materials, estimated time period, and historical significance:

Museum Object Catalogue

1. Tape Dispenser

- *Category:* Office Supplies
- *Description:* A yellow plastic tape dispenser with a roll of brown adhesive tape. The design suggests it is a standard, mass-produced item, likely from the late 20th or early 21st century.
- *Estimated Time Period:* 1990s–2000s
- *Materials:* Plastic, metal (cutting edge), adhesive tape
- *Condition:* Good (minor wear visible)
- *Historical Significance:* Common household and office item, representing everyday work and organizational tools from late 20th-century consumer culture.

2. Framed Religious Artwork – "Sacred Heart of Jesus"

- *Category:* Religious Art
- *Description:* A framed print or oil painting of Jesus Christ with the Sacred Heart symbol, characterized by His blessing gesture and a halo. The frame is gold-trimmed with signs of aging and wear. Hanging on floral-patterned wallpaper, which suggests a domestic or devotional setting.
- *Estimated Time Period:* Likely mid-to-late 20th century
- *Materials:* Printed canvas or oil painting, wooden frame, glass (possibly)
- *Condition:* Fair (visible wear, small damage on the artwork's surface)
- *Historical Significance:* The Sacred Heart image is widely used in Catholicism and Christian devotion, especially in homes, churches, and religious institutions. The mid-century style suggests it was a popular religious icon in many households during that era.

3. Wooden Chair (Pink, Distressed Condition)

- *Category:* Furniture
- *Description:* A wooden chair painted pink, with a curved backrest and a slightly concave seat. The paint is chipped and worn, exposing the raw wood underneath. It appears handmade or crafted in a traditional style.
- *Estimated Time Period:* Mid-20th century (possibly earlier)
- *Materials:* Wood, paint
- *Condition:* Poor (significant wear, chipped paint, visible structural deterioration)
- *Historical Significance:* The handcrafted style suggests it may have been used in a domestic or rural setting, possibly as a children's chair or lightweight furniture for informal use. The wear indicates long-term use and exposure to elements.

Examples of AI Cataloguing – Chat GPT

Chat GPT Object and Scene Recognition

Image uploaded (no context included, and note that its somewhat blurry)



Chat GPT Response:

This image shows a well-lit neoclassical-style building at night, featuring white columns and black lamp posts leading up a staircase to the entrance. The banners on the facade suggest an exhibition or event, with titles like *Behind the Lines* and *Dress Code: Empire*. The building appears to be of historical or governmental significance, possibly a museum or heritage site. The presence of a coat of arms above the entrance further indicates its official status. Given these elements, this could be the Old Parliament House in Canberra, Australia, which now houses the Museum of Australian Democracy.

Examples of AI Cataloguing - Grok

Grok

Can you analyse these images and develop a catalogue of them?



Examples of AI Cataloguing - Grok

Grok

Certainly! Based on the images provided, here's a catalogue of the items:

Image 1: Christmas and Greeting Cards Collection

Gold Box: A rectangular box with a gold patterned design, likely used for storing cards or gifts.

Christmas Cards: Several small cards with "Merry Christmas" greetings, featuring colorful illustrations of festive scenes.

Card 1: Depicts a Christmas tree and gifts.

Card 2: Shows a fireplace with stockings.

Card 3: Features a snowy landscape with a house.

Card 4: Illustrates a Santa Claus figure.

Card 5: Shows a reindeer pulling a sleigh.

Card 6: Depicts a nativity scene.

Greeting Card: A card with the text "THOUGHTS OF YOU" and a large floral design.

Handkerchief: A white handkerchief with a pink floral design on the corner and pink embroidered edges.

Orange Pencil: A pencil with an orange body and a black eraser.

Blank Card: A plain brown card, possibly for writing a personal message.

Green Ribbon: A green ribbon with a pink floral pattern, tied into a decorative bow.

Image 2: Sheet Music

Sheet Music Cover: A sheet music cover titled "It's A Long Way To Tipperary" by Jack Judge and Harry Williams. It's a special wartime edition with 25% of the proceeds going to the Belgian Relief Fund. The cover features illustrations of soldiers in combat, likely referencing World War I. Published by The Stanley Mullen Co., Melbourne and Sydney, and Feldman & Co., London.

Thank you



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Available by
appointment