



Information Society  
Technologies

# erpastudies

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[www.erpanet.org](http://www.erpanet.org)

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Further information on ERPANET and access to its other products is available at <http://www.erpanet.org>.

A great deal of additional information on the European Union is available on the Internet. It can be accessed through the Europa server (<http://europa.eu.int>).

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## **Executive Summary**

The Portable Antiquities Scheme (PAS) aims to facilitate the recording of, access to and reuse of small archaeological finds data that falls outside the scope of the National Treasures Act. Access to information for over 60,000 objects is provided via the PAS Finds database. Recently migrated from Microsoft Access to a new open source product with an extraction layer, the Finds database should enable the datasets to be easily exported to other programmes as technology dictates.

PAS is an active contributor to the identification and development of standards and policies via the Forum for Standards in Heritage (FISH) and adheres to FISH standards for the creation, maintenance and sharing of their electronic resources. PAS has a well established quality control chain to ensure that all data entered into the Finds database is as complete and accurate as possible. These controls help to ensure the authority of the data. PAS is actively working to ensure that information regarding portable antiquities finds are accessible to archaeological enthusiasts, researchers and students of all levels for at least as long as funding is available, and has made provisional plans to ensure transfer of the records to another source, should funding cease. Whilst records are created using standard formats and within a well-planned IT infrastructure, which will assist in preservation activities in the future, a policy framework and explicit strategy to ensure that the records are reliably preserved after initial funding is exhausted has yet to be defined.

## **Chapter 1: The ERPANET Project**

The European Commission and Swiss Confederation funded ERPANET Project<sup>1</sup> (Electronic Resource Preservation and Access Network) works to enhance the preservation of cultural and scientific digital objects through raising awareness, providing access to experience, sharing policies and strategies, and improving practices. To achieve these goals ERPANET is building an active community of members and actors, bringing together memory organisations (museums, libraries and archives), ICT and software industry, research institutions, government organisations, entertainment and creative industries, and commercial sectors. ERPANET constructs authoritative information resources on state-of-the-art developments in digital preservation, promotes training, and provides advice and tools.

ERPANET consists of four partners and is directed by a management committee, namely Seamus Ross (HATII, University of Glasgow; principal director), Niklaus Bütikofer (Schweizerisches Bundesarchiv), Hans Hofman (Nationaal Archief/National Archives of the Netherlands), and Maria Guercio (ISTBAL, University of Urbino). At each of these nodes a content editor supports their work, and Peter McKinney serves as a co-coordinator to the project. An Advisory Committee with experts from various organisations, institutions, and companies from all over Europe give advice and support to ERPANET.

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<sup>1</sup> ERPANET is a European Commission funded project (IST-2001-32706). See [www.erpanet.org](http://www.erpanet.org) for more details and available products.

## **Chapter 2: Scope of the Case Studies**

While theoretical discussions on best practice call for urgent action to ensure the survival of digital information, it is organisations and institutions that are leading the drive to establish effective digital preservation strategies. In order to understand the processes these organisations are undertaking, ERPANET is conducting a series of case studies in the area of digital preservation. In total, sixty case studies, each of varying size, will investigate awareness, strategies, and technologies used in an array of organisations. The resulting corpus should make a substantial contribution to our knowledge of practice in digital preservation, and form the foundation for theory building and the development of methodological tools. The value of these case studies will come not only from the breadth of companies and institutions included, but also through the depth at which they will explore the issues.

ERPANET is deliberately and systematically approaching disparate companies and institutions from industry and business to facilitate discussion in areas that have traditionally been unconnected. With these case studies ERPANET will broaden the scope and understanding of digital preservation through research and discussion. The case studies will be published to improve the approaches and solutions being developed and to reduce the redundancy of effort. The interviews are identifying current practice not only in-depth within specific sectors, but also cross-sectorally: what can the publishing sector learn from the aeronautical sector? Eventually we aim to use this comparative data to produce intra-sectoral overviews.

This cross-sectoral fertilisation is a main focus of ERPANET as laid out in its Digital Preservation Charter.<sup>2</sup> It is of primary importance that disparate groups are given a mechanism through which to come together as best practices for digital preservation are established in each sector.

### *Aims*

The principal aims of the study are to:

- build a picture of methods and match against context to produce best practices;
- accumulate and make accessible information about practices;
- identify issues for further research;
- enable cross-sectoral practice comparisons;
- enable the development of assessment tools;
- create material for training seminars and workshops; and,
- develop contacts.

Potential sectors have been selected to represent a wide scope of information production and digital preservation activity. Each sector may present a unique perspective on digital preservation. Organisational and sectoral requirements, awareness of digital preservation, resources available, and the nature of the digital object created place unique and specific demands on organisations. Each of the case studies is being balanced to ensure a range of institutional types, sizes, and locations.

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<sup>2</sup> The Charter is ERPANET's statement on the principles of digital preservation. It has been drafted in order to achieve a concerted and co-ordinated effort in the area of digital preservation by all organisations and individuals that have an interest and share these concerns.  
<http://www.erpanet.org/charter.php>.

The main areas of investigation included:

- perception and awareness of risk associated with information loss;
- understanding how digital preservation affects the organisation;
- identifying what actions have been taken to prevent data loss;
- the process of monitoring actions; and,
- mechanisms for determining future requirements.

Within each section, the questions were designed to bring organisational perceptions and practices into focus. Questions were aimed at understanding impressions held on digital preservation and the impact that it has had on the respective organisation, exploring the awareness in the sector of the issues and the importance that it was accorded, and how it affected organisational thinking. The participants were asked to describe, what in their views, were the main problems associated with digital preservation and what value information actually had in the sector. Through this the reasons for preserving information as well as the risks associated with not preserving it became clear.

The core of the questionnaire focused on the actions taken at corporate level and sectoral levels in order to uncover policies, strategies, and standards currently employed to tackle digital preservation concerns, including selection, preservation techniques, storage, access, and costs. Questions allowed participants to explore the future commitment from their organisation and sector to digital preservation activities, and where possible to relate their existing or planned activities to those being conducted in other organisations with which they might be familiar.

Three people within each organisation are targeted for each study. In reality this proved to be problematic. Even when organisations are identified and interviews timetabled, targets often withdrew just before we began the interview process. Some withdrew after seeing the data collection instrument, due in part to the time/effort involved, and others (we suspect) dropped out because they realised that the expertise was not available within their organisation to answer the questions. The perception of risks that might arise through contributing to these studies worried some organisations, particularly those from sectors where competitive advantage is imperative, or liability and litigation issues especially worrying. Non-disclosure agreements that stipulated that we would neither name an organisation nor disclose any information that would enable readers to identify them were used to reduce risks associated with contributing to this study. In some cases the risk was still deemed too great and organisations withdrew.

### **Chapter 3: Method of Working**

Initial desk-based sectoral analysis provides ERPANET researchers with essential background knowledge. They then conduct the primary research by interview. In developing the interview instrument, the project directors and editors reviewed other projects that had used interviews to accumulate evidence on issues related to digital preservation. Among these the methodologies used in the Pittsburgh Project and InterPARES I for target selection and data collection were given special attention. The Pittsburgh approach was considered too narrow a focus and provided insufficient breadth to enable full sectoral comparisons. On the other hand, the InterPARES I data collection methodology proved much too detailed and lengthy, which we felt might become an obstacle at the point of interpretation of the data. Moreover, it focused closely on recordkeeping systems within organisations.

The ERPANET interview instrument takes account of the strengths and weaknesses from both, developing a more focused questionnaire designed to be targeted at a range of strategic points in the organisations under examination. The instrument<sup>3</sup> was created to explore three main areas of enquiry within an organisation: awareness of digital preservation and the issues surrounding it; digital preservation strategies (both in planning and in practice); and future requirements within the organisation for this field. Within these three themes, distinct layers of questions elicit a detailed discovery of the state of the entire digital preservation process within participants' institutions. Drawing on the experience that the partners of ERPANET have in this method of research, another important detail has been introduced. Within organisations, three categories of employee were identified for interview: an Information Systems or Technology Manager, Business Manager, and Archivist / Records Manager. In practice, this usually involved two members of staff with knowledge of the organisation's digital preservation activities, and a high level manager who provided an overview of business and organisational issues. This methodology has allowed us to discover the extent of knowledge and practice in organisations, to understand the roles of responsibility and problem ownership, and to appreciate where the drive towards digital preservation is initiated within organisations.

The task of selecting the sectors for the case studies and of identifying the respective companies to be studied is incumbent upon the management board. They compiled a first list of sectors at the very beginning of the project. But sector and company selection is an ongoing process, and the list is regularly updated and complemented. The Directors are assisted in this task by an advisory committee.<sup>4</sup>

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<sup>3</sup> See <http://www.erpanet.org/studies/index.php>. We have posted the questionnaire to encourage comment and in the hope that other groups conducting similar research can use the ideas contained within it to foster comparability between different studies.

<sup>4</sup> See [www.erpanet.org](http://www.erpanet.org) for the composition of this committee.

## **Chapter 4: The Portable Antiquities Scheme**

Established by the UK Department of Culture, Media and Sport in 1997 as a series of six pilot projects, the Portable Antiquities Scheme (PAS) is a voluntary scheme to help promote the recording of chance archaeological finds by the general public. It aims to increase public awareness of the importance of archaeological information for understanding the past. The scheme records archaeological finds that fall outside the scope of the National Treasures Act<sup>5</sup> (1996). The project was expanded in 2003 by the Heritage Lottery Fund (HLF) to include five new pilot schemes and now covers all regions in England and Wales.

PAS's goals include:

- advancing knowledge of the history and archaeology of England and Wales by systematically recording archaeological objects found by the public;
- raising awareness among the public of the educational value of archaeological finds in their context and facilitate research in them;
- increasing opportunities for active public involvement in archaeology and strengthen links between metal-detector users and archaeologists;
- encouraging all those who find archaeological objects to make them available for recording and to promote best practice by finders;
- defining the nature and scope of a Scheme for recording Portable Antiquities in the longer term, to assess the likely costs and to identify resources to enable it to be put into practice.<sup>6</sup>

The Museums, Libraries and Archives Council (MLA)<sup>7</sup>, working in partnership with sixty-three national, local authority and university organisations, leads the management of PAS. It is funded through the Heritage Lottery Fund<sup>8</sup>, the Department for Culture, Media & Sport<sup>9</sup> and other partner organisations. PAS has a central office located within the British Museum, but it is essentially a hollow organisation with over forty members of staff distributed throughout England and Wales. The PAS Finds database currently holds over 60,000 records and 19,000 images. It is envisaged as an ongoing project but funding has been guaranteed only until 2006. However, a decision on future long-term funding is expected in 2004 and government support for this project is strong.<sup>10</sup> Should funding cease to exist, the data will be managed by the MLA but belong to the local authority from which the data was collected.

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<sup>5</sup> Summary of National Treasures Act

[http://www.finds.org.uk/background/treasure\\_summary.asp](http://www.finds.org.uk/background/treasure_summary.asp).

<sup>6</sup> Aims outlined on PAS organisational web site <http://www.finds.org.uk/involved/faqs.asp>.

<sup>7</sup> The Museums, Libraries and Archives Council <http://www.mla.gov.uk/index.asp>.

<sup>8</sup> Heritage Lottery Fund <http://www.hlf.org.uk>.

<sup>9</sup> Department for Culture, Media & Sport <http://www.culture.gov.uk/default.htm>.

<sup>10</sup> Annual Report 2003 [http://www.finds.org.uk/documents/Resource\\_December\\_2003.pdf](http://www.finds.org.uk/documents/Resource_December_2003.pdf).

## **Chapter 5: Details and circumstances of the Interviews**

<http://www.finds.org.uk/>

Initial contact was made with Daniel Pett, ICT Advisor, who then contacted Roger Bland, Head of Portable Antiquities, and Claire Costin, Administrator, for contribution to the questionnaire. Subsequent email communications took place with Daniel Pett regarding their responses between October 2003 and May 2004.

## **Chapter 6: Analysis**

This section presents an analysis of the data collected during the case study. It is organised to mirror the sequence of topics in the questionnaire.

- Perception and Awareness of Digital Preservation
- Preservation Activity
- Compliance Monitoring
- Digital Preservation Costs
- Future Outlook

### **Perception and Awareness of Digital Preservation**

A contributing member of the Forum for Standards in Heritage (FISH)<sup>11</sup>, the Portable Antiquities Scheme participates in the identification and promotion of heritage data standards to enable the indexing, retrieval, and sharing of digital information. The PAS development team is currently driving research into the creation of a new FISH heritage standards toolkit. As such, PAS staff feel that they are well informed about the value of using standards in creating, managing and sharing digital cultural heritage resources. For specific information regarding digital preservation, the Portable Antiquities Scheme refers to white papers, attends conferences and consults peers within the cultural heritage sector. The interviewees feel that the general awareness of the importance of digital preservation is growing among the cultural heritage community.

#### *The Main Problems*

As stated above, the participants feel that overall awareness of digital preservation issues is increasing but acknowledge that many cultural heritage organisations lack the necessary skills to address these challenges effectively. The interviewees cited the absence of reliable funding for training activities and technical equipment as the major problem that has led to this lack of expertise among the cultural heritage community.

#### *Asset Value and Risk Exposure*

The Portable Antiquities Scheme records small archaeological finds that are found by the general public. Staff working on the Portable Antiquities Scheme realise that their object records might represent the only documented instance for a given archaeological find. Without such a scheme, these finds could go unrecorded and their historical value would be lost. As such, the main reason for preserving these records is to preserve the historical and contextual information about the objects to enable future research. The Portable Antiquities Scheme must also ensure that all of the finds it records fall outwith the scope of the Treasures Act.<sup>12</sup> Staff realise that any loss of data would lead to the integrity of the Portable Antiquities Scheme being compromised.

A risk analysis was carried out as part of the tendering process for the development of a new database. PAS recognises that the data it gathers has value beyond that for which it was originally created. The Finds database holds data for thousands of objects and has great potential as a tool for educators, researchers, students and the casual observer alike. PAS has recently appointed a dedicated Education Officer to actively

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<sup>11</sup> Forum for Standards in Heritage (FISH) <http://www.mda.org/fish>.

<sup>12</sup> Op cit.

encourage the reuse of its data for secondary education, undergraduate and postgraduate research, and life-long learning.

### *Regulatory Environment*

Under the National Treasures Act, anyone finding objects that may be considered treasure has a legal obligation to report them. Museums have the right to acquire any finds deemed as 'treasure'. Finds Liaison Officers (located throughout all regions of England and Wales) can advise the public on the National Treasures Act and help to identify any finds that must be reported. Information supplied by members of the public is subject to the Freedom of Information Act (2000) and the Data Protection Act (1984). Resource: The Council for Museums, Libraries and Archives leads a consortium to help ensure that PAS meets its objectives. As a Heritage Lottery Fund (HLF) funded project, PAS is also accountable to the HLF.

### **Preservation Activity**

Pas relies upon an open source database as the main system through which to catalogue and link to images of recorded finds. This allows finds to be recorded directly onto the central database and published instantly to the web. The database is a fully searchable archive of finds information.

### *Policies and Strategies*

In the absence of explicit policies and strategies on long term digital preservation, the Portable Antiquities Scheme relies on open and standard formats to ensure easy and persistent access to their files and believe that this continuous access will simultaneously enable them to preserve the files through time. PAS conforms to the several standards identified by the Forum for Standards in Heritage when recording their data, such as the Monument Inventory Data Standard (MIDAS)<sup>13</sup> and INSCRIPTION<sup>14</sup>, which complements the MIDAS information by ensuring that standard terminology can be applied to all records. Furthermore, they rely upon a range of technical standards for image formats and raw data.

### *Selection*

Selection of objects is governed by criteria in the Treasure Act and the intrinsic archaeological value of non-Treasure objects. PAS must also rely on the voluntary cooperation of the general public to report finds for inclusion in the finds database.

PAS has implemented an organisation-wide classification and retention schedule. These schedules are implemented from the top down – from senior management, to developers and then to the Finds Liaison Officers who collect and record the dataset. PAS keeps up to date with developments in the cultural heritage and ICT communities through involvement with FISH and updates their approach as necessary. PAS are committed to an ongoing communication of goals and ideals for the recording of data. Fifteen days of training are allocated to each member of staff per year to help achieve this.

### *Preservation*

The Finds database was migrated from the proprietary Microsoft Access to a new open source system following a tendering process in 2002. This can be developed and built

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<sup>13</sup> MIDAS [http://www.jiscmail.ac.uk/files/FISH/web\\_midasantro.htm](http://www.jiscmail.ac.uk/files/FISH/web_midasantro.htm).

<sup>14</sup> INSCRIPTION <http://www.mda.org.uk/fish/inscript.htm>.

upon as necessary in the future. The dataset is configured so that it can be exported to other organisations or programmes with little difficulty. PAS can provide access to their dataset in XML, CSV, CIMI-XML and SQL tables, with the raw data stored in ASCII format.

A database extraction layer has been created so that they can cope with changes to the software. An open source image database is also used to store images. Images and text are stored in open, industry standards, for example uncompressed TIFF files, JPEG, PNG to enable migration as needed. The software that runs the image conversion for display on the web, can convert any type of image format to another type.

PAS conforms to the several standards identified by the Forum for Standards in Heritage when recording their data. One of the standards they comply with is the Monument Inventory Data Standard (MIDAS).<sup>15</sup> MIDAS is an open data standard that outlines the units of information that should be included for any record of the historic environment. The objectives of the standard include 'assisting the migration of inventories from old systems to new systems; to increase the opportunities for the evolution of inventories ensuring their survival and relevance as technologies change and to provide a common format for monument-related inventories, ensuring that important information is recorded'.<sup>16</sup> INSCRIPTION<sup>17</sup> complements the MIDAS units of information and provides access to a collection of simple, hierarchical and complex wordlists and thesauri to help ensure that standard use of terminology is applied to all records.

PAS ensures that all data entering the repository is as accurate and authentic as possible and has provided a model of their workflow to illustrate how selected data is checked for completeness and accuracy (see appendix). To ensure that data in the archive is not corrupted, the Finds database is housed on a dedicated server behind a secure firewall. The system generates an alert to the system administrator if an attempt to gain access has been made by an unauthorised user.

Data is backed up daily across the servers and weekly at the server farm. In addition, the system is backed up weekly to the Development Team office and also to the ICT advisor's desktop. An offline version of the database exists that can be synchronised with the main server. The ICT advisor also copies the data to CD regularly. The CDs are checked monthly, and are migrated to new CDs if necessary. This approach is similar to the Lots Of Copies Keeps Stuff Safe (LOCKSS)<sup>18</sup> philosophy. PAS adheres to standard metadata schemes when recording their data to enable discovery, maintenance and long-term use.

PAS works closely with the MLA, FISH and various universities in the UK to ensure that its approach is as up to date as possible. PAS is currently investigating the development of a transferable data standard and methods of preservation as part of its FISH activities. The ICT Advisor regularly monitors developments in standards and codes via the internet. By carrying out these technology watches, PAS should be able to anticipate any changes that would threaten their digital holdings.

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<sup>15</sup> MIDAS [http://www.jiscmail.ac.uk/files/FISH/web\\_midasintr.htm](http://www.jiscmail.ac.uk/files/FISH/web_midasintr.htm).

<sup>16</sup> MIDAS: A Manual and Data standard for Monument Inventories  
<http://www.english-heritage.org.uk/filestore/nmr/standards/midas3rdreprint.pdf>.

<sup>17</sup> INSCRIPTION <http://www.mda.org.uk/fish/inscript.htm>.

<sup>18</sup> LOCKSS <http://www.lockss.stanford.edu>.

## Access

The Finds database has five main types of users. These are:

- 1) Finds Liaison Officers
- 2) General public user
- 3) Researchers
- 4) Administrators
- 5) Trusted public users

Finds Liaison Officers (FLOs), Administrators and Trusted Public Users can add content to the database. Public users become 'trusted' if they undergo training provided by the FLOs in the terminology and standards used by PAS. Data added by Trusted Public Users must still undergo verification by FLOs before it is made accessible to the public. All actions are auditable and can be reversed if need be.

In terms of the data itself, PAS aims to make available as much of the object information as possible, via its finds database, while still protecting the personal information of the individual who found the object and the specific location the object was found at (findspot). Precise details of findspots are made available to the Finds Liaison Officers, the Sites and Monuments Record, and other statutory bodies such as English Heritage, Cadw and the Royal Commission on the Ancient and Historical Monuments of Wales. However, in the publicly accessible database, the findspot is given as a National Grid Reference (NGR) based on those outlined by the Ordnance Survey that identifies the general findspot as a range of one square kilometre. This practice aims to protect archaeological sites from possible damage.

## **Compliance Monitoring**

The Portable Antiquity Scheme ICT officer checks the integrity of their data on a daily basis for signs of deterioration. Audits are carried out by the PAS development team, and an additional external evaluator will soon be appointed to ensure compliance to FISHER policies and standards.

## **Digital Preservation Costs**

PAS are funded by the HLF and have a budget of £3 million for the next three years. Of this amount, interviewees indicated that 1.2% is spent on storage and preservation, which is divided between the capital and IT budget sections. This compares with 1.9% spent on development. PAS staff feel that this amount is adequate for the time being. PAS staff believe that hardware will become cheaper in the future but think that costs involved for staff time will increase. PAS indicated that there are external government grants and cross-sectoral funds that could be applied for if preservation costs increase beyond the current budget allocations.

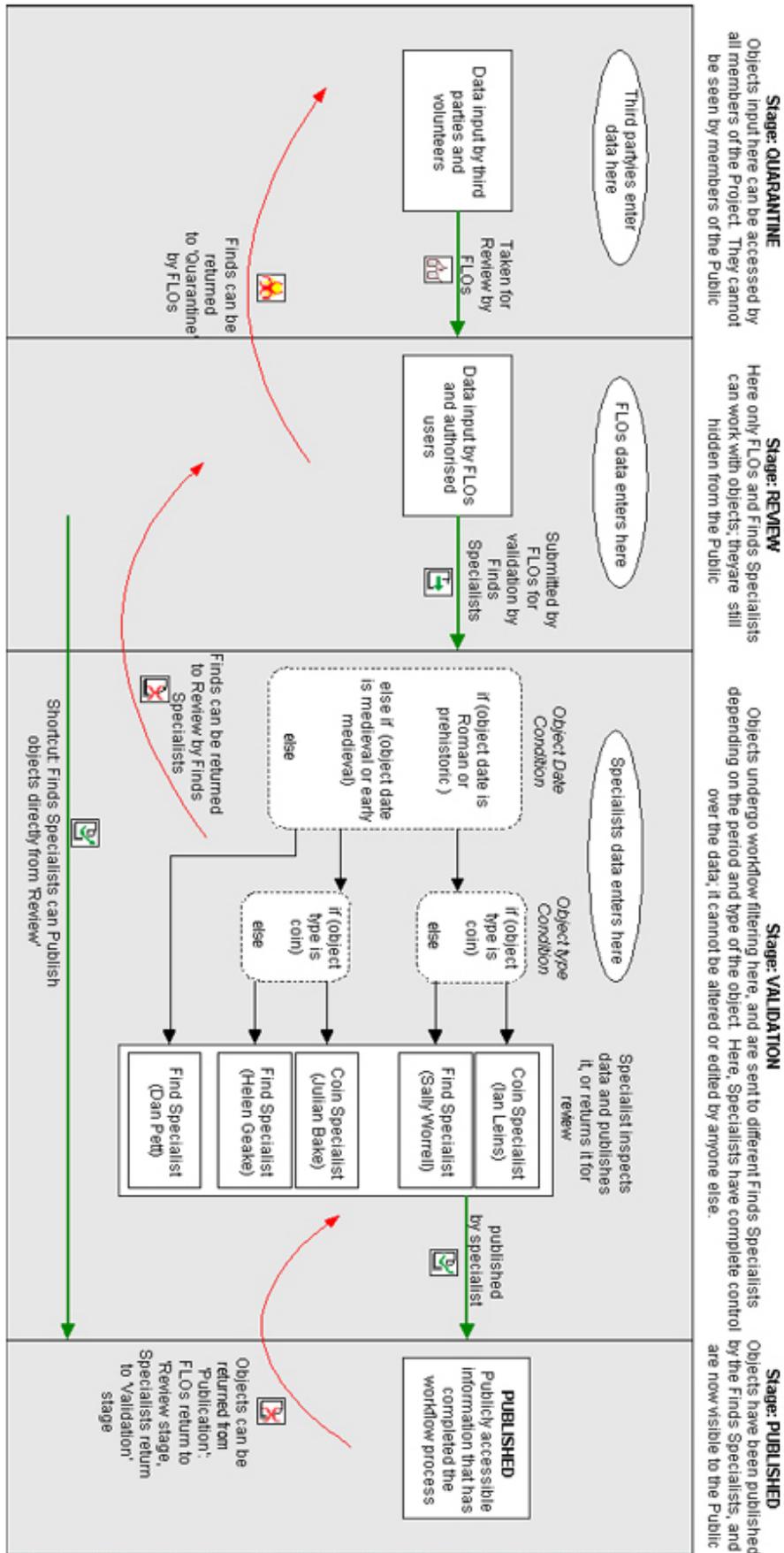
## **Future Outlook**

PAS feels confident that its current approach will be sufficient for at least the next three years as it will be funded until at least 2006. With strong government support, PAS hopes to receive long-term funding commitment some time in 2004. PAS believes that the increased functionality offered by the new Finds database will increase the educational potential of the finds information. This is an area that it plans to focus on for the foreseeable future of the project.

## **Chapter 7: Conclusions**

The enthusiasm of PAS will hopefully ensure that the scheme will endure and that the resources it holds will be available to archaeological researchers, students and enthusiasts for many years to come. Should PAS cease to be viable due to a lack of funding, it has some provisional plans in place to transfer the custody of the data, however in order to ensure the long-term survival of its digital resources these will require clarification and further detailing. Proper strategies and policies for preservation should be created regardless of whether the data is to be transferred or not, especially given the range of bodies and staff inputting data to the project and the perceived long-term value of the data by the organisation. However, by adopting the open standards promoted by FISH for the creation, maintenance and sharing of its digital data PAS has already taken the first step towards creating digital resources with the potential to persist through time.

**Appendix 1: PAS Workflow Model**



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