COLLECTIONS AT RISK

Digital

DIGITAL VIDEO, INTERACTIVE PROGRAMS,
WEB-BASED CONTENT

Introduction

This guide aims to assist small to medium collecting organisations and individuals to care for digital media in their collections, specifically digital videos, interactive programs and web-based content. The guide is not intended to replace the advice of a trained professional but provides the first steps in caring for digital materials. This guide can be used in conjunction with the others in this series: Film, Floppy disk, Magnetic tape and Optical disc.

The information provided in this guide includes terminology and names of technologies and processes that are complex and specific to the format in focus. For many these terms and names may be challenging to recognise or understand. Please don't be discouraged, definitions can be clarified by consulting with a conservator, professional service provider, GLAM sector agencies as well as the references and further reading provided in this guide.

Background

Since the late 2000s, collections of digital media such as single-channel video and interactive programs moved from analogue and digital tapes and disks to predominantly digital files. Web-based content also evolved fast with more artists and creatives using the internet to produce and display their work. Digital files and content are increasingly common in collections and require care and attention to ensure their longevity into the future.

Assessment

When assessing your collection of digital formats, ensure you have a clean workspace with enough room to carefully set up the hardware required to access the material. Allow space to document the condition of the material and have any necessary equipment ready before you begin. Equipment may include a dedicated computer and accessories for various digital storage media (card readers, external floppy disk drive, cable adaptors, etc).

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Media and materials

The digital formats focused on in this guide can be separated into three main components.

- Intellectual material: this is the intangible aspect of the content that is owned by the copyright holder of a digital video, an interactive program or content created for the web. It is important to identify the files or code of the intellectual material to properly render the work.
- Dependent hardware: the physical equipment for accessing the material such as playback devices like a media player or computer, display devices like a screen or projector, and storage devices like hard drives, thumb drives and SD cards.
- Dependent software: the operating system and programs required to access the material.

Assorted digital storage devices and adaptors

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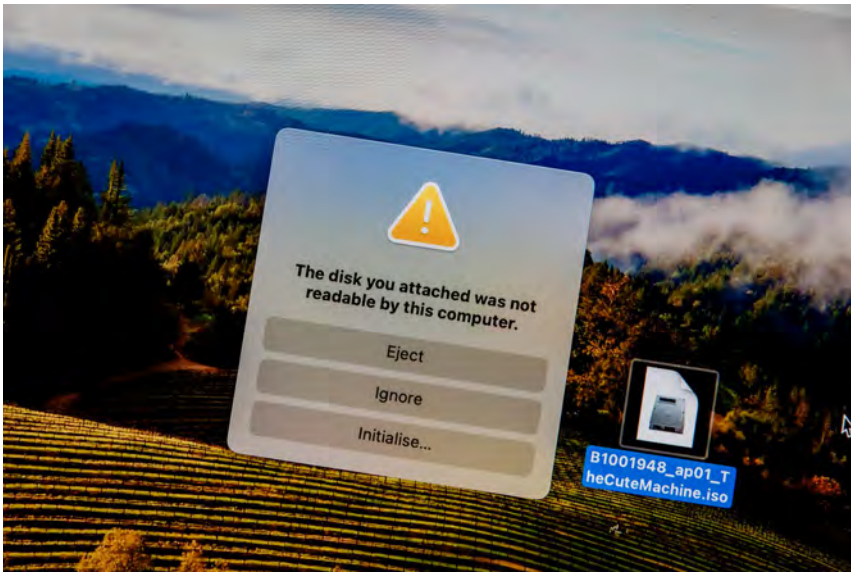
Computer system incompatible with imaged optical disc



Condition issues

- The limited availability of hardware and parts, and the need to maintain this hardware are significant issues.
- The file format or software could become obsolete, or a system upgrade could affect the files.
- Files could be accidentally deleted, or intentionally deleted through sabotage/hacking.
- Data could be completely or partially lost due to a corrupt file or a virus.
- Storage devices could be misplaced or damaged as a result of unforeseen incidents, poor handling or storage practices.
- Loss of metadata or documentation could lead to content not being displayed as the artist/creator intended.
- A website host could cease to exist, and data permanently lost.

Handling

- When accessing intellectual material, take care not to change the file in any way.
- Handle the hardware carefully as the equipment can be fragile and expensive.

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Preservation

Digital content is all around us and it is easy to forget it is fragile. In addition to risks with the hardware that digital material is stored and accessed on, there are many factors that can adversely affect the integrity of digital content.

Preventive conservation

Here are some preservation strategies that can be used to maintain accessibility of this material into the future:

- Once the material is identified, it's advisable to also produce a preservation copy, an exhibition/access copy and backup copies.
- Store backup copies in separate geographical locations from their originals to avoid complete loss in the event of a disaster.
- Documentation of digital material is equally as important as documenting object-based works. Ensure the files are recorded accurately into your Collection Management System (CMS). Include any information gathered from the artist or creator such as images and videos of the artwork on display and detailed specifications on how the work should be installed.
- Checksums are values generated by algorithmic analysis of digital files, like a digital fingerprint, and should be created and saved at the earliest opportunity. The term fixity refers to a process of comparing pre-existing and newly generated checksums to detect change in a file, where an identical checksum indicates no change.

LTO tapes used for digital backup

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- Bagger is a software tool that can be used for packaging, moving and copying a set of digital files. It also creates a file manifest and has integrated fixity checking capability.
- Interview the artist/creator and record how the work was created, the artist's preferences on how the work is displayed and their intent. What type of technology can the work be migrated to if the current one becomes obsolete? Or, as long as the artist's intent is achieved, could the technology be non-specific?
- Web-based content can be preserved through a process called web-archiving. This involves capturing the content in its present form including all relevant files and code. To do this, a software tool known as a crawler or harvester gathers all the required data, which is then converted into a preservation format that can be read by web-archiving software.
- The following table indicates general storage environment recommendations for preserving hardware:

CONDITIONS	RECOMMENDED PARAMETERS
Temperature	18– 21°C
Relative Humidity (RH%)	35–45 RH%
Light	Avoid direct sunlight and limit light exposure
Storage area	A dark, cool, dry, clean and stable environment

Potential treatments

- If a corrupt file is discovered when comparing checksums, a new copy will need to be created from an existing backup.
- If a corrupt or broken hardware, such as a hard drive, is an issue for file access, seek advice from professional data recovery services.
- If you require a conservator, refer to the *AICCM directory of conservators*.

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Portable storage device and forensic USB bridge

Migration

Migration is a key method for ensuring ongoing access to digital materials. It can be the act of transferring content from one storage technology to another, usually from an obsolete technology.

Migration can also refer to the act of saving digital content in a different file format for compatibility reasons. File formats can become inaccessible due to upgrades in computer hardware and software systems.

- A write-blocker can be used when transferring content to avoid accidental alteration of the data on original storage devices in the process.
- A disk image can be created of hard drives, thumb drives and other storage devices. This process copies the entire content exactly and original files are not altered. The content can then be copied again for exhibition copies and other backup copies. The metadata and any technical information should also be recorded.
- Emulation is another way to overcome inaccessibility due to obsolete technology. Emulators are software programs designed to mimic specific computer systems and may enable access to content that is otherwise incompatible with contemporary hardware and software.

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Disposal advice

Hardware that has suffered significant damage may require disposal. After backing up or migrating the content, you can erase or delete it from damaged devices. Format or reset the devices to factory settings to ensure any sensitive material is removed and remember to remove any labels or markings from the devices before disposal. You may need an IT specialist to help with this, depending on the complexity of the hardware.

Editioning artwork (attributing an edition number) is common practice and disposing copies after an exhibition controls the number of copies that exist. Exhibition copies created for a touring exhibition or a loan at another organisation may need to be destroyed after the exhibition comes to the end of the loan period. File deletion requirements should be clearly stated in a relevant contract.

Some components of the removable devices, consoles, computers and tablets can be recycled. However, some components of this hardware are hazardous and should be handled by a professional. Check with your local council for an appropriate recycler near you.

References and further reading

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