

# 6 An outsider's perspective

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## **Digitising knowledge into tangible form**

The last two decades of digital archiving of collections at the Tropenmuseum have represented non-stop work and immense learning. This bulletin has presented the opportunity to get to know technology as a tool to support the work of the museum. It further represents a revision of work practices regarding the management of objects and information about the collections. The analysis of the digital archiving process reveals an increasing awareness about the knowledge housed in the museum and a realisation of its multi-dimensionality. Digital archiving of collections has come to represent the gathering of this acquired knowledge. Furthermore, digital archiving is conceived as the means to 'save' the knowledge acquired about the objects in the collection, so that it can be made accessible now and in the future. This is an innovative approach to collection documentation because of its inclusive nature, as it incorporates the people's process of learning at work.

The Tropenmuseum has been at the forefront of innovation regarding the digital archiving of collections. The 20-year experience has been shared with other museums and can be taken as example of continuous creative improvement. Without doubt, future advances represent a challenge. The Tropenmuseum hopes to continue being in the leading group in the Netherlands and in Europe for the knowledge development and communication that would improve universal access to our heritage.

The Tropenmuseum is in the process of developing a joint repository of information that can conceptually be called the 'museum knowledge'. It consists roughly of everything gathered by people working in the museum since its conception and includes selected gathered objects, the documentation of the objects, the research presented in publications and exhibits, the knowledge that staff possess about the collections and the working processes, such as exhibit creation and so forth. This abstract concept has primarily taken shape inside TMS, The Museum System

software for the management of the collections. This system offers the capability to link information about the objects within the eight modules, which are labelled as objects, literature, constituents, exhibitions, events, loans, themes and media.

## **How to optimise profit?**

The process of digitising a collection is a continuous activity that requires specific resources and knowledge, thus representing a specialised area. Digitised content can always be expanded, just as formats can evolve, presenting constant possibilities for development. There will always be new levels to reach. Digital archiving projects demand an investment from staff in the organisation, including a change in working practice. Learning from the experience of others can be greatly beneficial. There is no need to reinvent the wheel. There are two aspects to the digital archiving of a collection: the adoption of a system and its implementation. Or to put it another way, digitising involves the exciting beginning as well as the challenge of institutionalising the processes in order to ensure operational and efficient daily working practice. During each of the two processes, a number of decisions, tasks and resources will need to be considered.

There are three key elements that make a successful digital archiving project possible. First, it is fundamental that there should be a phased plan of approach. Digital archiving of an entire collection is a key activity that can sound overwhelming and a starting point can be difficult to find. Dividing work into sections and levels of complexity can help clarify achievable tasks to be done. These sections can then be divided among the different staff and departments. One way to arrive at an identification of divisible tasks is by using procedural standards. One such internationally supported procedural standard is SPECTRUM (see [www.museumconsulent.nl](http://www.museumconsulent.nl)), also used by TM. Secondly, resources must be specifically allocated to the various phases of digitisation. This means setting aside time, people and money. Sufficient funds must be made available to cover the training or hiring of personnel, as well as everything involved in the acquisition and maintenance of a system, including software and hardware. TM describes this in the *Collectienota* (collection memorandum) and in the information and digitisation plan. And thirdly, there must be one enthusiastic, accountable person, preferably at a managerial level, to lead the project throughout its various stages. Somebody who reminds the rest of the staff of the advantages of digitisation, its usefulness, the savings it represents, the benefits reached through the process, and so forth. The application managers and IT managers at the TM fulfil this role. Meeting these three requirements assists in the digital archiving process and assures its durability. These are needed, in different capacities, from the start and throughout the life of the digital collection. The Tropenmuseum, looking at its digital archiving process with hindsight, has several recommendations on how to embark on such a project. Experience comes also from

training and supporting staff from a variety of museums in the Netherlands and abroad.

Digitisation requires museums to have a system where all the digitised data can be input. A quick scan of the organisation will determine the information management system that is most appropriate. This scan should include a three-question review of 1) why digitise, 2) what is there to digitise and 3) who will have access to it. The first question, why digitise, will confirm the commitment from the organisation and involvement required from staff or potential collaborating institutions. The second question, what is there to digitise, will establish the type of knowledge in a museum, the type of collection, the condition of its registration and documentation, and the overall state and characteristics of the organisation. The third question, who will have access, will verify the information to be shared with the intended users and determine the level of access to the various data fields. Finally, it is important to review the availability of hardware and software, to find out what is used and how often, and to see what is available on the market. It is also worth considering all the pros and cons of information management systems and their providers, including the annual costs involved, the level of support provided, the amount of work expected to be divided between the museum and the provider, the level of complexity of system and level of satisfaction at other museum customers. Companies that provide inexpensive systems to be developed by the museum may require more resources than the payment of a yearly license for a more developed and thus expensive product.

The process of adopting an information management system as a new tool to work with the collection has an impact on the entire organisation. It generally changes the way that the digital archiving process is seen. The act of digital archiving, entering data in a computer, is a task that represents an opportunity to revise working practices, for example to improve workflow. Evaluating the work done and devising ways to improve it is a way to reduce unnecessary burdens, which will be welcomed by staff. It is helpful to prepare staff for this by planning the involvement of all members of the organisation in the scheduling and allocation of phased work, in the learning process and in the implementation of the system.

Digital archiving should be institutionalised and integrated in daily activities to ensure its cost-effective operation. As such, it becomes part of the everyday work for everybody in the organisation. To this end, it is beneficial if members of the organisation at all levels participate actively in the planning, learning and implementing of the digital archiving plan. In the long run, digitisation becomes one of the organisation's core efforts, along with research, exhibitions, and publications. TM integrated all the procedures and manuals in their Quality Handbook.

A phased plan of approach is fundamental in the digital archiving process. This allows division of work into attainable goals and over various departments or people within departments. Defining a policy to prioritise the digitisation of objects can involve division by field (or data type, i.e. all fields involving basic registration), by

subject (for instance household utensils), by activity (all objects on display and new acquisitions), by projects (by storage location), or by any other way of grouping knowledge about the objects. It is rewarding when interesting results can be obtained from performing object searches on large and broad datasets, even if the data is basic or minimal. The Tropenmuseum opted to start by registering 15 fields of basic information for all objects in the material collection and then made a selection of a sub-collection to feature in depth. The first selection consisted of all objects on display, both inside and outside the museum (as objects on loan) and objects used in publications. Reaching a balance between broad and in-depth information is the key to advancing in the digital archiving of collections. This can be achieved by planning both day-to-day input of data while selecting areas to highlight. Both broad and in-depth data are valuable and necessary to understand the potential of the information system in place and the power of accessing large datasets while taking advantage of the system's capabilities and developing highly sophisticated, quality data about the collection.

In addition to an implementation plan, a digital archiving policy document must be prepared, for example the Tropenmuseum Quality Handbook. This can take the form of a procedural manual based on actual practice, i.e. recording the digitisation process as it takes place. The document becomes instrumental in assuring best practices and can help clarify a number of issues as well. Issues addressed can include the policy regarding access to data, or who can see or edit what information in the database, as well as the responsibility to maintain an accurate and current dataset. Language is an important issue. International access to information depends on it. Especially in museums where more than one language is used for the documentation of the objects, developing a thesaurus of word equivalents can be most beneficial. In addition to multiple languages, varied terminology can be unified through a thesaurus, such as the SVCN thesaurus or the Art and Architecture Thesaurus (AAT). For example, scientific names can be linked to popular names just as old spelling can be correlated to new spelling. The use of thesaurus thus supports the standardisation of terminology, increasing the quality of data entry and access. Collaborating to develop thesauri between museums with common content expertise can have an advantageous effect. Agreement on terminology can thus lead to an agreement on practice. The standardisation of the process of digitisation facilitates future exchanges of data with other organisations and databases. A digitising policy or best practice manual can be instrumental in the process.

Systems last longer when they are used, maintained and nurtured to evolve. The use of standards supports dataset longevity. Systems and procedures that are widely used are more likely to have a longer lifespan. To guarantee their functioning, particularly in terms of the technical knowledge needed to run them, it is important to employ more than one person who is a specialist in the field. These specialists can also assist in transmitting knowledge to the rest of the organisation about the system and how to use it so that it evolves with the input from everybody. Sophisticated

systems that function with many complex layers of knowledge about the objects can turn out to be labour intensive. The highly specialised data can also be seen as restrictive and inaccessible if search capabilities are not intuitive and only precise terms can return meaningful data. This becomes of particular concern as data is made accessible to general users who may not be familiar with 'proper' search terminology. In order to avoid this, additional research and design may be necessary to develop accessible vocabulary in a user-friendly interface.

Successful digital archiving projects will be able to provide what everybody wants, both museum workers as well as the general public, namely a fast tool to access quality information. This is not meant to encourage the belief that digitising collections will be 'the answer to all dreams'. Rather, a digitised collection is the door for accessing the objects in the collection and the knowledge inherent within.

### **Beyond 'digitising'**

Digitising a collection has come to represent the process of making the analogue collection information digital. As mentioned earlier, the Tropenmuseum devised a four-phase registration system that includes 'basic registration', 'registration', 'validation' and 'documentation' of all objects. 'Validation' refers to the review of the digitised information to guarantee quality before making it available to the public. The 'documentation' level considers the creation of content designed for presentation and made by the abstraction of all the specialised knowledge resulting from the previous levels mentioned above-. The output of this content is regularly evolving as it seeks to respond to the needs of the identified user groups. Developing content made to explain collections to a greater public and to be presented through digital means requires considering the data items contained. There are three levels of content development in the digital archiving and presentation of specialised knowledge. The first level refers to collection management, including the registration of the object, which involves inputting data such as an inventory or collection number, the provenance, location, measurements, object name and thesaurus fields (origin, function, materials and name). At this time, a digital photograph will generally be made, although some times a temporary scan of an existing image can be used until a proper high resolution digital photograph can be made. The output can have several looks, generally one for internal use in museums and the other for use by the public through the online collection database. The second level concerns the documentation of the object. This level involves the research into collections in terms of their history and meaning, leading to content that creates a context that may include descriptions, references to other research, exhibition history, knowledge of intangible heritage and so forth. This knowledge traditionally has three outputs: exhibitions, catalogues and papers. An output form beyond these three conventional outputs may be required as collection information is made available online. All these

forms of content combined make up the knowledge of the museum and are referred to as digitisation of context data or as making knowledge accessible.

In addition to this holistic approach to content development by the museum, knowledge can also expand through links to content developed by other organisations. In other words, the entirety of specialised knowledge housed in one museum can profit from tapping into partner organisations in the field, such as libraries, foundations, associations and the world at large, as for example in the SVCN project *'Collectie in Context'* (Collection in Context). In the case of the Tropenmuseum's collection database, this means allowing communication between datasets from the library, the theatre and all departments that are part of the KIT umbrella, and the SVCN – and beyond.

As it has been previously argued, digitising a collection in the full sense of the word involves allowing digital access to all knowledge produced at the museum. That is, all work performed at the museum represents a collection of organisational expertise that goes beyond the objects, but includes the research policy and presentation style of the content. The organisational knowledge comes from the integration of a) the organisation and the coordination of projects, b) research and the development of content, c) the presentation of the content and the creation of new products and services and d) the technical realisation.

Digital archiving generally tends to affect the whole organisation. For this, it is helpful to have a dedicated advisory team of people who can support the process of clarifying the goals of the project, setting their scale and scope, who remain enthusiastic and who coordinate the assignment of work throughout the organisation (Mitroff and Alcorn, 2007; Bottis and Klaehn, 2007). Allocating the proper resources specifically for the digital archiving project, or part of it, represents a level of clarity regarding the costs of the project and it reflects an interest in the creation and development of a digital collection (Navarrete, 2005). Digitising the knowledge of a museum that is inherent in its collections, research and presentation policy, requires taking time to consider the desired goals and possible outcomes. These have to consider the fact that museums have limited exhibition space so that only 10% of their collection is generally shown. The Tropenmuseum exhibits less than 5% of their collections. This means that information that explains the objects for a general public, in a sort of exhibition style, probably covers only a portion of the collection. Not all objects in the collection may have equal scientific value or be of equal research interest – at this moment at least. Instead, taking a selection of objects in the collection to research them fully may be an attainable task. The rest of the collection may be explained demonstrating similarities to and differences from the selected, fully-researched objects, or by illustrating the links and breaking points in the storyline developed and presented.

Gathering knowledge can be a project-based activity (such as selecting a theme to work with), determined by public input (e.g. what are the subjects of the most wanted images), decided by professionals (namely the curators and researchers),

or based on collection management involved in new acquisitions, research, exhibitions and publications. It very important not to neglect the continuous renewal of knowledge, even if at a basic level, regarding the objects in the collection. Entering large amounts of data into a database system, generally for a period of time at the beginning of digital archiving projects, takes a vast amount of resources. Preventing a gap in knowledge creation and acquisition and retaining the expertise of the museum is a management challenge. There is no 'right' way and all approaches are valid. The key lies in making smart decisions to use resources strategically, so that phased work and projects lead to an enriched result. Individual digital projects can survive in the future if they can be extended for broader use, if others are allowed to build upon them and if projects can merge previous work (NINCH, 2002-2003).

History of research, content making and display design to explain objects in collections has developed in the last few decades to acknowledge the prominent role of the organisation and presentation of knowledge (see Legêne, 2007; Noordegraaf, 2004). Museums divide collections to let people understand objects, thereby fragmenting the information that gives them meaning. Categories are built upon a system of themes that does not match the environment in which the object existed. Moreover, these composed taxonomies do not always support a sense of continuity of heritage production and universal knowledge. Digital means make evident the need for a unified historic thought. Users use the web to locate content regardless of the source of information (Navarrete, 2005). Content can also be created through social participatory groups. This can take the form of a collaborative group, for example the SVCN. The SVCN meets quarterly to develop a joint thesaurus based on the knowledge from their collections. Another form of inclusion may go further to involve people beyond the museum professionals, something like user tagging or a folksonomy, to expand common vocabulary and to increase social participation in accessing the collection. Folksonomies work most effectively when matched with detailed collection records and balanced with the structural benefits of formal taxonomies (Chan, 2007). Folksonomies, and other forms of book marking, are more successful for committed visitors, for researchers and for educators (Filippini-Fantoni and Bowen, 2007).

Content can be prepared with two major user groups in mind: the professionals (and semi-professionals in the field, museum workers, amateurs) and the general public. The first group may benefit from specific information, sometimes in great detail, and may need little help finding content via a search engine. In the case of the Tropenmuseum, this would represent the online collection website. The second group may require an introduction to the collection, followed by content in a narrative form using accessible language. This can be expected from the organisational website, such as in the case of the Tropenmuseum. General users may understand the collection better if they can relate to it, for instance a personal story of how the artefact was produced or about the artist behind an object to give it meaning (Haynes and Zambonini, 2007; Mitroff and Alcorn, 2007). Content can also be developed by

thinking about what the user wants (Chan, 2007; Ellis and Kelly, 2007; Filippini-Fantoni and Bowen, 2007; Griffiths, 2007; Haynes and Zambonini, 2007; Peacock and Brownbill, 2007). Users may come to a museum website for the following reasons:

- to plan a visit – the Tropenmuseum website has opening times and visiting information; users may also plan their gallery tour.
- to follow up a visit – users may review additional data on exhibits, follow-up with interactive activities and refer other visitors to the site.
- to search for specific information – 10% of visitors will conduct a search within the first second of arriving at a site.
- to browse the collection – sites rich in graphics are more popular.
- to contribute to the knowledge as ‘prosumers’ – defined as users producing content or reading content produced by other users.
- to perform a transaction – users may want to communicate with staff or to order products for purchase online.

The most popular divisions of content used in museum websites are for families, education, adults and professionals. Another approach is to respond to barriers of motivation, ability and opportunity to participate (see variables proposed by Stokmans, 2007). With research projects providing data on the positive relationship between on-site visits to museums and online visits to museums, efforts can be focused on the development of quality products and services, both inside the museum and online. Developing innovative forms to transmit museum knowledge digitally can lead to new products and services. Examples include papers (published or unpublished), thematic essays developed for a general semi-knowledgeable audience, digital-only exhibits of the research performed, guided tours delivered via mobile telephones (a positive response of three times more popularity than the normal tour was reported by Caruth and Berenstein, 2007), multimedia presentations to present the work at the museum in YouTube (the National Dutch Library has experimented in this field with positive results), as well as content linking specialised heritage content producers such as partner museums and libraries at local, national and international level.

Strategies for content development go hand in hand with a sound technical development that would include ways to facilitate data entry, content display, information standards and data quality control. An information policy is fundamental in assuring different levels of content and (secured) access to it, as well as various data characteristics such as text, image, sound and video. Technology is a tool to support work and adopting the appropriate type can improve the management of data, increase efficiency in workflow and, most of all, assist museums to design a digital information future that can be reached.

## **Tangible knowledge**

The object is the starting point in the work of the museum organisation as it acquires, conserves, researches, communicates and exhibits a collection. The knowledge created is generally captured as factual data in an information system. Data to identify the objects can be represented in different media formats (text, sound, image) and can serve to place objects within a context, related to other objects or as representations of places, periods or ideas. There are, however, other types of knowledge not easily represented in a 'registration card' type of system. This has become apparent as search results reflect partial access to the information about the objects in the collection. At first sight, the problem may be linked to an inadequate searching system. Further inquiry reveals a deeper concern: is data incomplete?

The multiplicity of knowledge sources (collectors, researchers, users), media representations (text, sound, image, multimedia), and information content (identification of object, contextualisation, interpretation) are a reflection of the multiplicity of voices that can give meaning to the objects, acting in a social, historical, political, economic and cultural context. Data in the information system is then a tangible representation of knowledge, as ideas are given a text, sound or image 'body'. Museums assemble these systems to access knowledge about objects, first internally for the management of the objects, then for the general public via online displays, and eventually into the future.

Objects in a collection can be explained through multiple links (linked to other objects, to people, to literature or to events), organised within a thesaurus system (hierarchical), as part of a group (physical similarities or relationships), within an evolving history (theoretical), or as part of an exhibition narrative (personal view). Links allow transverse access to the knowledge about objects as these are placed within new contexts. The greater the number of links, the more access entry points to understand objects, depending on the users' needs. Soon it becomes clear that links go beyond the museum collection and expand into the world outside. These links are being made by TM by using the TMS relationship links.

What can be expected in the future? Digital archiving is the process to make knowledge tangible so that it can be accessed, in the future too. Collections are increasingly becoming knowledge: acquired, preserved, researched and exhibited knowledge. Objects are part of this knowledge. Museums can grow into expert organisations that facilitate information exchange, through links deriving from the objects in the collection, and thus becoming catalysts for knowledge generation. Museums are natural prime producers, collectors and presenters of quality information. The Tropenmuseum has attained an advantageous position by identifying multiple sources of knowledge, starting with the people working with the collection.

The last twenty years of digital archiving of collections at the Tropenmuseum has led to an understanding of digitisation as the process for giving shape to the

knowledge formed around the objects in the collection, with the intention of making it available for others to see, to adopt and to build upon. That is, digital archiving is making knowledge tangible. The tangible result is then the digital collection. A digital collection is not a digital copy of records about the objects in the collection: it represents the creation of new forms of records to explain the objects. The knowledge about the objects has multiple dimensions, just as there are multiple contexts to explain them. The digital joint repository is merely the tool to unlock the collections. The work of the museum begins then, creating new meanings and developing new presentations to share the knowledge from and exchange among cultures in the world.

The digitisation of collections will represent the gathering of the acquired knowledge. The museum's knowledge grows to be a repository where information can be exchanged. The use of multiple formats (texts, image, sound, multimedia) makes it possible to develop alternative visions and opinions about the collection. Optional descriptions of objects are being produced to inform the various expected user groups better. After all, the role of digitisation has been, and will continue to be, a tool to support the functions of the museum. The evolution of digitisation can accompany and is surely able to assist the development of museums.