

Developing an information system for archaeological sites and monuments – administration and maintenance model

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Abstract: The Swedish National Heritage Board is currently developing an information system for archaeological sites and monuments. The system is primarily intended as a support for cultural heritage management, forest protection management, planning of physical environment and scientific research.

The project is now at the second stage, which is composed of construction and test of the information system and preparation of a model for the administration and maintenance of the system.

Details are given about the background to the development project and about the work done on an administration and maintenance model. Further topics are the expectations of more efficient information handling and increased information quality, induced by the chosen model.

Key words: information system, GIS, archaeological sites and monuments, system administration, system management

Introduction

The topic of this paper is a development project where the aim is an information system for archaeological sites and monuments. The paper will elaborate on its use, administration and management. It also includes a short background to the project and a brief description of Swedish cultural heritage management. The development project is carried out at the National Heritage Board which is the central authority in Sweden for matters concerning the cultural environment and the cultural heritage.

Background

In 1938 a nationwide survey of archaeological sites and monuments was started by the National Heritage Board. The reason for this survey was a government decision on mapping the land use of the country. Archaeological sites and monuments protected by law were to be included on the Land use Map, published by the National Land Survey. Information on the recorded sites, in the form of geographic positions on maps and descriptions in notebooks was gathered in the Register of

Archaeological Sites and Monuments, in Swedish Forminnesregistret. Information from subsequent surveys, from archaeological investigations as well as reports on finds made by private citizens have since been added to the register. The register is maintained by the National Heritage Board.

Today the parish-based register contains information on roughly 1 million objects at close to 400 000 sites. Not all of the sites and monuments in the register are covered by the Protection of the Cultural Monuments Act, the register includes for instance some early industrial sites which are not protected by law at present. The information in the Register has widespread use in Swedish society. It is needed in physical planning and decisions concerning land-use, in research and in the accumulation and communication of knowledge about the cultural heritage. Organisations using the information include the National Heritage Board, the County Administrations, the county museums, forestry organisations, large infrastructure developers, municipalities and private landowners.

The County Administration Boards are responsible for supervising cultural heritage management at regional level. Decisions on whether an archaeological site or monument is to

be excavated and removed is made by the County Administration. In their decision they are obliged to consider whether the importance of preserving the site is greater than the importance of carrying out the development project in question. Information from the register is vital in this process.

The County museums are responsible for the accumulation of knowledge and research on the cultural heritage in their county. They are also responsible for communicating information about the cultural heritage to the public. Information on archaeological sites is part of these responsibilities.

The municipalities are responsible for physical planning on a local level and consequently they too need to have access to information from the Register.

Organisations involved in contract archaeology use information from the Register as a basis for planning, interpretation and for making prognoses on the presence of archaeological sites in areas where development is planned. This information is of course also of great interest to entrepreneurs planning construction work.

And finally, the public also have a need of and a wish for this information, not least because landowners are required by law to show consideration to archaeological sites on their land.

Today the need for this information involves large amounts of paper copies being sent between different organisations. Since the major part of other basic information used in planning is digital, it is becoming increasingly important that cultural information is also accessible in digital form.

In the middle of the 1980s the National Heritage Board started to digitize the descriptions in the register. The geographical information had been partly digitized by the National Land Survey.

The efforts of the National Heritage Board was never brought to a satisfactory conclusion and in 1998 the Board was given a commission by the government to solve the problem of digital access to this kind of information. In 1999 a development project was started.

The development project

The result of the development project is to be threefold:

- an information system, presenting information about archaeological sites and monuments together with geographical data from the databases of the National Land Survey
- a model for system administration and management
- support for the deployment of the system, for instance instruction in its use

The information system is to be in operation by the beginning of 2002. The information in the system will be more or less the same as that in the analogue register.

One of the tasks of the development project has been to make an evaluation of the quality of the existing digital information,

both from a technical and from an archaeological point of view. The ambition is to re-use as much as possible of the existing digital information but it is already clear that some of it is of too poor a quality and will have to be digitized anew.

One of the basic aims of the future system is that information should be entered into the system as close to the source of the information as possible. Hopefully this will increase the quality of the information and minimize the timelapse between the discovery of a site and the time when information about it is entered into the national databases.

As a first step only the County Administrations will be able to enter data into the system. The change in responsibility for the entering of data from the National Heritage Board and to the County Administrations will however probably take some time.

A so-called *Hjnbroken* digital chain of production is a vision for the future. Whichever organisation produces data enters the relevant information into the system, for instance different organisations doing archaeological excavations. One example could be an archaeological unit using a field documentation system on a dig. When the excavation is finished someone from the unit transfers relevant parts of the digital information directly into the information system.

From a decentralised data entry follows a shared responsibility for the information in the system. The organisation responsible for entering information is also responsible for the information having the right quality. Decentralised entering of data, however, needs to be combined with different types of support from the National Heritage Board and an effective quality assurance system.

Initially the information system will be accessible to professionals working in cultural heritage management. Later on the information will be accessible to the public by way of the Internet. One of the reasons for the delay with going public is that the information contains many archaeological terms and may be difficult to interpret and understand for the layman. Time is needed to make the information more accessible to everyone.

System administration and management model

In addition to the system, the development project has the responsibility of creating a model for system administration and management. This includes management of the information in the system as well as management of a more technical nature. This is work in progress and the following is more a presentation of method and visions rather than a finished product.

Present situation at the National Heritage Board

A large number of information systems have been acquired by the National Heritage Board over the years. Some of them have been especially developed for specific purposes, others are standard products and have been used more or less without customization. The non-standard systems are primarily used to manage information on archaeological sites and monuments,

buildings and also archival material, such as documents and photos.

Since the information systems have mostly been acquired to fulfil a specific purpose they are rather varied as regards development tools, software, accessibility, data storage etc. This makes administration and management difficult and expensive. The fact that much of the information concerned has a geographical dimension has unfortunately not always influenced the construction of the different systems.

Information on archaeological sites and monuments as well as buildings is to a great extent of common interest for the entire cultural heritage sector and this information is collected and used at several levels. However, the construction, administration and management of these systems have not always been sufficiently influenced by this fact. The development of the systems have seldom been made in co-operation with interested parties. This leads to problems with data capture, updating, accessibility etc.

Strategy for the use of information technology

At present the National Heritage Board is working on a strategy for the use of information technology. The aim is to make the use more uniform and efficient. It is also meant to elucidate on how this technology is to be used in order to fulfill the assignment given by the government.

The long term vision of the National Heritage Board is to have a common technical platform for several information systems. This means that information on archaeological sites and monuments, buildings and historical land use is stored in an information system for common use, a kind of common cultural heritage database.

This vision naturally demands a common administration and management organisation where synergy effects of joint system developments arise and is made use of, where different systems can use the same components and where there are established rules and routines for the administration and management of information.

In this way the emphasis is moved from the system to the information. Applications for working with the information is independent of the information itself and can be changed over time. In conclusion the information can be regarded as lasting and independent of technology.

No fixed timetable exists for the common technical platform and the common cultural heritage database but the information system for archaeological sites and monuments will be the first system built with an eye to the future.

Administration and management

An information system comprises manual routines, use of information as well as computer hardware and software.

To provide a system with information is often quite expensive. It is therefore very important to have an administration and

management model which really works and which keeps the information up-to-date and with a guarantee of quality. Often the demands for changes regarding how to work with and compile information arise with those who work with it. The administration and management model must therefore be able to respond to these demands and allow certain changes. A system should never be so fixed that changes are impossible.

The administration and management model is an issue for those who work within the field of cultural heritage management. They own the system and make necessary decisions. It is not a technical issue.

When defining a model like this one some of the more important tasks are to identify all necessary functions, to clarify and describe different responsibilities and, finally, to make sure that everyone has understood and that they all agree. This entire process must be fully documented. This has been an extensive part of the work so far.

The next step has been to put the different functions in to comprehensive groups.

- Information provision
- Administration and management of the information
- Extending information
- Administration and management of the system
- Technical maintenance and support
- Helpdesk

Information provision describes the different ways of entering information into the system. It deals with the actual registration process and the data capture that is made during field work.

Administration and management of the information includes, among other things, all the manual routines that will be necessary both for today's analogue register as well as for the future system. It also includes education activities, information support, the execution of information compilations and analysis.

A reference organisation for *extending the information* involves the creation of formalised ways of contact, for example groups of users who discuss different aspects of the information and the information system. These groups include:

- A user forum which is formed by representatives of different user organisations where you can discuss defects in the system, proposed changes and suggestions for development.
- A forum for discussion on definitions and denominations of different types of archaeological sites and monuments. This group also needs a broad representation of users.

A vital process is the one concerning which types of cultural remains should be entered into the system. The discussion also includes whether they should be protected by law. The definition of what constitutes a protected site or monument is constantly developing and changing. The Cultural Monuments Act gives a framework which has to be discussed and reinterpreted. The National Heritage Board is by tradition the interpreter of the legislation, and the interpretation made by the

Board has become practice. Other institutions and organisations have previously only been marginally involved in this process. In the future the discussion should involve more people and institutions in the sector.

Administration and management of the system includes for example economic management, co-ordination of functions within the organisation, system development etc.

Technical maintenance and support includes among other things being responsible for the performance of the technology, for the accessibility of the system, for making back-ups, for the maintenance of hardware and software, for technical systems administration and for questions on security.

Helpdesk involves one thing only, to distribute, within the National Heritage Board, incoming questions to the right place in the organisation. Helpdesk is a vital function as it is the first contact with the National Heritage Board for the users. A user is normally not so much interested in how the National Heritage Board is organised, as getting correct and quick answers to questions. Helpdesk will be the receiving point of all questions concerning support on information and technique for most of the areas of activity of the National Heritage Board. Helpdesk is not responsible for solving problems, that is the responsibility of the support organisation.

Two models for administration and maintenance

The work has so far resulted in two models:

The first model is more of a temporary solution. The administration and management is organised as a project for a limited time, a year or two. In this way we avoid forcing the administration and management into an existing structure. The information system will result in a number of new tasks and responsibilities. In order to make those as clear as possible it is better to make a break with the organisation of today.

The administration and management could function in this way until there is a reason for having a common organisation for this purpose, that is when several of the information systems managed by the National Heritage Board are based on a common technical platform.

The second model deals with exactly this situation. Several information systems are based on a common technical platform. Another prerequisite is efficient co-ordination within the National Heritage Board in order to make use of synergy effects in, for instance, systems development. This model is a realization of the National Heritage Board's strategy regarding informa-

tion technology and a common technical platform.

It is essential that the staff working with administration and management do not lose contact with daily issues and the information in the system. One way of assuring this could be that these individuals divide their time between day to day cultural heritage management and systems administration and management. Another way could be to circulate staff between different tasks, thus spreading competence in the organisation.

It is of great importance that both general and system specific manuals regarding system administration and management are produced at the National Heritage Board. The organisation, tasks and activities are constantly changing, people change jobs etc. Therefore, up to date and adequate documents describing the administration, management and maintenance, are vital.

In conclusion, we believe that no matter how the system administration and management is going to be organised, a greater extent of co-operation than previously will be required by the sector when this system is in operation.

Conclusion

Finally some thoughts on the use of an information system like the one under development. There is a great need today for analyses and compilation of the existing information, but as long as they are only available in analogue form these analyses are difficult to carry out.

Examples of possible use of the information system are:

- to investigate the degree of preservation and destruction of different types of archaeological sites and monuments;
- to study sites and monuments and current land use in order to take preventive measures, for instance, as regards to the damage caused by forestry;
- to compare how monuments of the same type have been classified in different parts of the country.

Hopefully, by the beginning of next year mission will be accomplished and the Swedish cultural heritage management will have access to an information system on archaeological sites and monuments. In a couple of years the information will also be accessible to the general public.

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More information can be found at:
<http://www.raa.se/formminnesinformation/> (in Swedish only)