Building Interoperability for United Kingdom Historic Environment Information Resources

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Abstract. The paper will present the work of the Forum on Information Standards in Heritage (FISH) – www.fish-forum.info – in the development of standards and protocols to support interoperability between historic environment sector information systems. The paper describes barriers to interoperability within the sector. These originate in the unique character of the historic environment as an information source. Progress in the development of relevant standards is reviewed and emphasis placed upon community building to support standardisation. Current work to develop an XML-based interoperability ‘toolkit’ of schema and protocols to support knowledge-sharing networks is described. This will be based on current FISH standards along with the CIDOC Conceptual Reference Model, an emerging ISO standard ontology for cultural heritage information.

1 The Historic Environment Information Landscape

The ‘historic environment’ is all around us. It consists of the totality of those aspects of the built heritage, archaeology and current and past landscapes that together form both the subject of study for academics, and a perceived ‘sense of place’ for those that live and work within such an environment. The holistic approach implicit in the phrase ‘historic environment’ presents particular challenges to the designers and managers of historic environment information resources (HEIRs). It is useful to introduce these challenges to provide a background to this presentation of the data standards that have emerged within the sector, the means by which they are developed, and the current work on interoperability to secure the benefits of that standardisation work.

1.1 Multiplicity of Interests

The historic environment is not ‘owned’ or curated by any one single organisation, and there are often many organisations interested in the same site. A contrast can be drawn between, for example, a museum object which will generally be documented by a single curating authority, and a Bronze Age burial mound. The latter may be recorded simultaneously by any or all of the following: a local authority for development control purposes, a national body for purposes of legal protection, the landowner for land management, a thematic national survey of sites of a particular type, a scientific or research group as the origin of a significant sample at the scale of microns and
a landscape survey project working on a scale of kilometres. This contrast is reflected in the distinction between process-based standards current in the UK museums sector (SPECTRUM from mda) and object-based standards for the historic environment [1].

1.2 Separation of Data from Documented Object

Features of the historic environment do not usually provide their own documentation. This is in contrast to an item of archive, which may well convey enough information, either within itself or by virtue of its context within a collection, for it to be adequately described. In consequence the recorded information about a Bronze Age burial mound is arguably as significant as the original site. This issue becomes most acute in cases where the site no longer exists. In the jargon ‘preservation by record’ means that recorded information may well stand as surrogate for the actual site itself.

1.3 Unique Character

No two features of the historic environment are identical, and it is this diversity which is often the subject of interest. Two Bronze Age burial mounds, for all their similarities, cannot be treated in the same way as two copies of the same book. Often there is uncertainty over the correct interpretation of such a feature. Is it really a burial mound? Is it really Bronze Age? Maximising future retrieval of records suggests the requirement to index all the possible alternative interpretations that the available evidence supports. Opportunities for rigorous rules-based classification of features of the historic environment are very limited, and have received little attention in comparison to, for example the classification of archaeological artefacts.

2 Consequences for the HEIR User

Faced by these challenges, historic environment information resource managers have developed many different software platforms and database designs. Even within a single subset of the sector, the Historic Environment Records (formerly known as Sites and Monuments Records or SMRs) maintained by English local authorities, Newman has identified the need for extensive auditing to promote consistent quality [2]. The Historic Environment Information Resources Network has surveyed and reported on the variability and fragmentation of these diverse information systems [3].

To achieve a full picture of the existing knowledge of a site it is therefore necessary to draw upon information from a large number of different information systems, which will in most cases have different physical designs, and quite often different underlying logical models. They will support different types of search, and will not provide consistent output. The process of transmission of data between these incompatible data structures is therefore complex and costly. Each attempt to transfer data between systems requires individual design, so that to provide data to multiple partners quickly becomes prohibitively expensive. The routines developed are vulnerable to changes in technology in either partner in the exchange (Fig. 1).