The Role of Data Standards in Digital Access and Interchange

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Abstract

This presentation will explore recent initiatives within the RCHME to improve access to and exchange of digital information and demonstrate how they conform with national and international standards for recording both the archaeological and architectural heritage. RCHME has played a key role in the development of these standards, which recognise and define shared concepts, use common protocols for recording data and, thus, facilitate both exchange of and access to information. It is hoped that the crucial role which standards must play in sharing cultural heritage information will have been demonstrated and that methods for encouraging their widespread adoption and use will have been explored.

1 Introduction

Since 1984, the Royal Commission on the Historical Monuments of England (RCHME) has played a key role in the development of national and international data standards for the recording of information about archaeology and the built heritage. Recent examples include the 1993 Recording England's Past standard (RCHME 1993), the standard for Urban Archaeology Databases (RCHME and English Heritage 1993), the Thesaurus of Monument Types (RCHME and English Heritage 1995), the Council of Europe's core data standard for architectural records (Council of Europe 1995) and the Comité International pour la Documentacion's (CIDOC, the documentation committee of the International Council of Museums) international core data standard for archaeological sites and monuments (CIDOC 1995). Last year the RCHME established its own Data Standards Unit within the National Monuments Record (NMR), recognising the importance of data standards and the need to apply them rigorously internally, as well as the value of outreach and continuing involvement in national and international initiatives.

This paper concentrates on the role of data standards in heritage inventories and their importance in access to and the exchange of digital information, and looks specifically at three recent initiatives in which the RCHME has been involved.

Data standards, within this paper, are defined as rules or protocols for recording information, including vocabulary control. The key words in relation to data standards are compatibility, consistency, accessibility and retrievability.

2 RCHME'S data standards unit

The Data Standards Unit was established in May 1996 and has the following responsibilities:

1. establishing and maintaining data standards;
2. disseminating information about data standards and vocabulary control;
3. training staff in the importance and use of data standards;
4. ensuring consistency in the recording of information across the organisation; and
5. ensuring that the quality of data is maintained.

The Unit also has an outreach role. It can offer advice and information on data standards and vocabulary control, and provide training in these areas. It also provides specific advice and recommendations on data standards and terminology control as part of reference data audits for Sites and Monuments Records (SMRs) maintained by local authorities in England.

3 The role of data standards in heritage inventories

The purpose of heritage inventories is to compile, present and provide access to information required to understand and interpret the historic environment for the purposes of management, conservation, preservation, education and enjoyment. Data standards ensure that compilation occurs consistently, through the use of common units of information and vocabulary control, and that information is presented in a consistent and meaningful way, through the use of a combination of controlled index fields and free text. Access to information, by making data retrievable, and dissemination are enhanced with users able to search on, retrieve and make sense of relevant information.

The application of organisational data standards leads to internal consistency: the application of national and international standards provides opportunities for communication and the sharing of information between organisations. Compatibility, shared access and the ability to exchange data sits at the heart of recent heritage standards.

Standards have also been developed to assist organisations at an early stage in planning and developing new information systems for their inventories. Adopting a common format, which can be developed and tailored to meet specific requirements, ensuring that information can be accessed and retrieved effectively through a consistent approach, and employing terminology control mechanisms,

helps inventories to meet their objectives and fulfil the requirements of their users. For existing inventories, the use of a common and well-defined format can also ease the process of migrating data from one information system to another.

The RCHME regards data standards and terminology control as a key element of its lead role and participates in both national and international initiatives on the recording and dissemination of heritage data, with the aim of providing access to a common store of inventory information.

4 How effective are data standards?

The development of data standards is not without difficulties. Concerns have been raised within the archaeological community about the relevance and applicability of particular data standards and whether standardisation is actually achievable or desirable. Typical criticisms of, and concerns about standards, include the following:

1. they are sets of rules which inhibit creativity and flexibility;
2. they do not cover the needs of individual organisations in sufficient detail;
3. those developed to cater for specialist needs become too complex and unwieldy;
4. international data standards should not be imposed at a local level;
5. they should not be dominated by the needs of larger, national organisations;
6. they are principally designed for classification rather than as tools to aid retrieval;
7. they must contain full definitions of the fields and explain how to use them, and
8. they must be responsive to suggestions from users.

Many of the criticisms can be overcome by the adoption of a more pro-active approach to standard development, with user consultation, feedback and education being essential elements of the process. Data standards which have clearly defined aims, can be linked with other standards, have sufficient flexibility to allow users to comply with a core but retain their individuality beyond this, and can be developed as requirements change, are now considered more effective.

The positive aspects of data standards continue to outweigh possible disadvantages. Besides maximising consistency, compatibility and retrieval, they provide a means by which to update information efficiently, facilitate the transfer and exchange of data from one information system to another, and, through the use of fields or concepts for recording information, encourage greater analysis of data and its structuring into a more logical form. This serves to enhance both the manipulation and presentation of information.

Data standards also require the use of terminology control. Strict control of vocabulary, through the use of simple word-lists and more complex thesauri, not only ensures that the data is recorded in a consistent fashion and is of a high quality (achieved through the validation of inputted data against authority files), but also that users are provided with a simple means of accessing all of the information which is relevant to a particular enquiry.

5 Core data

Recent initiatives involving the RCHME have ensured that core data lies at the heart of new data standards. Core data is defined as the "*minimum amount of information required in indexing, ordering and classifying material independently of the form in which it is held*" (Council of Europe 1995). Consistent core data also ensures that information is retrievable. The core data record is not intended to be comprehensive but to act as an index to additional information required for the full understanding and interpretation of a record, held within the information system, the heritage organisation and elsewhere. In the context of both recording and the exchange of information, the value of core data lies in the fact that the fewer fields of data which are used the greater the degree of control on the consistency and quality of the information.

The RCHME is implementing core data within the NMR Inventory (see 6.1 below) and encouraging SMRs to exchange data at core level.

6 Recent data standard's initiatives

Recent English data standards have drawn heavily on the European and CIDOC core data standards, and include an internal standard for the National Monuments Record (NMR), the MIDAS standard and a data standard for SMRs.

6.1 The NMR data standard

RCHME staff have played a major role in the development of European and international core data standards for archaeological and architectural records over the last few years (see Appendix 1). Internally, although data standards were recognised as important, they were only applied in an *ad hoc* way, and a standard for recording monuments did not exist. Following extensive internal consultation and in the light of international developments, a core data standard for the NMR Inventory was ratified by Commissioners in December (RCHME 1996). The standard consists of four parts. These detail core data for NMR monument records to be compiled or edited to a consistent standard in all cases where the information is available, additional fields to be compiled by RCHME archaeological and architectural survey teams, additional fields appropriate to Maritime records, and non-core fields to be used when justified in the context of particular projects. The standard has been implemented within the NMR. Validation and enhancement projects ensure that core data requirements are met and quality assurance procedures check that the quality and consistency of data is maintained.

6.2. MIDAS

MIDAS, the Monument Inventory Data Standard (RCHME forthcoming), has its origins in a revision of Recording

England's Past (RCHME 1993) by the Data Standards Working Party. This group comprises representatives from the RCHME, English Heritage, the Association of Local Government Archaeological Officers (ALGAO), British and Irish Bibliography and The National Trust. The aim of this standard and manual is to enhance retrieval of information from monument related inventories, to provide a common format in order to ensure that important information is recorded, to promote consistency within a given inventory and between inventories, to facilitate the exchange of information, to assist the migration of records from old information systems to new ones, and to enhance the opportunities for evolution of inventories.

MIDAS has been influenced by Recording England's Past, the Council of Europe and CIDOC standards, the NMR Core Data Standard, and the museum documentation standard *SPECTRUM* (MDA 1994). Its development has been a collaborative process, based on the shared experiences of the working party members and feedback from a large group of peer reviewers. MIDAS is very clear about its aims and its audience, and not only sets out the standard but also provides practical advice and guidance for the holders of existing monument inventories and the creators of new ones. Compatibility with existing heritage standards, and the ability to fit these together, was regarded as a priority.

6.3 The SMR software standard

The SMR Software Standard (RCHME forthcoming) has been produced by the Data Standards Unit, supported by a group with representatives from ALGAO. The work was undertaken in the context of the RCHME lead role for the co-ordination of Sites and Monuments Records. Steve Stead was engaged as a consultant to the Unit and the Suffolk, West Yorkshire, South Yorkshire, Northamptonshire and Lincolnshire SMRs acted as reference sites.

The purpose of the data standard is to bring together the best elements from the standards which underlie a number of heritage databases, including English Heritage's Record of Scheduled Monuments (RSM), RCHME's National Monuments Record database (MONARCH), the Urban Archaeological Databases, and local authority Sites and Monuments Records, in order to inform the development of new software for SMRs. MIDAS lies at the core of the data standard, to ensure compatibility between the new national standard for monument inventories and a standard which caters for the specific needs of SMRs. The data standard has also been heavily influenced by a revised version of the CIDOC standard (unpublished, Nairobi 1996) and the Council of Europe's architectural standard. Although designed primarily in the context of a text database, it does take into account the need to link to Geographical Information Systems (GIS) and other spatial tools.

The data standard is being used as a design document by exeGeSIs Spatial Data Management, which has been commissioned to produce an SMR database and GIS software. Design and testing of the software will take place over the summer and it will be launched in the Autumn. The standard, and technical documentation, will be released after the software is made available.

7 Metadata

The RCHME has contributed to discussions on metadata with the Archaeology Data Service and in the context of the AQUARELLE Project, a European project which aims to provide an information network on the cultural heritage using the Internet as a delivery mechanism. The value of metadata in aiding the identification (resource discovery) and linking of relevant entries in various inventories is recognised by the RCHME. MIDAS discusses the role of metadata and includes a form for recording a metadata entry for an inventory, and the SMR Software will have the capability of generating metadata records. Although metadata is a flexible and effective resource discovery tool, it is not a substitute for consistently applied data standards and terminology control. Efficient and effective access to and retrieval of information can only be achieved through a combination of both these tools.

8 Conclusion

The aim of this paper was to emphasise the importance of data standards in the context of heritage inventories and to focus on some of the recent initiatives in which the RCHME has been involved. The format of data standards and the way in which they are being developed is changing. It is recognised that there is a need to produce standards that have clear aims and objectives, that cover the requirements of the target audience, that concentrate on core data rather than trying to be prescriptive on all fields of information, and that can adapt to changing needs. The effectiveness of standards is often questioned. However, the advantages of standards in terms of consistency, retrievability and compatibility, as well as in terms of facilitating access to and the sharing of heritage information, continue to outweigh any potential disadvantages.

Bibliography

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Royal Commission on the Historical Monuments of England, forthcoming SMR '97: *A Data Standard for England's Sites and Monuments Records*

Royal Commission on the Historical Monuments of England, 1996 *The NMR Core Data Standard*, Unpublished standard, ratified by Commissioners in December 1996

Royal Commission on the Historical Monuments of England and English Heritage, 1993 *Urban Archaeology Databases Data Standards and Compilers Manual*, Unpublished consultation draft

Royal Commission on the Historical Monuments of England and English Heritage, 1995 *Thesaurus of Monument Types: A Standard for Use in Archaeological and Architectural Records*, Swindon, RCHME

Appendix 1 Heritage data standards with RCHME input

Data Standards

RCHME and ACAO Recording England's Past *A Data Standard for the Extended National Archaeological Record* (1993)

RCHME and English Heritage Urban Archaeology Databases Data Standards and Compilers Manual (1993)

Council of Europe Core Data Index to Historic Buildings and Monuments of the Architectural Heritage (1993)

CIDOC Draft International Core Data Standard for Archaeological Sites and Monuments (1995)

Council of Europe Core Data Standard for Archaeological Sites and Monuments (forthcoming)

RCHME National Monuments Record Core Data Standard (unpublished 1996)

RCHME MIDAS *A Data Standard and Manual for Monument Inventories* (forthcoming 1997)

RCHME and ALGAO Data Standard for SMRs (forthcoming 1997)

MDA *SPECTRUM* Archaeological Guide (forthcoming 1997)

Vocabulary Control

RCHME and EH Thesaurus of Monument Types (1995)

MDA Archaeology Object Name Thesaurus (forthcoming 1997)

Council of Europe European Bronze Age Monuments *A multilingual glossary of archaeological terminology* (draft 1995)

RCHME Thesaurus of Building Materials (unpublished 1996)

RCHME authority lists and thesauri used in NMR databases (unpublished)

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