DESIGN OF A HERITAGE REGISTER FOR THE SOUTH AFRICAN HERITAGE RESOURCE AGENCY USING A SPATIAL INFORMATION SYSTEMS APPROACH

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ABSTRACT:

In April 2000 the South African Heritage Resource Agency (SAHRA) succeeded the previous National Monuments Council that was responsible for the management and maintenance of heritage sites in South Africa. SAHRA is legally based on the National Heritage Resource Act (NHRA) of 1999, which re-defines heritage in a revolutionary way. Until then "heritage" had always been defined as physical objects, such as buildings, tombstones or artefacts. South Africa's rich history is connected to such physical objects, but it is also based on space and the definition of space with regard to the historical separation of South Africa's population groups. The NHRA has moved the term "heritage" to a new level, in that it includes space that serves as memories to forced removals, to race barriers and signs of apartheid. Historical sites that are defined as a space are distinctly different from other heritage objects in that some of them are in their emptiness a memory. One of the challenges faced by SAHRA is the definition of such sites and how to manage them.

1. INTRODUCTION

1.1 Background to the Study

Since 1999 South Africa has a new heritage resource act, which introduces an integrated and interactive system for the management of the national heritage resources. Up to now this system has only been defined on paper and the study performed at the Department of Geomatics at the University of Cape Town investigated the possibility of using a spatial systems approach to record, document and monitor the management of heritage sites. One of the reasons why the study went underway during 2001 was that a number of erven in Cape Town had been sold in recent month despite the fact that the land had been claimed as a heritage site, which consequently lead to dispute over the development rights. It has become clear that a new way of documentation of sites is required that provides a clear conceptualisation of what constitutes historical, aesthetic, social, community, archaeological and educational evidence in terms of heritage management. But the recent disputes have also shown that the method to communicate this evidence to all stakeholders in a more effective way has to be re-designed.

1.2 Objectives of the Study

This study was performed from October 2000 until December 2001. Its primary objective were to contribute to the theory building for the design of a computerised spatial heritage management system and to investigate if GIS technology would improve the documentation, monitoring and management of heritage sites at the required level.

2. PROCEDURES OF HERITAGE REGISTRATION

2.1 The South African Heritage Resource Agency (SAHRA)

SAHRA's principle objective is to identify place of special national significance and investigate whether these sites should be declared as national heritage sites. For the management and preservation of heritage sites, an inventory of the national estate is compiled and maintained listing all places of cultural and historical significance (National Heritage Resource Act (NHRA) no. 25 of 1999 of South Africa). The matters of SAHRA are under the control, management and direction of a council consisting of the chief executive officer of SAHRA and nine members representing the provinces of South Africa, who are appointed by the Minister of Arts and Culture. The provincial heritage resource authorities are responsible for the compilation and maintenance of the heritage register within the province, while SAHRA records the heritage resources of the national estate.

At the moment the existing heritage register is mainly paper-based, although a database system has been developed but only a few staff are trained to use the system. After interviews it was also established that the design of the system is limited with regard to the special needs for heritage management.

2.2 Heritage Register Requirements and Definitions

A computerised Heritage Management System (HMS) will only be successful if it responds to the needs and requirements of SAHRA. Thus it is important to understand the process of registration of heritage sites that are defined in the Act for National Heritage Sites.

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Prior to establishing a site as a national heritage site a range of criteria from archaeological to historical to social aspects have to be evaluated. For any site significance, vulnerability and the practices with regard to policies and management of the site have to be identified.

Significance plays a central role in assessing heritage and is usually one of the most contentious issues when registering a new site. A site is significant, if it is important to the community or pattern of South Africa's history, if it yields potential information about the natural or cultural heritage, if it has particular aesthetic characteristics, if it demonstrates a high degree of creative or technical achievement and if it relates to the history of slavery in South Africa (NHRA). Within the assessment of significance the degree of vulnerability of the site is defined, which determines the policies and management practices for the site to ensure that the significance will be retained.

The process of declaring a property as a heritage site requires consensus form different authorities such as the provincial Heritage Resource Agency, SAHRA and the State. The procedure strives to find approval of the owner of the property and the general public.

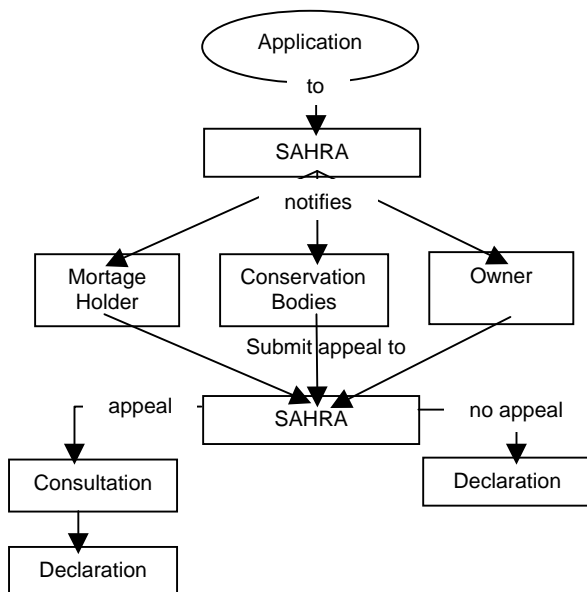The flowchart below gives and overview of the procedures involved in the declaration of a heritage site.

Figure1. Process of Heritage Registration in South Africa

Any person expressing the wish to declare a property or site a national heritage act can submit a nomination to SAHRA or the provincial heritage resource authority who will then start the process. The declaration of a site as a national heritage site is finalised with the endorsement of the title deeds.

Understanding the process of Heritage Registration and the assessment criteria, the main requirements for a heritage register in the South African context can be described as:
- List of all declared sites including the location and the Magisterial district of the sites
- The cadastral information of the site, including erf/farm number, descriptions of subdivisions, the

registered name and title deed and the zoning of the area
- Extra information relevant to the site or place, including the geographical co-ordinates and map index on which the site appears
- Historical, cultural and aesthetic significance of the site
- Photographs depicting the visual description of the site
- Reference to the Government Gazette, its date and the number in which the site was protected.
- References for the heritage register files and any correspondence

A number of information systems could deal with this type of information, but the key to a successful HMS is not only to encompass the heritage register requirements, but also to allow the various users to create an understanding of the historic landscape as a whole.

3. GIS AND ITS RELEVANCE IN HERITAGE MANAGEMENT

The basic difference between GIS and any other Information System is that GIS defines data by its spatial dimension. During the last five years the concept of using GIS for Heritage Management has become more popular. So states Box in 1999 that by using GIS, heritage managers would succeed in understanding the connection between heritage and its spatial surrounding of natural and human environment (Box, 1999). Besides the spatial advantage, Stancic et al. discusses as another major advantage of GIS systems the possibility of integration between environmental and heritage data. This is specifically important in the context of environmental impact assessments (Stancic et al., 2001). GIS is also often used for research of heritage sites that have not been identified yet. The overlay of digitised historic maps over aerial photographs has for example supported the Maryland Historic Trust in identifying and predicting archaeological sites (Maryland Historic Trust, 2001). Literature studies show that GIS is seen as a powerful tool capable of handling the requirements of heritage management system.

As stated previously one of the significance plays a major role in assessing heritage sites. One of the challenges for the design of a GIS based HMS is the direct translation of significance into a precise spatial setting. The importance of achieving this means on the one hand that investigation and interpretation of landscapes can be enhanced, on the other hand that archaeological sensitivity and importance of sites can be assessed (English Heritage, 2001). Significance of a site is usually determined by a panel of assessors who should come from a wide background, since the quality of the assessment will depends on the contextual and comparative knowledge, skill and experience of the experts (Kerr, 2000).

As stated by Busgeeth (2001) with the ability to integrate a variety of data including significance into the HMS the creation of a spatial infrastructure, which supports not only the documentation of the heritage resources, but also a holistic understanding and creation of a heritage site inventory is achieved (Busgeeth, 2001).

3.1 Challenges of SAHRA with the Existing HMS

During the investigation questionnaires were handed out to establish user needs, shortcomings of the existing system and an understanding of the business processes of SAHRA. This survey proved to be one of the key elements of the research since it encouraged participation of the users in the system design, offered the research team the possibility to determine shortcomings of previous efforts for system designs and familiarise themselves with the environment at SAHRA.

SAHRA is using at the moment a relational database for the inventory and documentation of heritage sites. The conducted survey showed that some of the staff members are unwilling to use the system since it does not fulfil the requirements. Inadequate database design is influencing the performance and effective management of heritage sites. The system was developed using paper-based data and not all the data went through a quality control. The system designers were not part of SAHRA and the SAHRA staff was not made part of the design. This has led to the situation that some of the design, for example tables and fields, is not understood, the retrieved information is sometimes outdated and the heritage site listing is incomplete. Since only a few of the top managers were trained in the systems design the rest of the users are frustrated by the results the system produces and turn to the traditional manual way of searching for information and creating documents.

The functionality of the database is mainly based on queries and reports. As seen in Figure 1, the declaration of a heritage site requires a number of procedures, which includes sending out reports to various stakeholders. The database system is at the moment not able to produce this information at the expected level of quality.

One of the main shortcomings of the system is what has so often been mentioned as a key component for any successful database design: operation and maintenance. No procedures were designed to assure an ongoing update of the database and maintenance for the system. This means that the system has stopped to develop at the level it was designed at.

Needs and expectations of the users had not been investigated at the appropriate level for the last systems development due to financial constraints. South Africa is facing a number of challenges at the moment and governmental funding has to be distributed according its present priorities. SAHRA has experienced a certain amount of instability due to the changing priorities regarding funding over the last decade.

4. THE PROPOSED HERITAGE MANAGEMENT SYSTEM

The design of a HMS based on GIS technology has to address the above stated heritage register requirements and the issues that SAHRA is experiencing with the existing systems. The introduction of a new system will change the existing management of heritage resources fundamentally. Therefore user will have to be re-trained and the staff has to be convinced that the system will be beneficial to them. With the help of a prototype users were introduced to the system and were able to comment on the design.

The survey showed that the system would be used by all staff members at SAHRA including a wide variety of specialists such as heritage managers, conservationists, archaeologists, architects, members of government and representatives of the public. The level of computer literacy was assessed for a representative sample of users and the feedback showed that most of them have basic computer literacy skills.

The design specifications were based on the requirements for the heritage register, the need of founding the system on the legal procedures of the new NHRA, the issue of significance, and the needs and expectations of the potential users.

Considering the design specification and the financial limitation it was decided to propose a system that comprised ESRI's ArcView GIS tool for the management of spatial data and the Microsoft Access application for recording and updating of heritage records and textual data. Visual Basic was used for the design of the interfaces. This combination of programmes would allow to keep the structure of the existing database at most levels, but to create via user-interfaces a more interactive system. Web-based applications will ensure that data can be exchanged between the various offices and provinces.

One of the first goals for the design of a new system was to support the visual and spatial information retrieval in a more effective way. With the proposed system a variety of data can be linked together, including photographs, drawings, text documents, historical maps etc. Most functions are simplified with the help of user-friendly interfaces. New data can easily be integrated and manipulated and via designed search window the user will be able to develop new queries and hypothesis from the database. The design is based on the requirement that once-off users have to be able to create a simple query in an intuitive manner. The results of the query are presented clearly in form of maps and reports and the data can be shared across South Africa, which makes the management of heritage sites more effective.

From the first design stages users have to be involved in the process and it was suggested that key users are identified as team leaders to support staff groups. The key users are trained on a more detailed level and work together with the system designers. This was a clear concern of the users and it has been shown in the past that the most successful systems have been designed in close collaboration between user and developer.

5. SUMMARY AND CONCLUSIONS

The primary objective of this study was to provide SAHRA with input and suggestions for the design of a new Heritage Management in South Africa. This included a specific investigation of GIS as a possible solution. It was shown that due to the new NHRA "space" has been made one of the key elements of heritage sites, which in itself suggests a GIS-based HMS. The requirements for a heritage register and various functions and responsibilities of SAHRA were discussed. Cultural identity is defined by heritage and it is without doubt that South Africa's rich heritage sites and resources have to be protected, preserved and administered efficiently. The success of the HMS is clearly depending on it supporting these objectives.

Based on the findings of the study it can be noted that designing a HMS in the South African context will be a major, long-term

undertaking. The fundamental challenge lies in designing a system that addresses the above mentioned requirements and serves as a good management system, that provides information effectively, supports the legal requirements, fulfils users expectations and allows a high level of decision support based on up-to-date information.

With regard to further studies it has been suggested to investigate relationships between stakeholders of properties, such as the Surveyor General, the deeds office and others to establish a better information flow between these parties.

SAHRA is the national heritage organisation, but its functions and duties are only recognised by a small group of the population. In view of enhancing its effectiveness it was recommended that SAHRA aims towards increasing public awareness and understanding of heritage to help remembering the past, recording the present and reaching the future (Busgeeth, 2001).

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