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Preserving Digital Art

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1 Introduction

This Guidance Note is aimed at institutions starting to collect digital art as part of a wider collecting remit. It offers basic guidance on the specificities of digital art and how it may differ from other digital content in an institution's care. Digital Art is a broad term that for this document we define as art that uses digital components, often alongside physical components such as electronic equipment and sculptural objects, to create or perform an artwork. The spectrum of technologies includes anything from a Word document to be printed for exhibition, a digital video in a gallery installation using vintage equipment, or an interactive augmented reality experience.

The digital objects at the core of these artworks are affected by the same issues as other digital objects, in that they are dependent on technology to be accessed. As with any other digital objects the collecting institution needs to be able to find them, access them and ensure they are held in safe long-term storage. However, what makes digital art quite different from other types of digital object is that they typically rely on non-digital components and specialist knowledge in order to re-create and display the artwork.

If a Word document must be printed for an exhibition, we need to ask many questions to ensure the resulting physical print is as the artist intended. What printing process should be used? What size should it be printed in - A4 in Europe if replicating a standard office document, but maybe a different size in the US? What type of paper - Should it be normal office paper, shiny or maybe heavier? Should it be framed, piled or stuck to the wall with putty?

The values of the different digital and non-digital elements can be identified by the "work-defining properties" of the artwork (Laurenson, 2006). Understanding how and why an element is valued is essential to define an appropriate preservation strategy. The digital and non-digital elements, and their relations, must be documented in respect of these properties. However, there is a fluidity to these work-defining properties, and the value of the different elements can change over time, often driven by the artists themselves as well as by changes in technology.

This Guidance Note proposes a framework for the analysis of artworks, describes the relationships between digital and non-digital elements of the art, and the parameters that are likely to influence preservation strategies. It is intended to provide an introduction only, though an extensive reading list is included for further exploration of this topic.

1.1 What is digital art being preserved for?

To plan for the preservation of an artwork it is essential to understand why it is being preserved in that specific context. The answers to the following questions may help.

- How does your institution plan to use the artwork?
- Is the work part of a teaching collection, is the focus on technologies of production along with the artworks themselves?
- Is the work permanently on display, a temporary display or a commission? What happens after the display? Will it be stored for research/future use?
- Is the work part of a collection of artworks meant for display and loan?
- Is the work part of an artist's personal archive and meant to be used for research of the artist's body of work, rather than public display?

The answer to these questions, as well as a realistic assessment of the resource and infrastructure available, will help identify the most appropriate preservation strategies.

2 What are the specificities of digital art for preservation?

2.1 The works of art

Digital art typically consists of a number of different elements that come together to create a specific artwork.

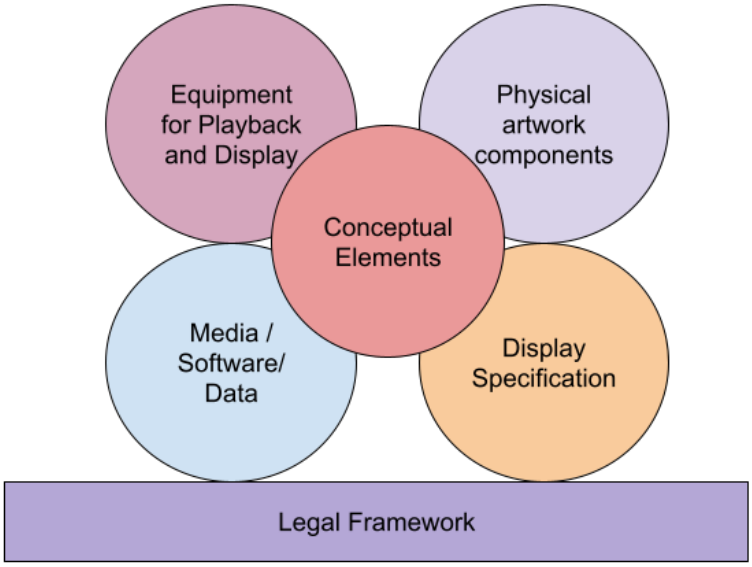

Figure 1 - Model of digital art elements – described in more detail in the sections below.

2.1.1 Media/software/data

Media, software and data are the artwork elements that are the focus of digital preservation. They exist as files and structured folders that need the same knowledge and care as other types of digital content, be they Word documents, video files, or software applications. They can be supplied as files, via download or on hard drives, but can also be supplied pre-installed on a computer or media player.

These files are the core of the work, so it is important that these elements are inventoried, their formats identified, and their functions understood. Any risks for access and preservation must be assessed as early as possible, as it is usually easier to mitigate risks earlier in an artwork's life, when artists and their teams are still available to help, and before technologies become obsolete.

The DPC's Data Types Guidance Note series about preserving specific media types are good starting points to define workflows and strategies for individual elements. There is a caveat, in that many artists work in novel and innovative ways that do not conform to industry standards. For example, artist Rosa Menkman works specifically with compression artefacts in *A Vernacular of File Formats* (Menkman, n.d.). To the uninitiated, it would be easy to identify her images as errors. Although many artists are technically proficient, it is also common for them to freely experiment with coding in ways that may not align with recognised best practice. Again, this should be evaluated as part of an artist's practice, rather than an error which needs to be 'corrected' (Engel and Wharton, 2015).

2.1.2 Equipment for playback and display

Digital artworks require equipment to be accessed and displayed. This can take different forms, but typically include one or more computers or media players and display device/s. For a video artwork this may be as simple as a monitor or projector, but for software-based artworks the requirements

are often more complex, including VR headsets, complex robots, or custom-made electronic interfaces.

Some artworks can be displayed on different types of equipment within a range of parameters, such as resolution and aspect ratio for projectors, which means the equipment can be easily replaced. At the other end of complexity are artworks that depend on one specific piece of equipment, either because it was modified by the artist or because it is conceptually relevant, or both (Harvey, 2022). For example, *Monitor* by Prof. Stephen Partridge (1974), is a now digitised video of a small portable monitor being rotated and displaying itself in an infinite loop. The video must be shown on a monitor that looks like the one contained in the video, otherwise some of its meaning would be lost.

2.1.3 Physical artwork components

Artworks often combine digital and non-digital elements, and even living beings such as plants or animals. Non-digital objects can be seen as part of a spectrum, from classical art objects, such as paintings and sculptures, which require specialised care, to replaceable but specific objects, for instance a custom-designed plinth, remade every time, with the correct dimensions and colour. The connection between all components, must be clear through documentation that describes their display or production.

2.1.4 Display specification

Artworks are usually created with display in mind. This can take place in environments such as a museum gallery, an art fair, a collector's living room, or an end of semester student show. Understanding how a work is produced and presented is essential to understand what the artwork is and how it should look. For instance, a video file can be viewed on a monitor among other artworks in a gallery or it can require its own space with low light levels, a large projection and a powerful sound system. In an art museum this information is often aggregated in to a display specification document, which guides the future display of the artwork (Phillips, 2015). The source of this information is usually the artist, and it is helpful to discuss the present and future possibilities for display with them. For artworks that have been shown before, display information can also be collated from available images or footage and visitor memories. Often there is not only one way to show a work, and artists opinions change over time, as they see the work in different settings and with different technologies. Consequently, instantiations of a work over time can look very different.

2.1.5 Conceptual elements

Conceptual elements are intangible aspects of an artwork that are essential to its meaning and often impact what is preserved and how. They often need to be expressed by the artist and may not be obvious from looking at a work's instantiation. An example of this is *Summer* by the artist Olia Lialina (Connor, 2013; Lialina, 2013). This web-based artwork shows the artist on a swing that hangs from the browser bar. The work is composed of a sequence of GIFs that reproduce the movement of the swing. Each GIF in the sequence is hosted on a different server, and the work is triggered by clicking on any of the links on the landing page. Independently of which server you start on, you are redirected to the next GIF in the sequence on a different server. You can see the URL and icons in the browser tab change as the host changes. The conceptual aspect is that each of the frames must be hosted by a different host, and the pages must remain online for the work to be complete.

2.1.6 Examples

The following examples explain how these different elements come together to make a single artwork.

Element/Example	Printed Paper copies	Video Installation	Software-based Installation
Artwork	Felix Gonzalez Torres, *Untitled (Death by Gun)*, 1990	Stephen Partridge, *Monitor*, 1974	Rafael Lozano Hemmer, *Subtitled Public*, 2005
Media/Software/Data	File of the pages to be printed	1 video file, created through digitisation of an analogue tape	Executable files, text files.
Equipment for Playback and Display	For production only, Printer, Lithography	Obsolete portable 1970s Sony TV	Closed network of computers, video cameras, projectors.
Physical Artwork Components	None	Original analogue tape is also stored	None
Display Specification	Sheets of paper must be arranged in a stack 22.9 x 114.1 x 83.6 cm.	Plinth width and depth must match those of the monitor	Room must be empty, dark, lit with infrared rich light and have an infrared absorbing black carpet.
Conceptual elements	Visitors are allowed to take sheets of paper, hence prints must be replenished	The monitor model used to display the work is the same as the one shown within the video.	The whole space must be tracked, there shouldn't be a space where people are not tracked.

2.2 The role of the artist and their representatives

A specificity of art, digital or otherwise, is the unique relationship between an artist and an artwork, which even legally is seen as an extension of an author's personhood (Rigamonti, 2006). This leads to organizations usually working closely with artists to collect, display and preserve their artworks. As Gover (2018) puts it "The collector or museum may own the object, but unlike other kinds of property, the owner cannot simply do whatever it wishes with the artwork because the artist continues to be linked to that object through personality and reputation". This explains the relevance given to the artist's views and intent when discussing art conservation (Wielocha, 2018). The artist's view is essential to understand the artwork, including its conceptual elements, and work-defining properties.

Artists and their technical teams are usually best placed to provide information about the conceptual aspects of the artwork, its display and production techniques, which must inform any preservation decisions, for instance if migrating between different media formats. Artists will also need to give permissions for specific activities and uses, from displaying the work in a gallery, to publishing images or video recordings online.

2.3 Legal frameworks

The relationship between artists, artworks and collecting institutions is quite unique, in the sense that, even if an institution owns an artwork, usually the artist retains its intellectual property rights (IPR), including copyright and moral rights. There are some contexts where IPR is transferred as part of a contract, or copyright is explicitly donated.

When working with an artwork, establish whether pre-existing institutional legal frameworks are sufficient or if they must be adapted or extended to allow the preservation and intended use of the artwork.

For digital art legal agreements may include the following:

- **Certificates of Authenticity** establish the authenticity of an artwork and can vary from a single-page document to a hybrid purchase agreement that specifies deliverables and display conditions. The certificate is often signed only by the artist, and if the artwork is sold the certificate must be passed on to the new owners.
- **Purchase Agreements** define the conditions in which an artwork is purchased. They include information such as seller and buyer details, cost, conditions of sale, and confirmation that there are no dependencies in third parties. It may also include a list of deliverables, installation guidelines, and the degree of artist involvement in, for example, conservation treatments and displays and loans (Phillips, 2018). It is important to try to ensure a level of freedom for the institution in displaying and preserving an artwork in the artist's absence.
- **Licence Agreements** describe how an artwork can be represented and how images or excerpts of it can be used by the collecting institution. Licences can regulate public displays and performances, production and reproduction of images (video and still), and making copies for preservation, exhibition and publication. These can also be included in commissioning or acquisition agreements.
- **Co-ownership Agreements** regulate the relationship between institutions that jointly own an artwork.

3 Resources and expertise

Digital art requires the same type of storage and preservation infrastructure needed for other digital objects, and if analogue elements are significant, these will also need appropriate storage conditions and collection care (see for instance, *Spectrum*, the UK museum collections management standard (Collections Trust, 2022) or for more specific information on Collection care, *Successful Collection Care* from the Association of Independent Museums (Thompson Webb, 2017)).

A wide variety of expertise is needed to evaluate and plan for preservation and treatment of the artworks themselves. This means building a network of people with specialist knowledge in preservation of specific media and equipment in the art context, including traditional conservators and time-based media conservators (who will often have their own extensive network of contacts).

4 Conservation

The field of conservation has developed a series of principles to preserve digital art based on the understanding that for this type of media the role of conservation, conservators and other caretakers is to manage and document change. The stated aim is to maintain an artwork's work-defining properties whilst accepting that these may change over time and in different contexts (Laurenson, 2006).

There are multiple strategies to allow for an artwork to be seen and studied in the future. These could include writing a report about them, safely storing the data necessary for display in a digital repository, documenting how it was and should be installed in a space, or intervening in any of the elements described in 2.1. The strategies of storage, intervention and documentation are described in more detail below.

4.1 Storage

Storage refers to the need to keep the digital and non-digital elements of the artwork safe over time. There is an underlying assumption that no change happens while these elements are in storage, and it is often seen as a passive option. Files will sit on the digital repository and equipment and physical elements will be kept in appropriate storage conditions. This apparent stability is not passive. Ongoing digital preservation processes such as fixity checking and software upgrades are necessary, and controlled environmental conditions are required for physical elements and equipment.

4.2 Intervention

Intervention refers to changes made to any element of an artwork, to facilitate the continued experience of that artwork. Those changes can be made in response to an existing problem, such as the failure of a computer running an artwork's software, or pre-emptively, for instance, asking the artist to change how a software sends commands to a printer, so that it can work with current USB connections as well as original obsolete SCSI connections, thus mitigating obsolescence-related risks.

The focus in contemporary art museums is on being able to display an artwork, which means being able to install it according to the artist's specification, for often a period of many months or years. This means that changes may need to be made to playback a video, or run a piece of software, with the emphasis being on maintaining the experience of the work. For instance, in the late 90s video artworks were played out from VHS tapes on video decks. Later on, the preferred display format were DVDs. Nowadays most video shown in a gallery will be played as a video file on a media player. The experience for the users remains unchanged.

Types of interventions include the digitisation of analogue video or audio (which is usually considered to be a form of migration), changes to the code of a software-based artwork (Engel and Phillips, 2019), emulation of computing environments (Roeck, 2021), or a complete migration of an artwork to a new technological infrastructure.

Choosing a strategy for preservation will require in-depth knowledge of the technologies of production of the work, as well as of those available for preservation. Artists and their teams will be the experts on the former, but decisions on the strategies for preservation should balance the artist's opinion with an understanding of preservation technologies. To summarize, interventions are typically context specific and should be carried out with consideration of a broad range of factors.

4.3 Documentation

Documentation is an essential preservation strategy, as well as a methodology that supports other preservation actions (Falcão, Ribeiro and Colussi, 2022). Documentation may have been created prior to an artwork's entry into a collection or created within the collecting environment. The former may include exhibition catalogues and other literature as well as artist's own websites and archives. Ideally this information should be reviewed as part of the process of bringing an artwork into a collection.

Once an artwork enters a collection it is important to document the technical make-up of the artwork, the display specification and any preservation requirements related both to technological and conceptual elements (see section 8.3 for examples of forms and templates in use). Key moments in the life of the artwork should also be documented, from the acquisition process itself to any displays or loans. As defined by conservation ethics and digital preservation good practice, any intervention must also be thoroughly documented. This is typically done at a very technical level, for example, through the creation of digitisation reports with details of the process, or code changes documented on GitHub (Haidvogl, 2016).

Given the importance of the artist's views, interviews with artists and their teams are highly valued (Beerkens et al., 2012). They can help to document an artist's creative and working process and build a framework for decision-making in reconstruction and preservation. They are also essential in establishing a relationship and in building trust with the artist.

The type and depth of the documentation created is dependent on the resources available, and the priorities and aims of the collecting institution.

5 Conclusion

Because of its hybrid nature, digital art is possibly more fragile than other digital objects, and collecting it is the only way to ensure the culture of the last 50 years is fully represented. However, preserving digital art can be complex – not just due to the hybrid nature of artworks, but also because of the range of formats and technologies in use, the specific requirements for access and the need for close collaboration with artists. This Guidance Note describes some of the strategies employed in the museum context, based on good practices from both the digital preservation and the conservation worlds. It stresses the need to consider preservation practices in the context of the artist and the specific artwork being collected and to create flexible and responsive collection and preservation processes. The aim of this Guidance Note has been to demystify key issues around the preservation of digital art, and to provide an introduction and further reading for those who are about to embark on collecting these artworks.

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8 Further Reading

The preservation of digital art is a substantial and complex topic, and this Guidance Note can only act as an introduction to some of the main issues to consider. Fortunately, there are many other resources and publications available if you want to explore this topic further. This section provides a helpful signpost to some of those resources:

8.1 General

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8.3 Documentation Templates

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8.6 Equipment

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