Archaeology Data Service

Introduction to Digital Archiving

IRP Course, Wednesday 29th of June

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Collections Development Manager
Archaeology Data Service

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Outline

- Introduction to the Archaeology Data Service (ADS)
- Importance of digital archiving for archaeology
- Why is digital data fragile?
- What is digital preservation?

- What can you do?
- Data Management Planning
- Metadata

Archaeology Data Service

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- Discipline specific repository
- Established in 1996
- Based at the University of York
- CoreTrustSeal Certified
- Staff of 15
- International collecting remit
- Depositor funded

“ is to support research, learning and teaching with freely available, high quality and dependable digital resources by preserving and disseminating digital data in the long term.. ”

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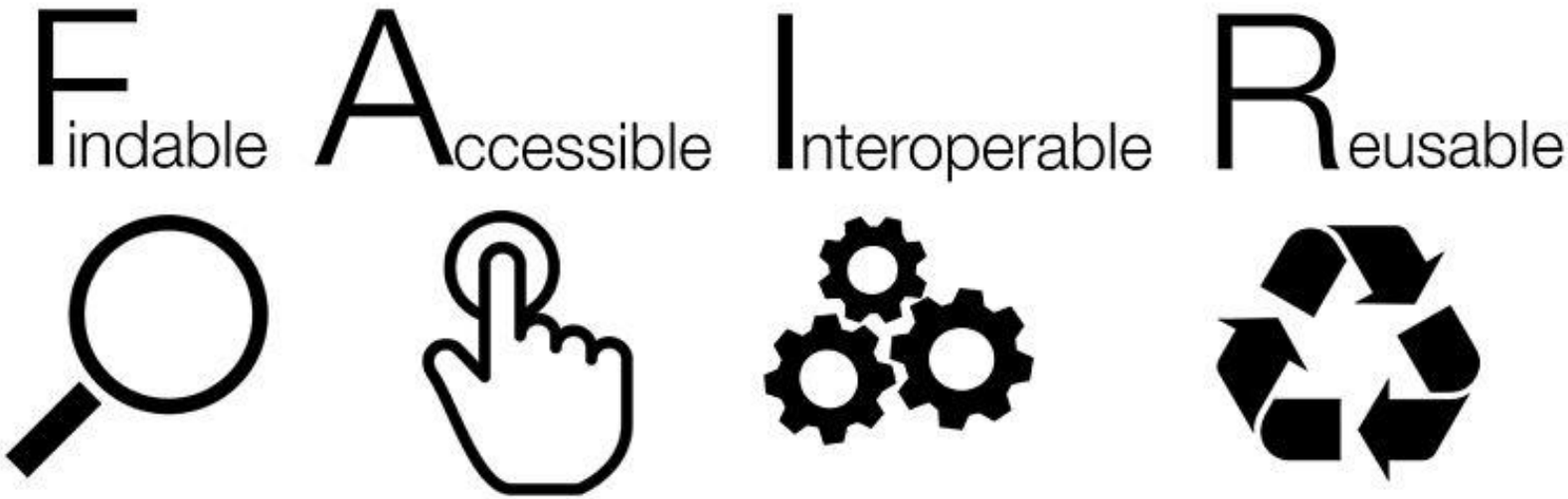

GOFAIR: https://www.go-fair.org/fair-principles/

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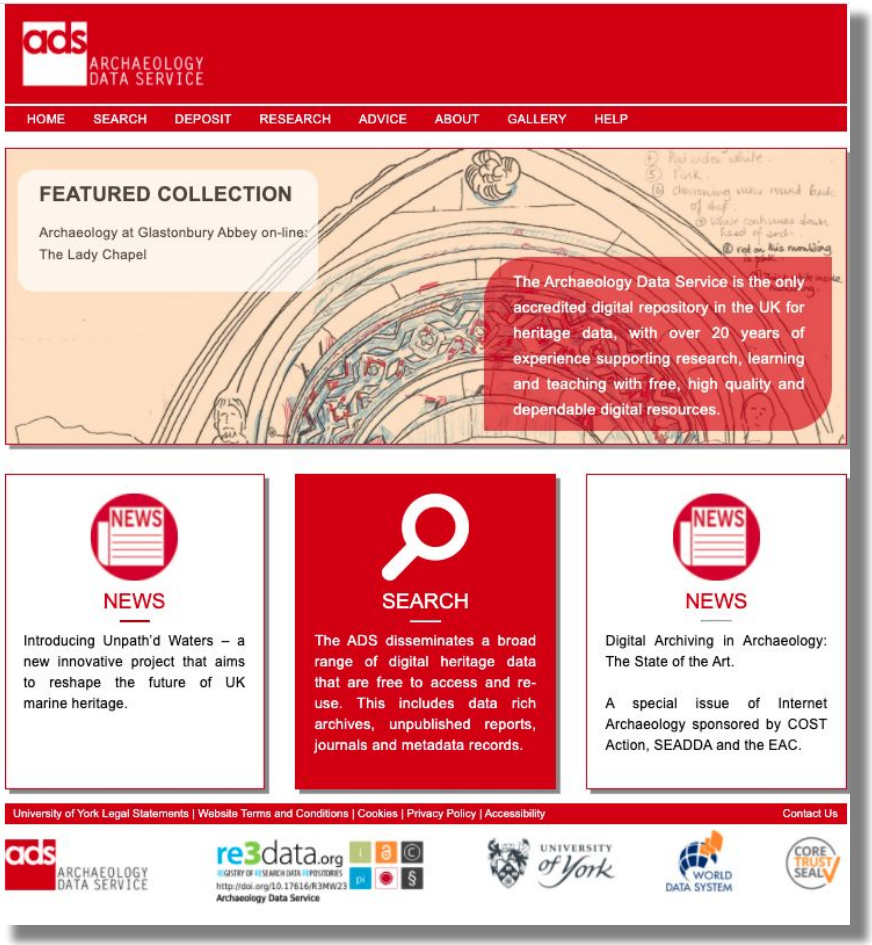
Open Access to:

- 1.4m metadata records of UK archaeology
- 65,000 UK reports
- 46,000 articles and monographs
- 2500 international project collections
- 25TB of data
- 3.6 million files of
- 308 unique formats



https://archaeologydataservice.ac.uk/

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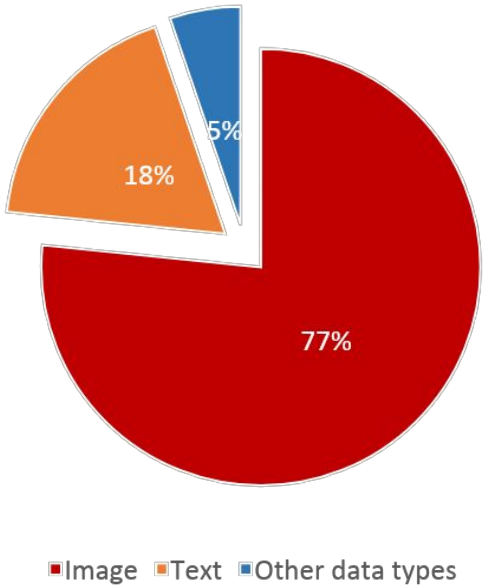
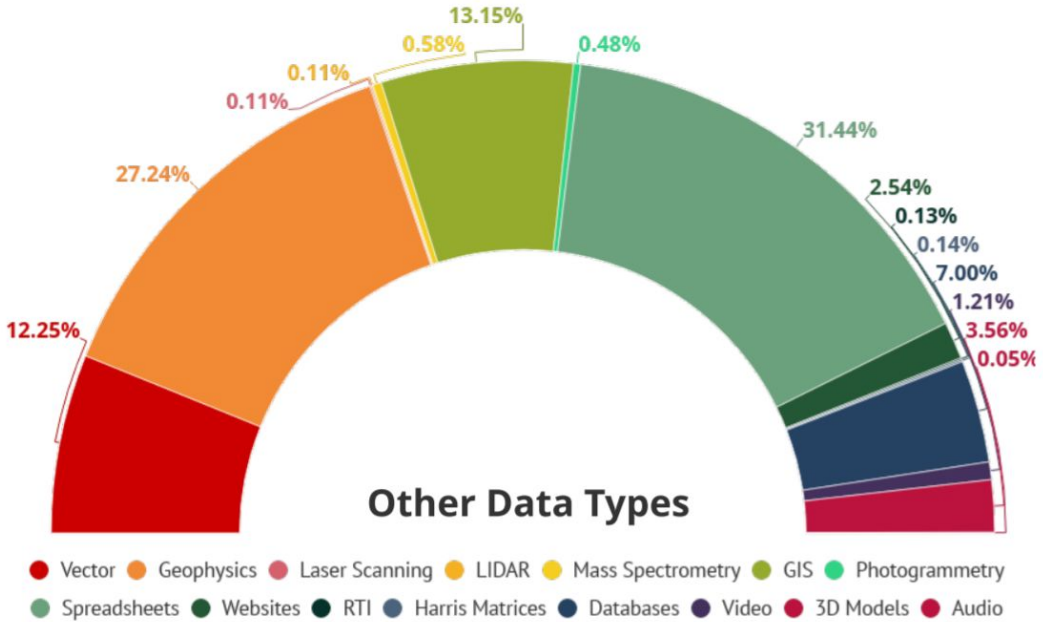
The ADS Archive by Data Type





Academic

Star Carr and Lake Flixton
University of York Research Project.
Image © University of York

Crossrail:Archaeological Investigations Conducted in Advance of Construction of the Elizabeth Line
Image © Crossrail Ltd, Museum of London Archaeology

Commercial Archaeology

Independent Sector

Whitworth Park Community Archaeology and History Project
Image © Whitworth Park Community Archaeology and History Project

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Visited by:

739,881

Unique Visitors

2,034,066

Unique Page Views

410,816

Downloads

Importance of Digital Archiving

© University of Birmingham

© Buch Edition

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It’s not all about finds….

Image © Buch Edition

Video © David Nash, Jake Ciborowski, Tobias Salge, Magret Damaschke, Steven Goderis

Archaeology Data Service

Born Digital

Data created in digital format

© Oxford Archaeology (North)

Digitised Data

Hardcopy converted to digital format

© State Library of New South Wales 2015

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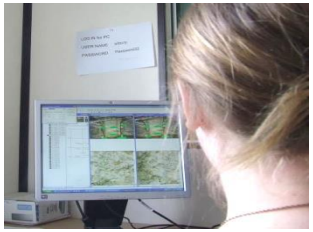
Digital Data

- Easier to create,
- Easier to update,
- Easier to access.



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This makes our work more **transparent**, our conclusions more **valid** and properly **supported**.

Accessibility **facilitates re-use**, enabling **new research** questions to be answered, providing greater **efficiency** and allowing archaeology to contribute to **wider public benefits,** achieving maximum value from research.

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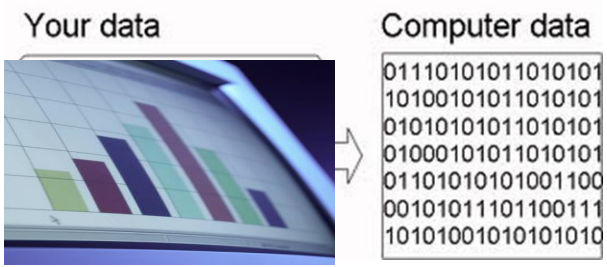
Digital Data is Fragile!

- Digital data is encoded,

- Digital data requires software and technology to present content.



Why is Digital Data Fragile?

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Why is Digital Data Fragile?

- **Deterioration/damage** of the storage medium
  - Degrade – Bit rot!
  - Can be easily damaged
  - Can also be easily overwritten or deleted

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Case Study: NASA

smh.com.au
The Sydney Morning Herald

News Entertainment Business Sport Travel Tech Other Sections

↳ Home » Specials » Science » Article

One giant blunder for mankind: how NASA lost moon pictures

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Case Study: PIXAR

5.25" Floppy

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Why is Digital Data Fragile?

- **Deterioration** of the storage medium
- Obsolescence of the **software**

Case Study: NASA

Data recorded on magnetic tape

Climate controlled environment

In the 1990s they could not decode the formats

Retype everything

Photos: Courtesy
NASA/JPL-Caltech

5.25" Floppy

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Why is Digital Data Fragile?

- **Deterioration** of the storage medium
- **Obsolescence** of the **software**
- **Obsolescence** of the **storage medium**

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Media Types

Experience rapid change


3.5" Floppy


xD Picture Card


QIC DC600


DC4_120


9-Track Reel


DVD-ROM


G2000 Tape


4mm Tape


8" Floppy


CD-ROM


Smart Media


Rectangular Hole Punch Card


Punch Tape


IBM 3480


Floptical Disk


5.25" Floppy


Travan


5.25" Optical Disk


DG90M Tape


Memory Stick


8mmD-eight


Cassette tape


Click!


Sparq Disk Cartridge


Ditto Max


MultiMedia Card


12" Optical Disk


Jaz Disk


SD Memory Card


Zip Disk


DLT Tape


CompactFlash

5.25" Floppy

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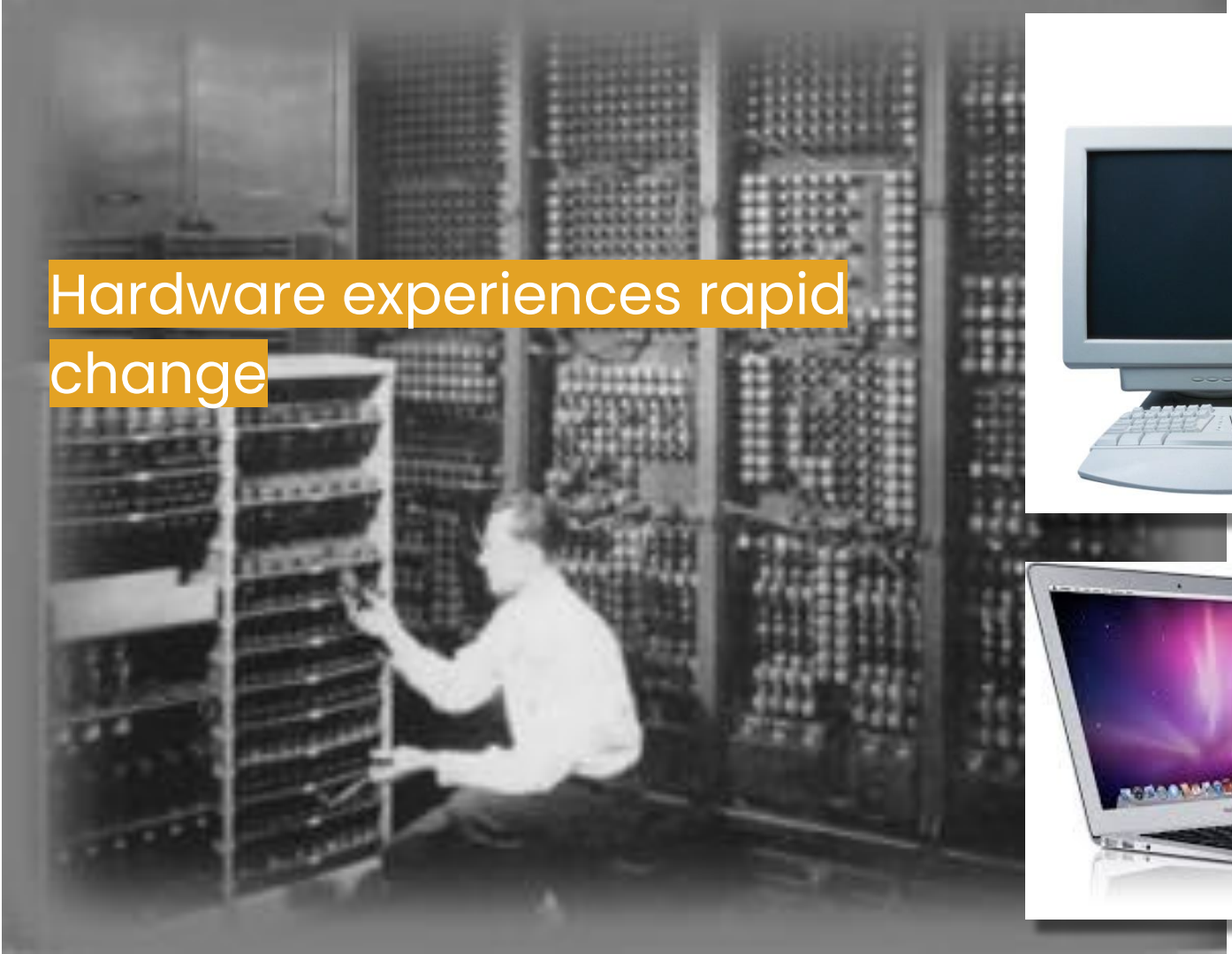
Why is Digital Data Fragile?

- **Deterioration** of the storage medium
- **Obsolescence** of the **software**
- **Obsolescence** of the **storage medium**
- **Obsolescence** of the **hardware**

Hardware experiences rapid change



Case Study: BBC Domesday Project

5.25" Floppy

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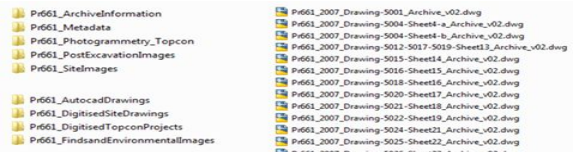
Why is Digital Data Fragile?

- **Deterioration** of the storage medium
- **Obsolescence** of the **software**
- **Obsolescence** of the **storage medium**
- **Obsolescence** of the **hardware**
- **Failure** to **document** the data adequately

©iStockphoto.com/Ansonsaw



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Case Study: Newham Museum Archaeological Service

- approx. 150 excavations
- 6432 individual files
- 1500 excavation reports
- 700 database files
- 1200 geophysics files
- 200 separate projects

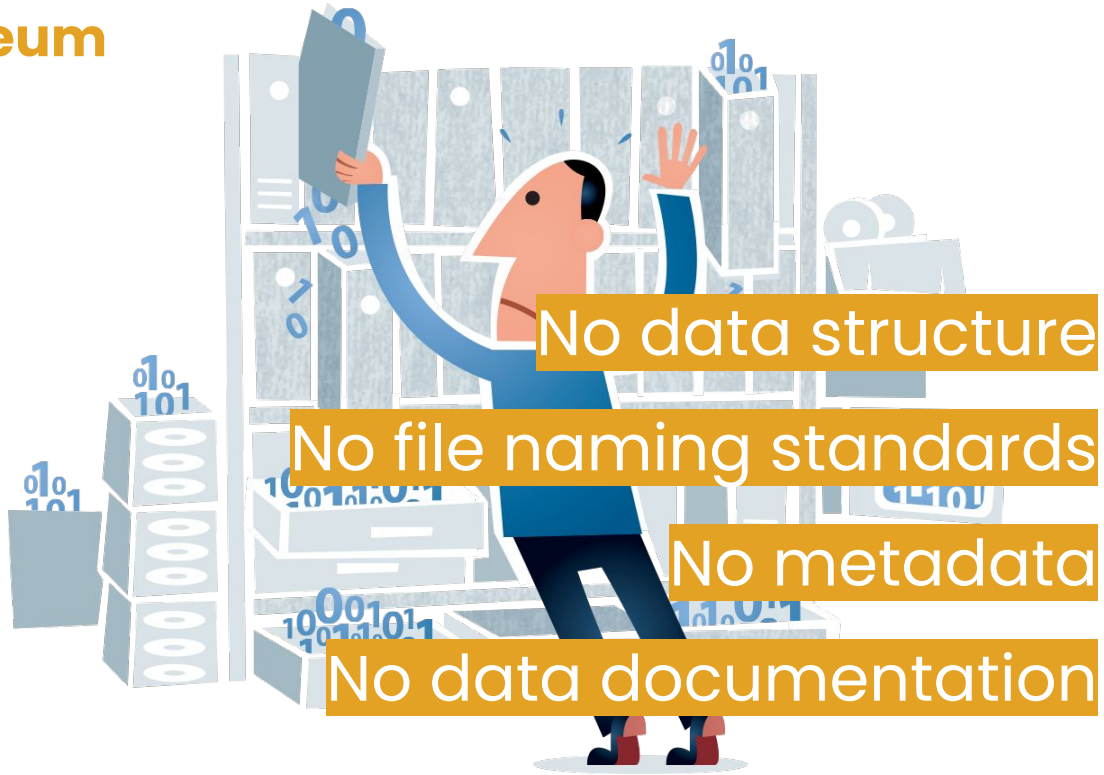


Image © www.digitalbevaring.dk

Archaeological Data

2,000 years in the making,

3 days to record,

Backed up in 10 seconds,

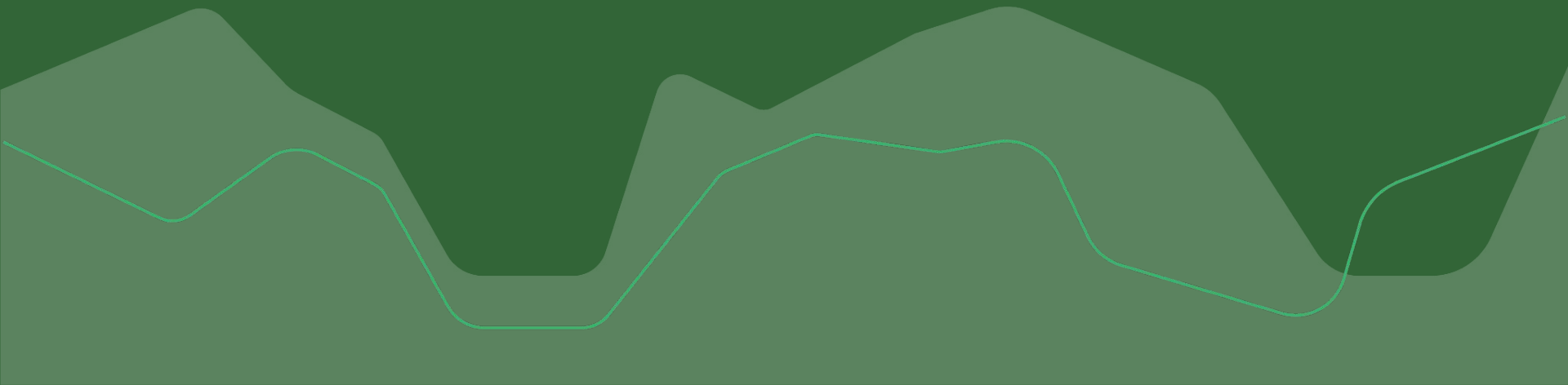
Lost forever?

How can we prevent this?

Why Deposit?

1. Ensure Preservation
2. Provide Access
3. Professional Recognition
4. Follow Professional Standards
5. Meet Governmental Requirements
6. **Meet Funding Agency Requirements**

How do we mitigate the risks of digital data through **Digital Preservation?**



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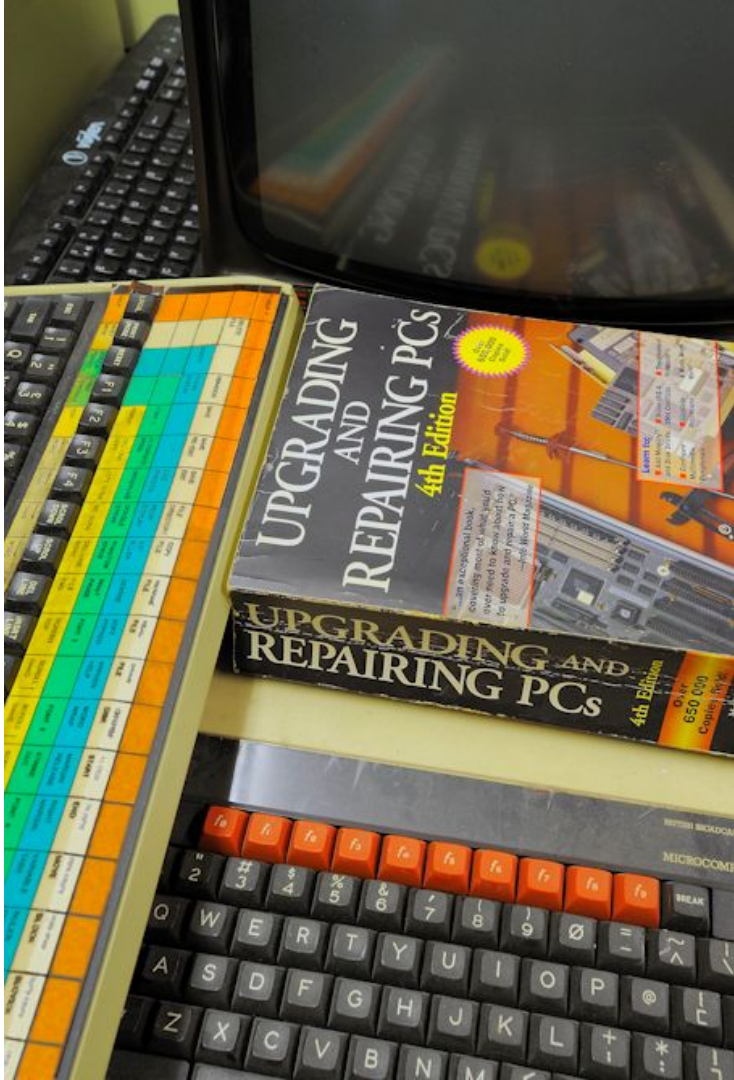
Digital Preservation: 3 Methods

- The Hardware Museum
- The Software Emulator /Virtualisation
- Migration

Much more intervention is needed than conventional archives



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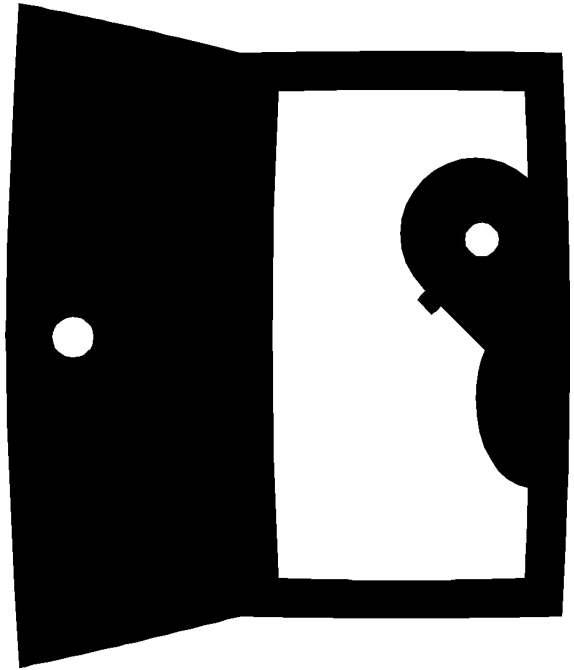
Behind the Scenes at the ADS

- Follow **FAIR** principles
- Use data **migration** strategies
- Follow the **Open Archival Information System** (OAIS) reference model
  - International ISO standard 14721
- Ensure the multiple and regular **backups** and the **renewal** of storage media
  - c. 30 virtual Servers
  - Tape backup at University of York
  - Cloud storage



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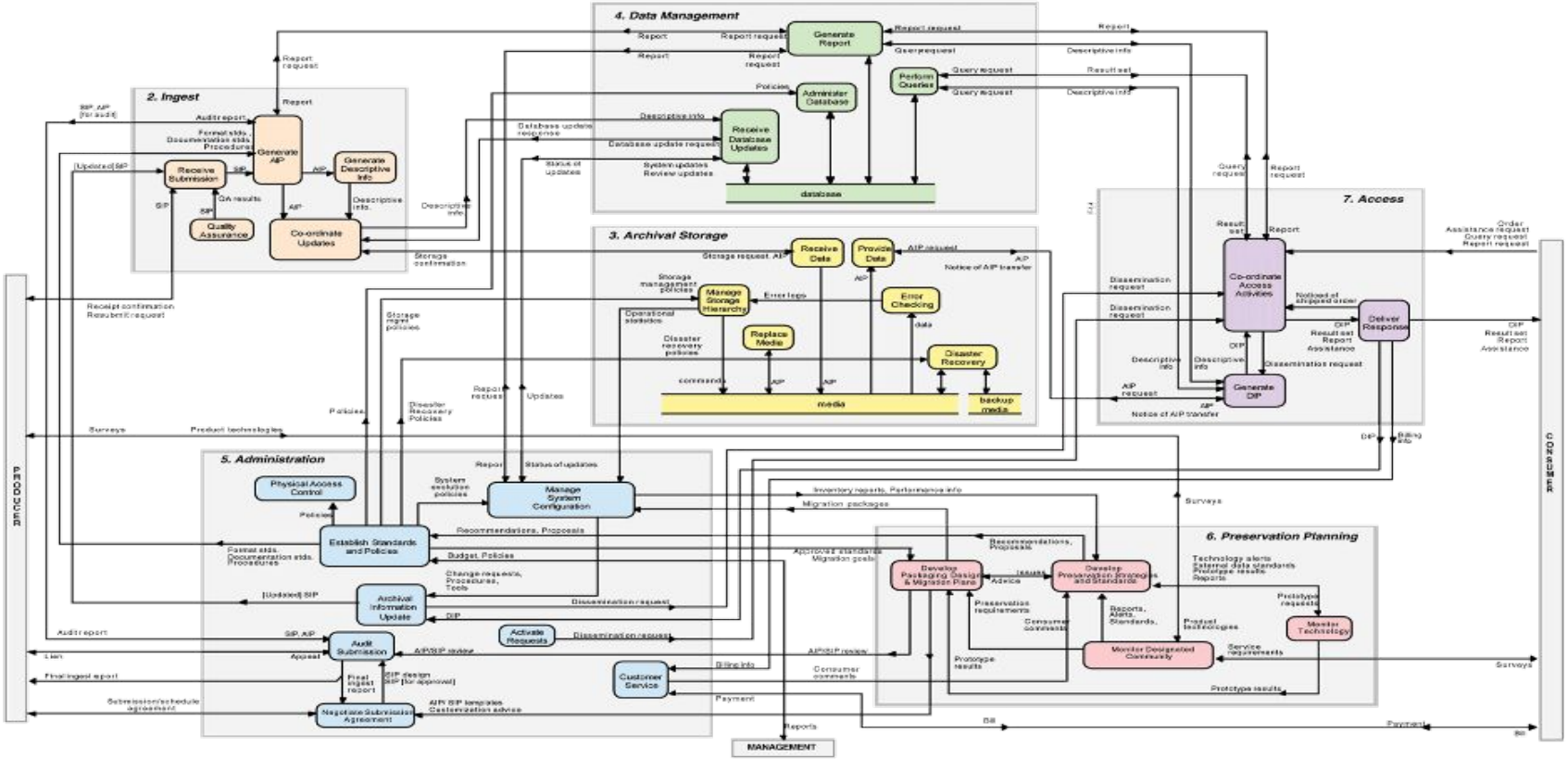
OAIS Reference Model



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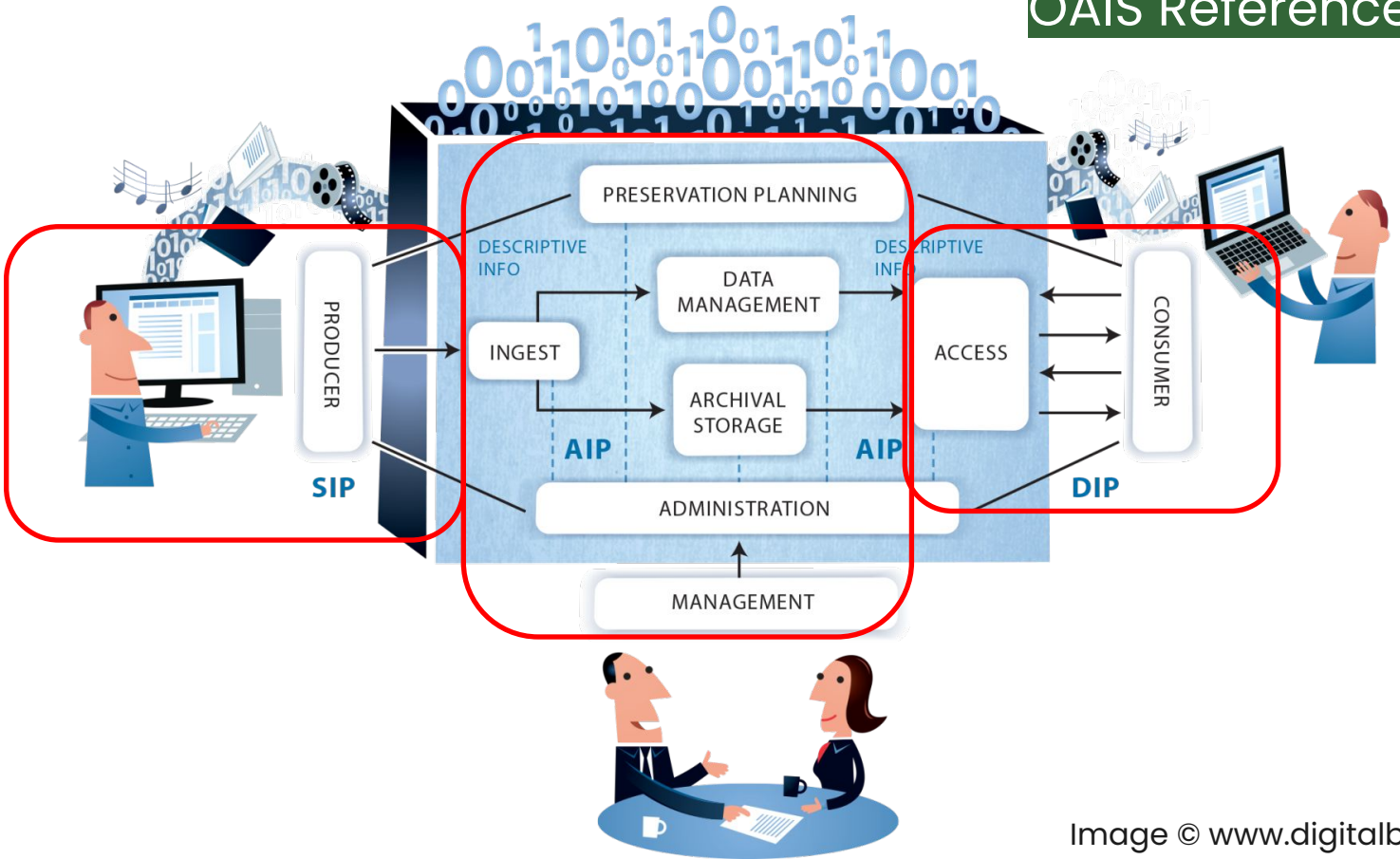
OAIS Reference Model



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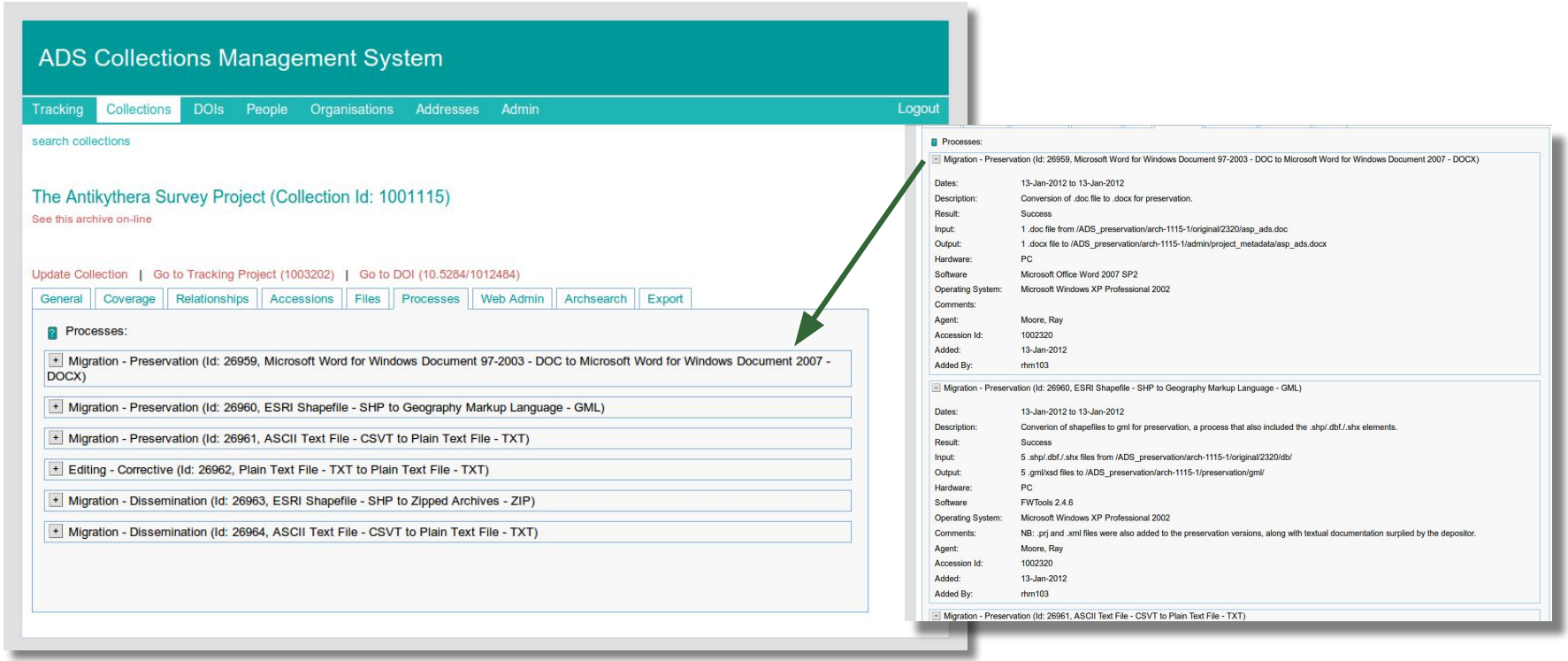
Information Packages

Delivery	Preservation	Presentation	Notes
Uncompressed Baseline TIFF v.6 **.tif**	Uncompressed Baseline TIFF v.6 **.tif**	Portable Network Graphics **.png** or Joint Photographic Expert Group **.jpg**	Any EXIF & IPTC metadata will also need preserving
Portable Network Graphics **.png**	Uncompressed Baseline TIFF v.6 **.tif**	Portable Network Graphics **.png**	""
Joint Photographic Expert Group **.jpg/ .jpeg**	Uncompressed Baseline TIFF v.6 **.tif**	Joint Photographic Expert Group **.jpg / .jpeg**	""
Graphics Interchange Format (Compuserve) **.gif**	Uncompressed Baseline TIFF v.6 **.tif**	Portable Network Graphics **.png**	""
Bit-Mapped Graphics Format (Microsoft) **.bmp**	Uncompressed Baseline TIFF v.6 **.tif**	Portable Network Graphics **.png**	""
PhotoCD **.pcd**	Uncompressed Baseline TIFF v.6 **.tif**	Portable Network Graphics **.png**	""
Photoshop (Adobe) **.psd**	Uncompressed Baseline TIFF v.6 **.tif**	Portable Network Graphics **.png**	""
CorelPaint **.cpt**	Uncompressed Baseline TIFF v.6 **.tif**	Portable Network Graphics **.png**	""
Adobe Digital Negative **.dng**	Adobe Digital Negative **.dng** and **.tif**	Adobe Digital Negative **.dng** and Joint Photographic Expert Group **.jpg**	""
JPEG2000 **.jp2 / .jpx**	Uncompressed Baseline TIFF v.6 **.tif**	JPEG2000 **.jp2 / .jpx**	""

Migration


ADS Collections Management System
Tracking
Collections
DOIs
People
Organisations
Addresses
Admin
Logout
search collections
The Antikythera Survey Project (Collection Id: 1001115)
See this archive on-line
Update Collection | Go to Tracking Project (1003202) | Go to DOI (10.5284/1012484)
General
Coverage
Relationships
Accessions
Files
Processes
Web Admin
Archsearch
Export
Processes:
Migration - Preservation (Id: 26959, Microsoft Word for Windows Document 97-2003 - DOC to Microsoft Word for Windows Document 2007 - DOCX)
Migration - Preservation (Id: 26960, ESRI Shapefile - SHP to Geography Markup Language - GML)
Migration - Preservation (Id: 26961, ASCII Text File - CSVT to Plain Text File - TXT)
Editing - Corrective (Id: 26962, Plain Text File - TXT to Plain Text File - TXT)
Migration - Dissemination (Id: 26963, ESRI Shapefile - SHP to Zipped Archives - ZIP)
Migration - Dissemination (Id: 26964, ASCII Text File - CSVT to Plain Text File - TXT)
Processes:
Migration - Preservation (Id: 26959, Microsoft Word for Windows Document 97-2003 - DOC to Microsoft Word for Windows Document 2007 - DOCX)
Dates: 13-Jan-2012 to 13-Jan-2012
Description: Conversion of .doc file to .docx for preservation.
Result: Success
Input: 1 .doc file from /ADS_preservation/arch-1115-1/original/2320/asp_ads.doc
Output: 1 .docx file to /ADS_preservation/arch-1115-1/admin/project_metadata/asp_ads.docx
Hardware: PC
Software Microsoft Office Word 2007 SP2
Operating System: Microsoft Windows XP Professional 2002
Comments:
Agent: Moore, Ray
Accession Id: 1002320
Added: 13-Jan-2012
Added By: rhm103
Migration - Preservation (Id: 26960, ESRI Shapefile - SHP to Geography Markup Language - GML)
Dates: 13-Jan-2012 to 13-Jan-2012
Description: Converion of shapefiles to gml for preservation, a process that also included the .shp/.dbf./.shx elements.
Result: Success
Input: 5 .shp/.dbf./.shx files from /ADS_preservation/arch-1115-1/original/2320/db/
Output: 5 .gml/xsd files to /ADS_preservation/arch-1115-1/preservation/gml/
Hardware: PC
Software FWTools 2.4.6
Operating System: Microsoft Windows XP Professional 2002
Comments: NB: .prj and .xml files were also added to the preservation versions, along with textual documentation surplied by the depositor.
Agent: Moore, Ray
Accession Id: 1002320
Added: 13-Jan-2012
Added By: rhm103
Migration - Preservation (Id: 26961, ASCII Text File - CSVT to Plain Text File - TXT)

DigitalPreservationCoalition

Handbook

https://www.dpconline.org/handbook

Novice to Know-How: Online Digital Preservation Training

https://www.dpconline.org/digipres/train-your-staff/n2kh-online-training

SEADDA

Saving European Archaeology from the Digital Dark Age

A community of archaeologists and digital specialists working together to secure the future of archaeological data across Europe and beyond.

https://www.seadda.eu/

What can you do?

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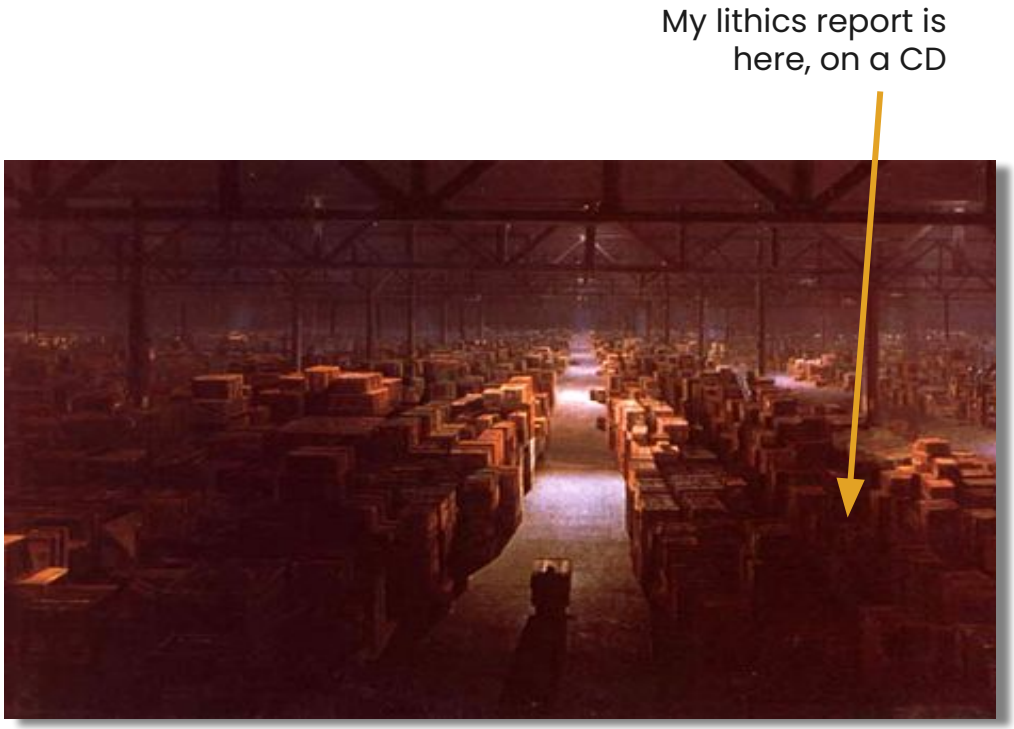
Protecting your Digital Data

- Recognise data is as **fragile** as the archaeological record we excavate

- Stop archiving data as objects rather than **computerised information**



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Protecting your Digital Data

- Recognise data is as **fragile** as the archaeological record we excavate
- Stop archiving data as objects rather than **computerised information**
- Create **Data Management Plans**

- Promote the **FAIR principles**
- Professionally **preserve** digital material

Create Data Management Plans

A DMP is a formal document that outlines how data are to be handled both during a research project, and after the project is completed.

The goal of a data management plan is to consider the many aspects of data management, metadata generation, data preservation, and analysis before the project begins so that the data is well-managed in the present and prepared for preservation in the future.

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Data Management Plans should be:

- Project specific
- Iterative, living documents,
- Be created collaboratively and in consultation with all team members,
- A tool to help you and your colleagues manage your data and your project.

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A good DMP will map out how the project team are managing data and provide a handy checklist **to help keep on top of changes which might impact the integrity of your data or the resources required throughout your project.**

Maintaining an up-to-date **version of the DMP throughout a project is good practice and undertaking a meaningful review of the DMP takes a small amount of time but will help save time and frustration later and maximise the value of your project data.**

CIfA Dig Digital Toolkit (https://www.archaeologists.net/digdigital)

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An archaeological Data Management Plan should include the following:

1. **Context** of the DMP
2. **Roles, responsibilities** and when the DMP will be **reviewed**
3. A **description** of the data to be collected
4. The **Standards** and **methods** used for data collection and data management
5. Consideration of **ethics, Intellectual Property Rights** and **data restrictions**
6. Plan for **data sharing, access** and **security** during the project
7. Plan for long-term **preservation** and **access** after the project

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Data Management Plans

Data management plans should cover the following:

- Description of the data to be collected / created
- Standards / methodologies for data collection and management
- Ethics and Intellectual Property concerns or restrictions
- Plans for data sharing and access
- Strategy for long-term preservation

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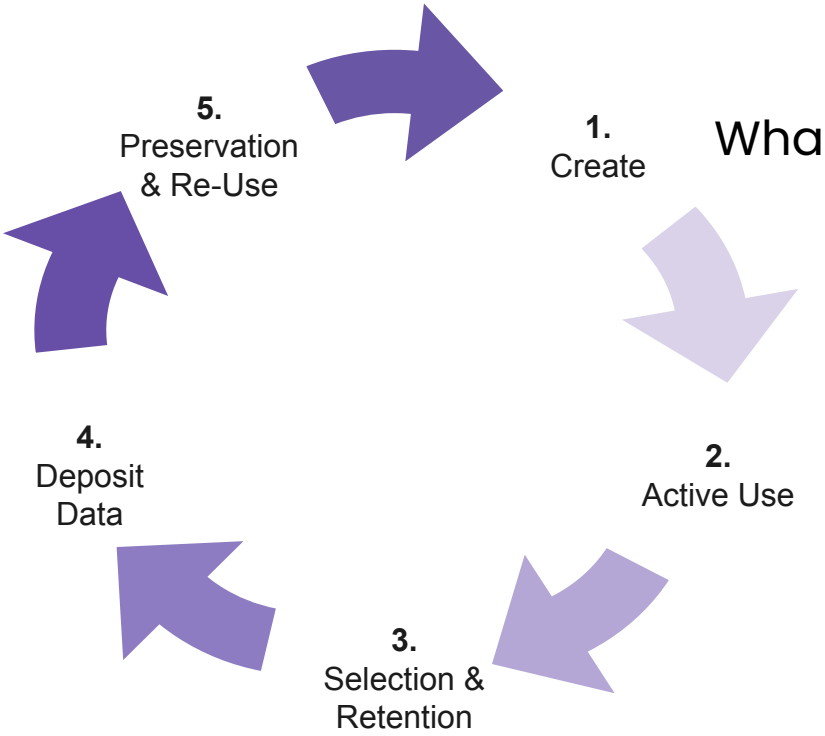
Data Cycles & Management Plans



What data will you collect or create?

- Data Types
  - Text documents
  - Artefact analyses
  - Sample analyses
  - Survey data
  - Drawings
  - Photographs
  - Recorded interviews
  - Etc..
- In what file formats?
- How big will the file sizes be?

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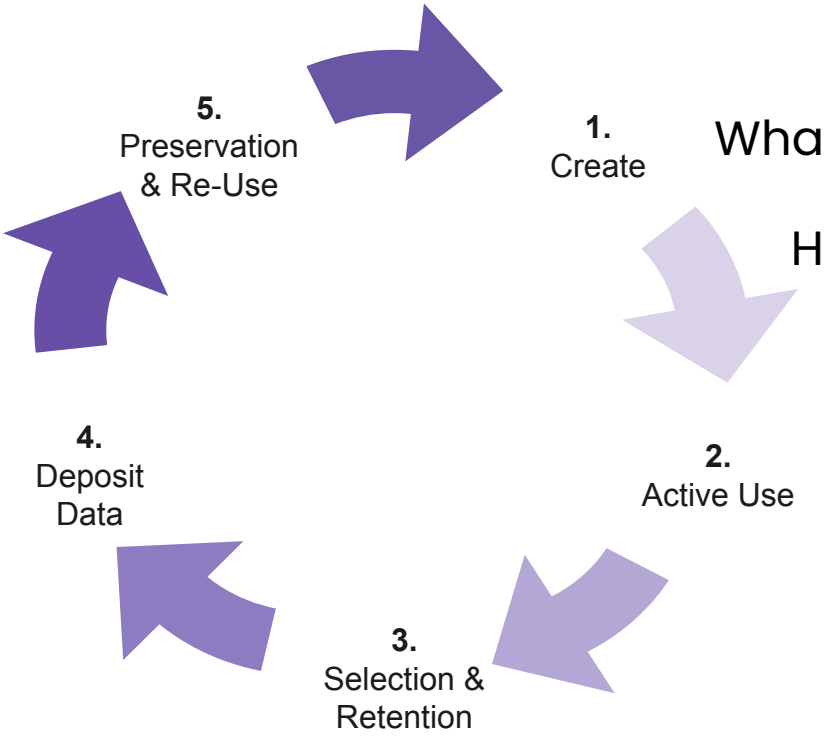
Data Cycles & Management Plans



What data will you collect or create?

How will the data be collected or created?

- Methodology of data capture
- How will it be organised
  - Versioning
  - File naming
- Do you have to follow any requirements?

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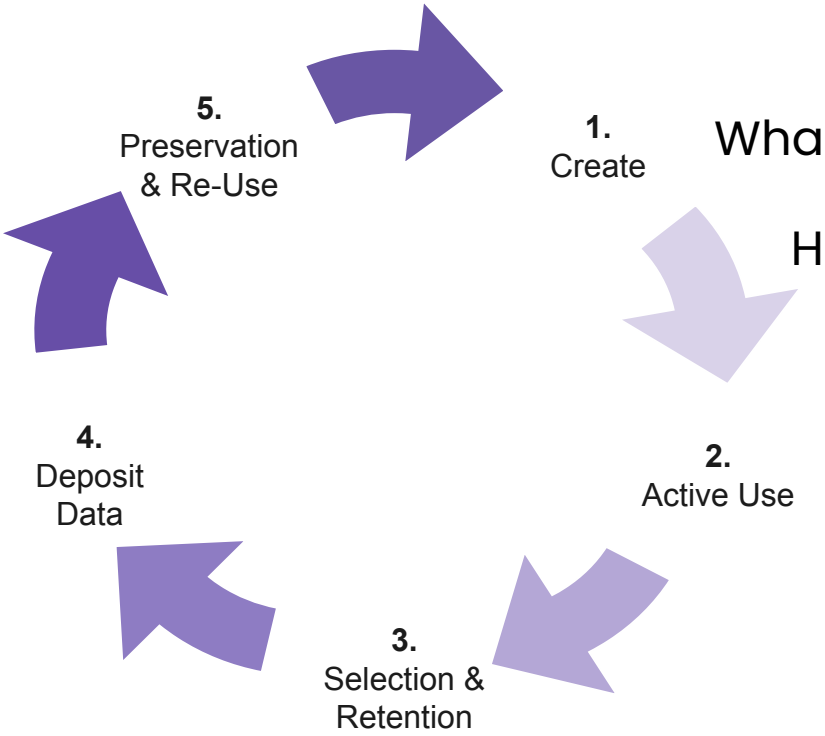
Data Cycles & Management Plans



What data will you collect or create?

How will the data be collected or created?

What Documentation and Metadata will you collect?

Create good metadata and documentation

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Why should archaeologists develop a Data Management Plan?

- To avoid the **duplication** or re-working of data and **reduce** the **costs** and **time** spent on data management,
- To provide **continuity** and **consistency** across project staff and facilitate **data sharing,** leading to more **collaboration** and **advances** in archaeological research,
- To allow for the **validation** of results and data re-use, making your archaeological research more **visible** and have greater **impact,**
- To better facilitate the **long-term preservation** of your data,
- To help make archaeological data **FAIR** (Findable, Accessible, Interoperable, Re-usable).

Plan for Re-Use

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“The single most useful thing you can do to ensure the long-term preservation of your data is to plan for it to be re-used. Imagining it being reused by someone else who has never met you and who never will meet you, will cause you to approach the creation and design of your data in a new light.

Moreover, studies show that re-use of data is the single surest way of maintaining the integrity of data and tracking errors and problems with it. In short, always plan for re-use"

Prof. Julian Richards, Director ADS.

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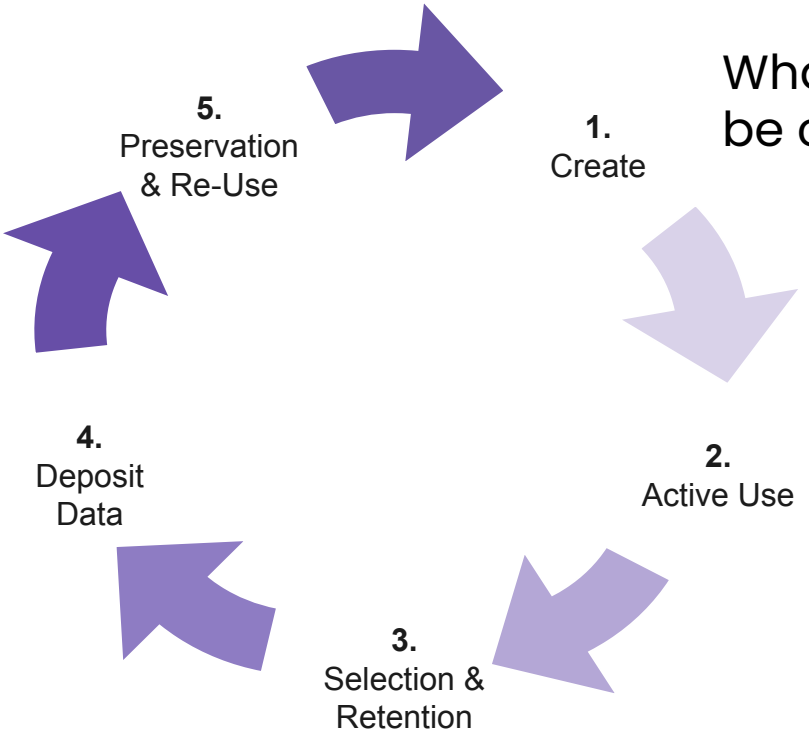
Data Cycles & Management Plans



What Ethical and IPR issues might need to be considered?

- Who owns the data?
- If using third-party data, how do the permissions you have been granted affect licensing?
- Have you gained informed consent for data preservation and sharing?
- How will sensitive data be handled to ensure it is stored and transferred securely?
- How will you protect the identity of participants?
- How will the data be licensed for re-use?
- Will data sharing be embargoed / restricted?

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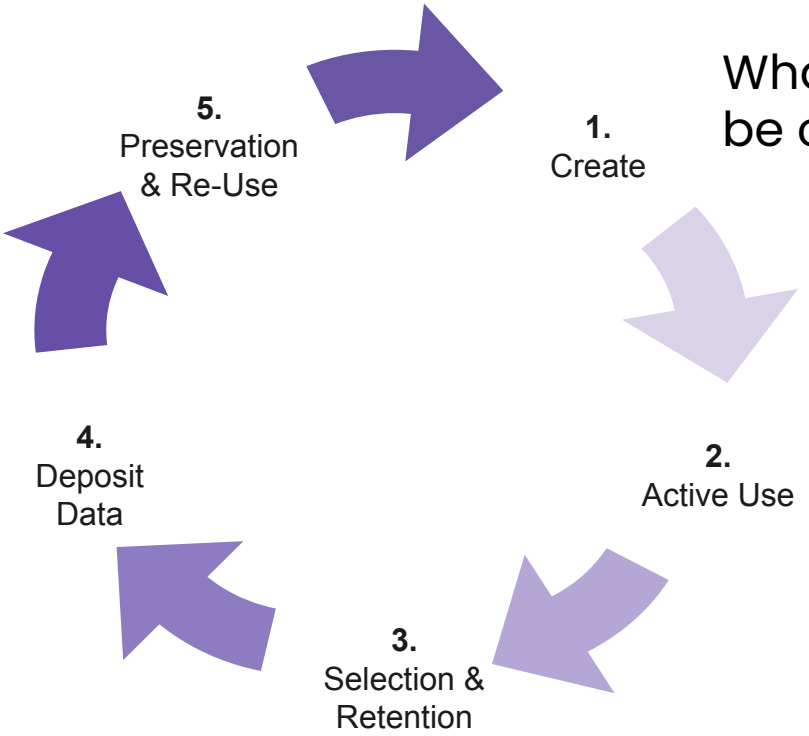
Data Cycles & Management Plans



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How will you share data?

How will you store data?

When will you evaluate if your data management is working?

- Is the file structure / naming understandable to others?
- Are further data required?
- Are new data types required?

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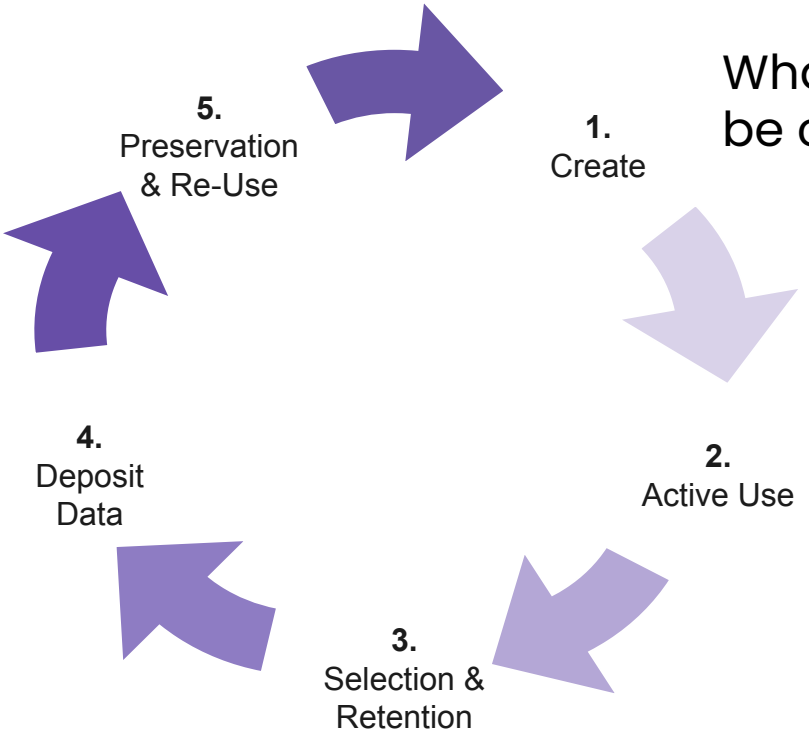
Data Cycles & Management Plans



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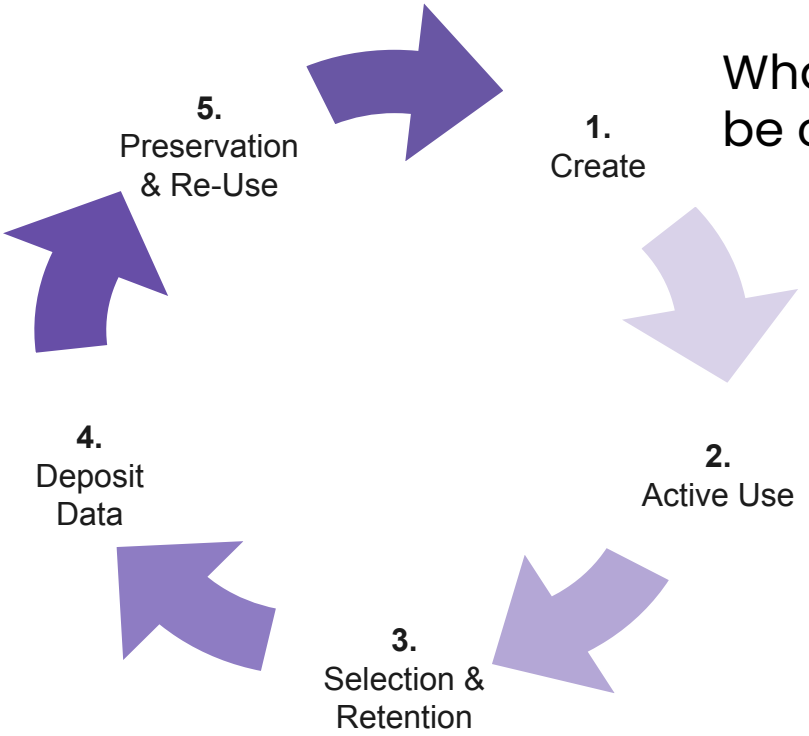

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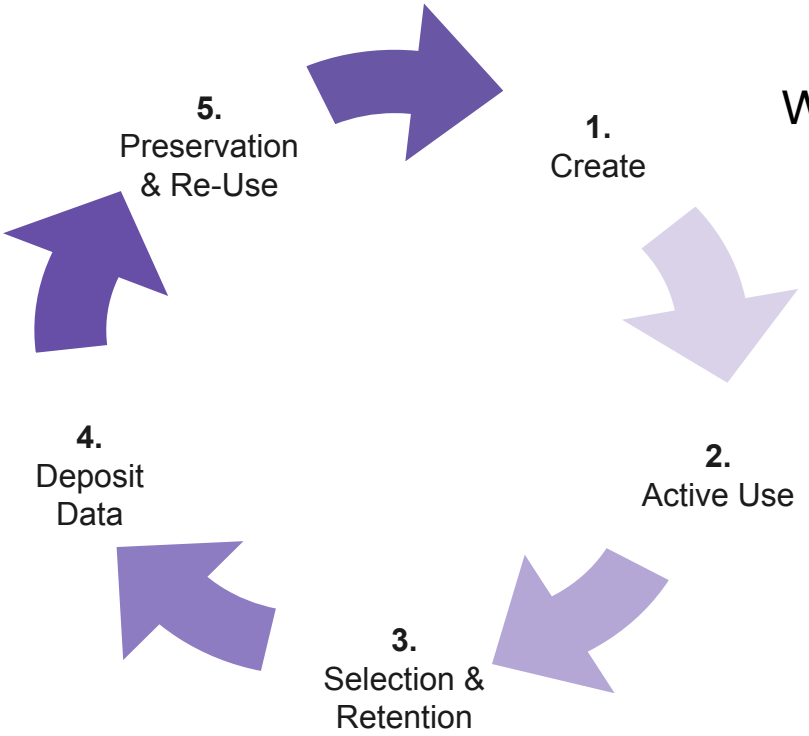

What data will you keep?

- Do you have a Selection and Retention strategy?

What data will be deposited and where?

- Define the core data set of the project
- Which data are supplementary?
- Licences
- Metadata
- Where? **Trusted Repository!**

Who will be interested in re-using the data?

Talk to the digital repository early!

Data Management Resources

Archaeology Data Service / Digital Antiquity
Guides to Good Practice

- Home
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This new and revised series of Guides to Good Practice have been produced as the result of a two-year collaborative project between the UK Archaeology Data Service and Digital Antiquity in the US. The project has encompassed important revisions of the existing six ADS *Guides* as well as the development of entirely new documents covering areas such as marine survey, laser scanning, close-range photogrammetry, digital audio and digital video. The project has involved previous Guides authors revising existing content alongside new authors, from both Europe and the US, also contributing to the development of the guides into new themes and areas.

The project has been undertaken in collaboration with the Digital Antiquity initiative, a US-based project with the aim of enhancing the preservation of and access to digital records of archaeological investigations. A major aim of the Guides is to provide the basis for archaeological project workflows that will create digital datasets that can be archived and shared effectively by Digital Antiquity's tDAR archive and repository in the US and by the Archaeology Data Service in the UK. The development
University of Arkansas and Arizona State University.

Other ADS projects have also fed into the revision and development of the Guides. ADS involvement in the European VENUS project has formed the basis of a guide focussed on marine survey. In addition, the incorporation of findings from the ADS Big Data project, together with the revision of the existing guide on aerial photography and remote sensing data, has seen a significant contribution to
funded projects.

Previous versions of the ADS/AHDS Guides to Good Practice have been archived and are still available on the old Guides to Good Practice page.

View the full new Guides to Good Practice Table of Contents

ads ARCHAEOLOGY DATA SERVICE

tDAR The Digital Archaeological Record
A SERVICE OF DIGITAL ANTIQUITY

The Andrew W. Mellon Foundation ENGLISH HERITAGE VENUS ace

Digital Data (general)

Geographical Information Systems

CAD

Geophysics

Aerial Photography & Remote Sensing

Unmanned Aerial Vehicles

Virtual Reality

3D Models

Photogrammetry

Dendrochronology

https://guides.archaeologydataservice.ac.uk/g2gpwiki/

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SEARCH

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ADVICE | PRESERVATION | GUIDES TO GOOD PRACTICE | NOTES AND PAPERS | TOOLS AND SERVICES

Guidelines for Depositors

Version 1.3, March 2008

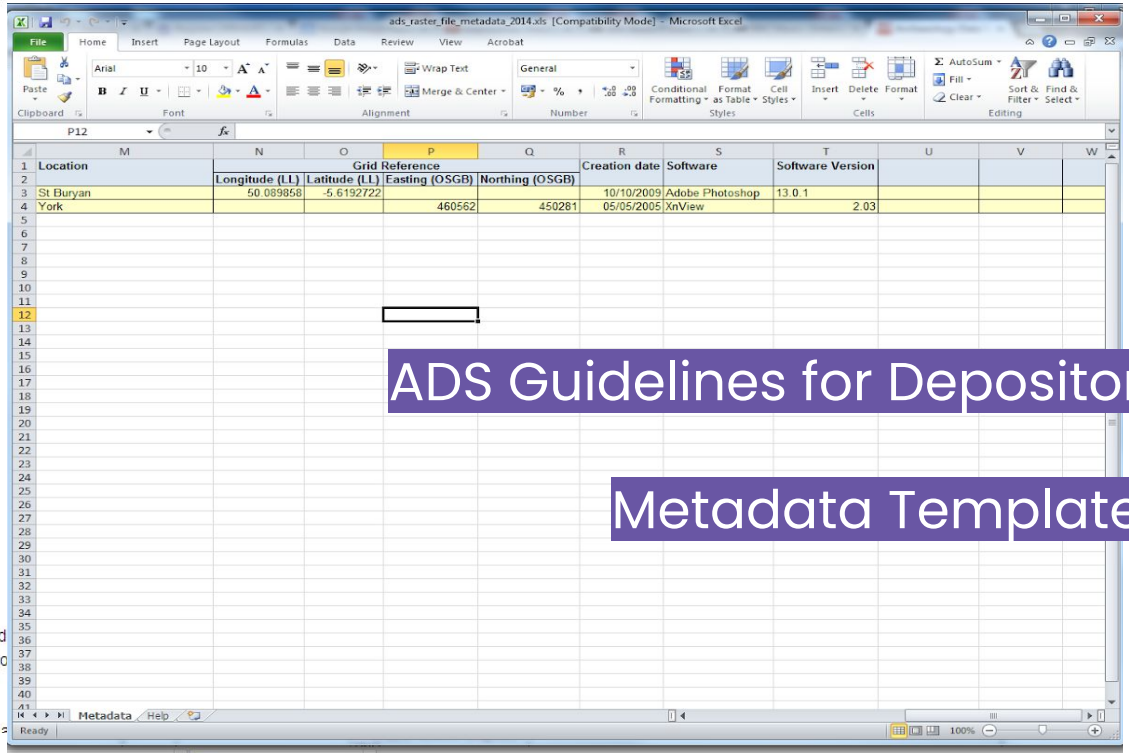
1. Depositing with the ADS

1.1. Why Deposit?

The Archaeology Data Service (ADS) collects, catalogues, manages, preserves, and
These pages describe the process of deposition and points to useful information abo

What is in the ADS collection?

The ADS will provide an archival home for any archaeological data of interest to UK a



ADS Guidelines for Depositors

Metadata Templates

https://archaeologydataservice.ac.uk/advice/guidelinesForDepositors.xhtml

Dig Digital

Introduction

The *Dig Digital* online resource has been created for the Archaeological Archives Forum (https://archives.archaeologyuk.org/) and delivered as part of the Historic England funded project: 7796 *Creating a Sectoral Standard and Guidance for Managing Digital Data*. The resource has been developed by DigVentures in partnership with CIfA.

The *Dig Digital* guidance aims to provide support for those creating digital data in archaeology, helping archaeologists manage digital data throughout projects and enabling the production of complete, ordered and stable archives which meet professional standards. This online resource links existing CIfA standards to digital materials, signposting good practice information and technical standards, and providing practical advice about how to achieve those standards.

CIfA standards and guidance underpin archaeological archives management and apply to all components – the finds, documents and digital data. A tailored approach to the practical implementation of those standards needs to be considered for each element and digital material is no exception.

By implementing these standards, we ensure that our work is accessible to the public, and to colleagues, researchers and educators.

Archaeological archives and digital data

The accessibility of archives for research and public interest is a key consideration when promoting the value of the material we keep in perpetuity. Archaeologists instinctively see the importance of retaining archives, responding to the destructive nature of investigation by making the site record accessible to all. This resource is about ensuring that the data we curate validates findings and can be used by others in the future. It promotes FAIR principles – meaning that the information we collect remains findable, accessible, interoperable and re-usable.

The Archaeological Archive comprises information that will facilitate reanalysis and reinterpretation of the site or project in the light of new data, new research questions, new techniques and new technology. Making data available for access is not just a requirement in archaeology, but increasingly across all research-based sectors. The reasons for this are logical, but are worth stating here:

- Data helps make our work transparent, and our conclusions more valid and properly supported
- Accessibility facilitates re-use, enabling new research questions to be answered which provides greater efficiency and increased impacts
- Open data can be used for interests beyond archaeology, providing a higher return on initial investment
- Making data available contributes to wider public benefits, achieving maximum value from research

This online resource includes background information, step-by-step examples, and case studies, to provide guidance for digital data management within archaeological project delivery. It focuses on the things you can do at each stage of the project that will embed digital data firmly within the process of archaeological archive management.

The guidance does not include detailed technical standards, information about cyber security, or disaster management planning, although you will find some useful links to resources that do.

How to use this resource

There is no right or wrong way to use the resource and, depending on your own experience and

Dig Digital Sections

Download this page:

PDF

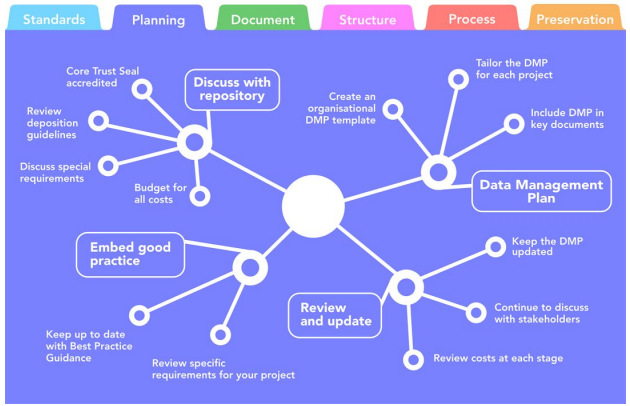
Dig Digital Health Check

1.05 MB

Dig Digital Webpage and Resources

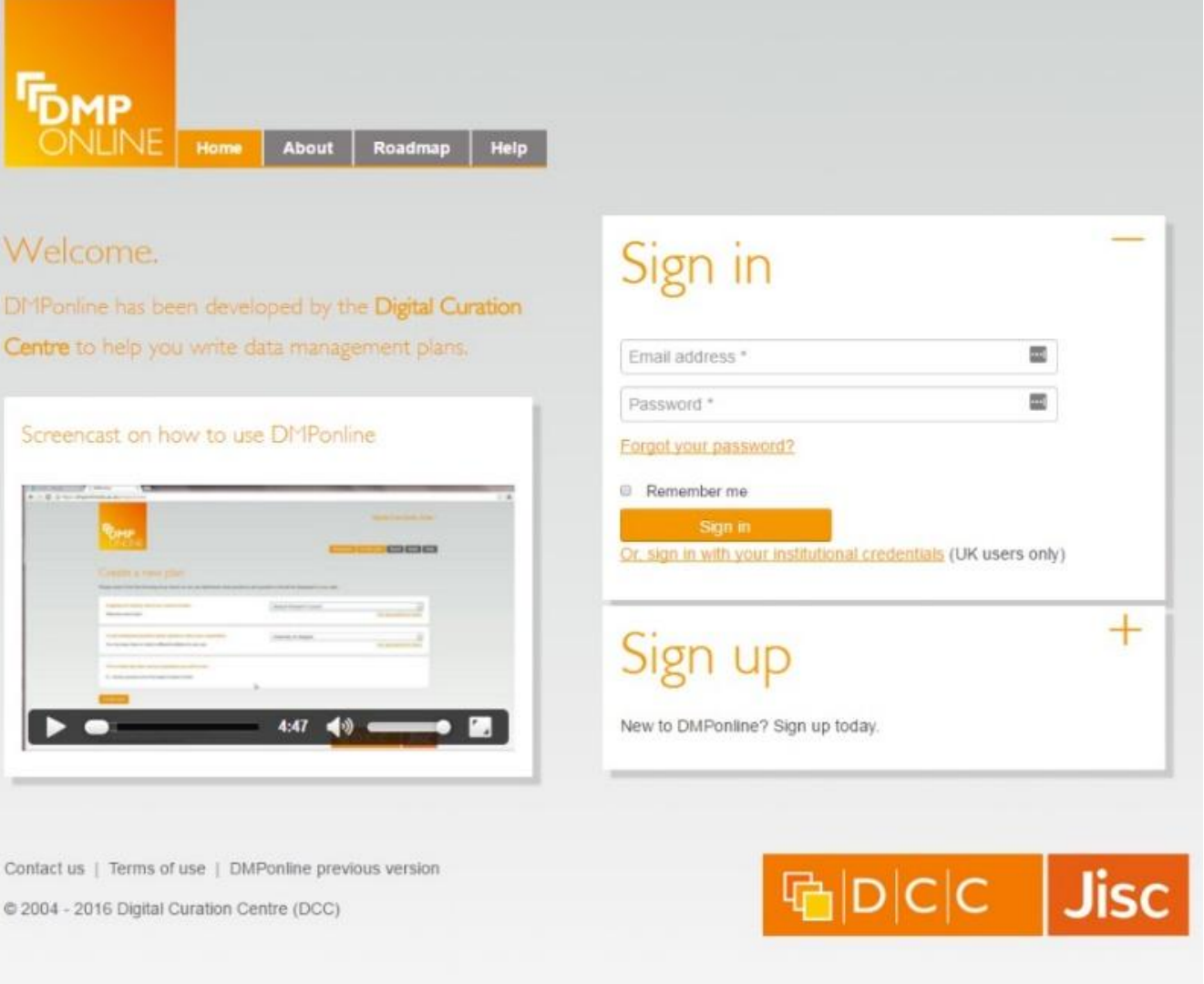
https://www.archaeologists.net/digdigital/

Still areas to add but publicly available



Archaeology Data Service

Selection Toolkit



General guidance on data management

DMP ONLINE

http://www.dcc.ac.uk/

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Thank You

katie.green@york.ac.uk

Archaeology Data Service
Department of Archaeology
University of York
The King's Manor
Exhibition Square
York, YO1 7EP

www.archaeologydataservice.ac.uk

help@archaeologydataservice.ac.uk

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Data Lifecycle Model

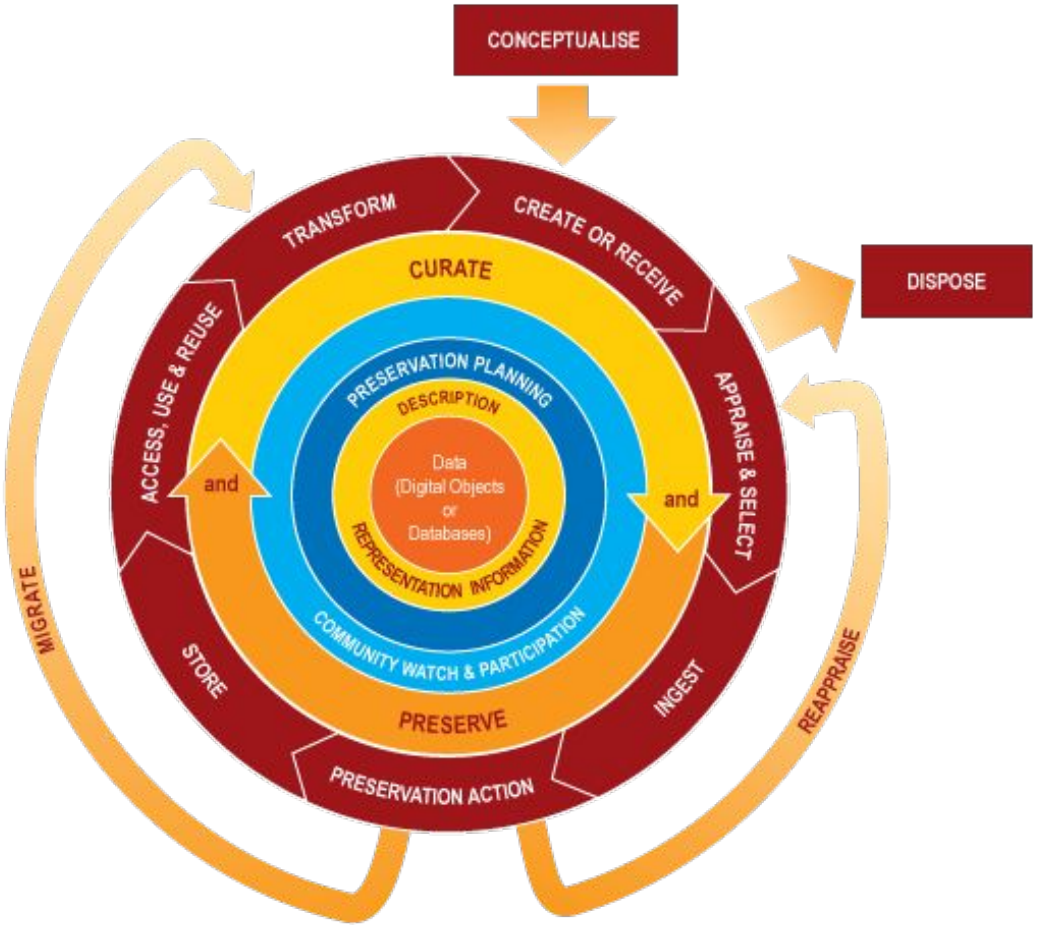

Image: Digital Curation Center

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Further Resources

- DPC
- Library of Congress

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1 Context

For an archaeological project, the contextual information for a Data Management Plan should include:

- Key details such as **project** or **site names** and related **unique identifiers;**
- **Funding bodies** where relevant;
- The date the DMP was **created** and last **updated**;
- The **version** number for the DMP document;
- Reference to any related **data management policies, fieldwork manuals** or other relevant documentation.

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2 Roles and Responsibilities

For an archaeological project, this area of your Data Management Plan should include:

- Information on who is responsible for implementing the DMP and ensuring it is reviewed and revised
- Information on who will be responsible for each data management activity
- How responsibilities will be split across partners in collaborative projects
- How data ownership and responsibility for data management be part of any consortium agreement or contract between partners

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3

Data Description

For an archaeological project, the data description section of your DMP should include:

- What data you will collect or create including the data type, format and volume/size of your data
- A justification of your chosen formats and the software used
- Information on what existing data is being collated and how this data will be used.

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4 Standards and Methods

For an archaeological project, this should detail the standards and methods used in the project, such as:

- How you will collect and create your data
- What instrumentation will be used and why
- What discipline specific data Standards or methodologies will be used and why
- How you will structure your data
- How you will manage version control of your data
- What quality assurance processes will be used and why
- What documentation and metadata will accompany the data and how will this be captured and created
- What metadata standards will be used and why

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5 Ethics and IPR

For an archaeological project, this section of your DMP should include:

- The name(s) of the copyright holder(s) for your data
- Information on required data sharing agreements (or equivalent)
- Details of any ethical concerns and ethical review processes undertaken for your data/project
- How personal or sensitive data will be handled, stored and transferred securely
- How you will ensure your data is compliant with appropriate legislation (i.e. GDPR 2018, UK Human Remains Acts)

6

Sharing Access and Security

For an archaeological project, this should include how your data will be stored, accessed and backed up during your research, such as:

- Details of **appropriate storage provision** for your dataset
- Information on **security** and **backup** procedures
- How data will be **recovered** in the event of an incident
- If creating or collecting data in the field, how will you ensure **safe transfer** into your main secured systems
- How you will **control access** to keep the data secure
- How will you ensure **collaborators** can access your data?

7

Preservation and Access

SEADDA
Saving European Archaeology from the Digital Dark Age

This part of your DMP should include how your archaeological data will be preserved and made available in the long-term, such as:

- What **selection strategy** will be applied to your data and what will happen to **de-selected data**
- How will the preserved data **relate** to any planned publications and other **dissemination** materials
- **Where** will the **data be deposited**, for **how long** will it be preserved, and **why** your selected repository was chosen
- **When** you will make the data available, and under what **licence**
- What are the **foreseeable research uses** for your data?

cost
EUROPEAN COOPERATION IN SCIENCE AND TECHNOLOGY

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What is an Archaeological Archive...

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A significant proportion of archaeological research remains:

- Unpublished and/or inaccessible
- Difficult to find
- Inoperable
- Incomplete
- Inappropriately archived

Deposit Evaluation

- Intellectual content & potential interest in their re-use
- Viability of data management, preservation, and distribution
- Other suitable archives?
- Authority to deposit the data
- Material is ‘complete’
- Digital form in preferred file format – consult repository websites
- Sufficient project documentation and file Metadata

Submission Information Package (SIP)

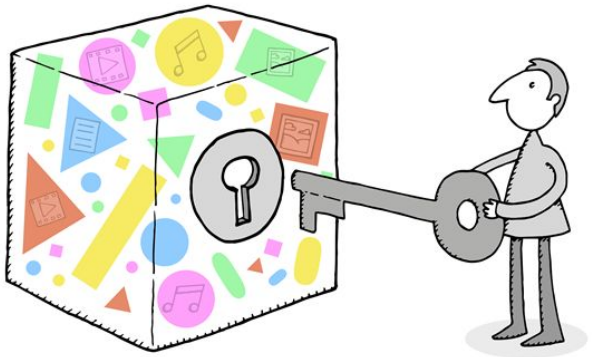
- **Virus check**
- Media and file **readability** check
- Data resource **integrity** check
- Check file **formats** suitable for depo
- Documentation **completeness** chec
- Data **validation** and **consistency** ch
- Web interface text check
- Copy to data server

Submission Information Package (SIP)

- Authenticate original version
- Replace spaces with underscores
- Log details of SIP in **Collections Ma**
- Create **checksums**
- Run **Droid** to generate file level met
- Store **licence** in AIP directory
- Scan paper documentation
- Acknowledge receipt of data
- Store original media

Archival Information Package (AIP)

- Check **licence**
- Check copyright and confidentiality clearance
- **Consistency** checks
- Selecting **preservation** and **dissemination** file formats
- Develop a **conversion** plan
- **Convert** the files
- **Validate** file conversion
- **Metadata** update
- Create and store **checksums** for
- Submit AIP for checking



Dissemination Information Package (DIP)

- **Convert** the files
- **Validate** file conversion
- Create web **interface**
- Allocate permanent urls / **DOIs**
- Pre-Release interface
- Make any depositor changes
- Release Archive
- Publicise Archive

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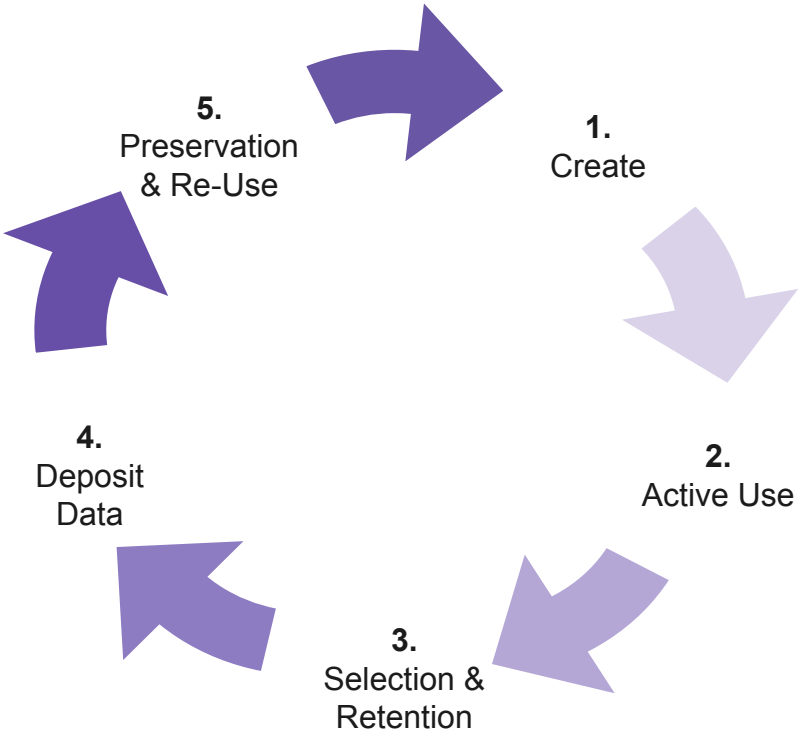
Data Cycles & Management Plans



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- The use of computers in archaeological fieldwork recording and research has become routine.