



Capturing museum knowledge

A twenty year evolution in digitally
recording the Tropenmuseum collection

Marjolain Beumer

Bulletin 386

Tropenmuseum

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Foreword

Computerisation and management of digitally archived collections play a vital role in almost all museums today. What, in many cases, began as a project has now become an essential and fundamental part of operational management. The project will never really be completed; we are only beginning to get an idea of the many applications and innovations possible.

We would not be where we are today without the collaboration of the other Ethnological Museums in the Netherlands (that together form the Foundation for the Ethnological Collection of the Netherlands: SVCN). It is, in particular, due to the development of a mutual thesaurus and the choice of a system for data registration (TMS), that has not only resulted in a permanent cooperation, but also a wonderful layered database resource with more than half a million objects.

In the meantime, many aspects of museological management are connected with the computerisation and digital archiving of the collection. For example, loan activities; location registration; the linking of image, sound and written information to objects; the preparation of exhibitions; research etc.

In collaboration, various departments of the Royal Tropical Institute are now taking steps to increase the accessibility of the collections of the KIT and the Tropenmuseum via a large search engine in a user-friendly way. Possibilities for digital association will help visitors to refine their search. In addition, we, as managers of World Heritage, consider it very important that the communities of origin have access to relevant sources in our collections. It will eventually be possible for people who visit the database to add relevant information themselves.

When museological objects and written sources such as books and documents are linked to intangible culture, for example, photos, films, music, sound and other sources, a Virtual Cultural Centre including a digital museum can be created. We are planning to develop this idea further.

In this bulletin, Marjolein Beumer, until recently applications manager of our digital system, describes the path we took. What we achieved would not have been possible without the extra support that we received from the Dutch Ministry of Foreign Affairs/Development Cooperation. They shared our conviction that if you wish to share knowledge, you have to invest first. These investments, and the hard work carried out over many years by registrars, collections researchers, IT workers, and many others, are proving to be fruitful on a daily basis. Likewise, on a daily basis, we are learning and continue to work on new applications.

Many colleagues who work in the Tropenmuseum and elsewhere have contributed to the result that has now been achieved. However, my special thanks go to Marjolein Beumer and also to Koos van Brakel who, as project manager digital archiving of the collection and later Head of Collections of our museum, tenaciously coordinated the essential modernisation drive.

Lejo Schenk
Director Tropenmuseum

Introduction

This bulletin gives an overview of twenty years of computerisation and digital archiving of the collections of the Tropenmuseum. Together with the collection documentation, the policy statement, the information policy and the digital archiving plan¹, it will be the basis for future IT and digital archiving projects within the Tropenmuseum.

In addition, it can be used by other institutions as a case study in the field of digital archiving of collections. It can also serve as a guideline for institutions who are considering digital archives of their collections.

To begin with, an introduction to computerisation and digital archiving of collections will be given. The terms *computerisation*, *digital archiving* and *IT* as used in this context will be explained and the basic principles of digitisation will be discussed. In addition, target group policy will be examined. Subsequently, the essential requirements of project coordination will be looked into as well as the cultural shift that is essential if digital archiving projects are to succeed. Various aspects of digital data production for the collection are briefly discussed in the step-by-step plan.

After the general introduction concerning digital archiving of collections, twenty years of computerisation and digital archiving at the Tropenmuseum will be reviewed. To begin with, there is an introduction to the past and present Tropenmuseum. An overview of the current contents of the collections is then given. The role of the Tropenmuseum within the ethnographic collection in the Netherlands will then be discussed.

In the following chapter, the process of changing from analogue to digital access of the collection will be discussed. Attention is paid to the analogue documentation, the information and digital archiving plans, project coordination, target groups and the cultural switch within the Tropenmuseum. Next, the decision making process in twenty years of computerisation and digital archiving will be described.

Subsequently, six digital archiving projects will be detailed. Projects that will be discussed are selection of the collection to be digitised, object location registration,

photography of the collection, collection registration, the use of thesauri and international digital archiving projects. Examples of such projects are discussed in appendix 4.

Digitally recording knowledge about collections and museological work has been the top priority of the Tropenmuseum's policy for a number of years now. A whole chapter has been dedicated to knowledge access. How the Tropenmuseum sees digital knowledge access is explained in that chapter. Here, accessing immaterial heritage is the central point. In addition, making knowledge accessible to the public is of vital importance. The SenterNovem project *Digitale associatie* (Digital association) serves as a pilot for making context, background information and immaterial heritage structurally accessible.

The final chapter presents an outsider's perspective, that of a PhD student (T. Navarette) researching the process of digitisation of collection at the Tropenmuseum.

A glossary has been added to appendix 1, containing frequently used terms relating to collection computerisation and digital archiving. Furthermore, appendices 2 and 3 give examples of input fields used by the Tropenmuseum and a brief overview of the step-by-step plan for digital archiving. In appendix 4 there are seven project examples relating to digital archiving in the Tropenmuseum, e.g. selection, barcodes, object location checks, digitisation of photograph collections, photography for publications and object photography.

1 Computerisation and digital archiving of a collection

Computerisation versus digital archiving

The terms *computerisation* (*‘automatisering’*) and *digital archiving* (*‘digitalisering’*) are both used within the heritage sector in the Netherlands to refer to the process of making collections available digitally. Furthermore, there is frequently a lack of clarity about the meaning of the term *IT*.

The Netherlands Museums Association (NMV) defines such computerisation as making digital images of physical objects. Digital archiving is defined as making collections available to a wider public by placing material online, adding metadata and providing search capabilities through standardised indexes and user-friendly search systems¹.

According to the Dutch version of Wikipedia, *‘automatisering’* – computerisation – is “...the replacement of human labour by computers and computer programmes”.² In the nineteen nineties, this term was frequently used for recording information about a collection on a computer. As was eventually shown, processing the information was usually not ‘automated’ at all but demanded human labour. The term computerisation is, thus, misleading and gives the impression that the work is left to computers.

At the beginning of the 21st century, the term digital archiving (*‘digitalisering’*) became popular. The Dutch version of Wikipedia describes *‘digitalisering’* – literally ‘digitisation’ – as follows: “... converting data from analogue to digital media”.³ This term describes the breadth and depth of activities better than the name computerisation.

In this publication, the term digital archiving, as described in Wikipedia, will be used rather than just ‘computerisation’, because the data entry phases from analogue or physical form are also included. The Tropenmuseum – part of the Royal Tropical Institute (KIT) – has various levels of digital archiving. These are as follows: basic registration, registration and documentation. In general, basic registration ties in with the term computerisation as used by the NMV.

There is also a great deal of confusion about the terms *IT* and *ICT*. In the Dutch version of Wikipedia, it is explained as follows:

*“Information and Communications Technology (ICT) is a discipline that has to do with information systems, telecommunication and computers. This includes developing and managing systems, networks, databanks and websites. Computer and software maintenance and the development of administrative software are also part of this. This often takes place within a business context. In early days [in the Netherlands] this category was called IT, an abbreviation of Information Technology. People often confuse these two terms and abbreviations. As distributing information and making it more accessible (in short, communication) are just as important as the information itself, this term has been added. After all, if a great deal of information is available but difficult to access, nobody will benefit. The wish to bundle communications together with information arose with the advent of Internet. ICT is a typically Dutch term, whereas abroad it always has been IT”*⁴

To avoid confusion it will be kept as just IT in this English document.

In the publication *‘ICT-gebruik in musea’* (The use of IT in museums) published by the Netherlands Museums Association (NMV) and Digital Heritage Netherlands (DEN) in 2008, IT is broadly interpreted as the entirety of hardware, software and digital communication.⁵ This means that IT is a broad concept that should be interpreted by the institutions that use it.

Points of reference

It is a matter of course for many institutions that data about their collection or business data is digitally recorded. The possibilities and applications seem endless. The publication *‘ICT-gebruik in musea’* (The use of IT in museums) shows that office computerisation has already been implemented in almost all museums in the Netherlands. However, a large majority of museums have not formulated an information policy or reserved a separate budget for IT. In Dutch museums, IT is still poorly incorporated at the policy level. Responsibilities have not been laid down unequivocally and investments in IT have not been guaranteed. Museums have certainly attached more importance to IT, but they are also searching for the right approach.⁶ It is significant that digital archiving often seems to be an objective in itself. A digital archiving project is started because money is available but without any clear objective; in other words, digital archiving for the sake of digital archiving. It should be a means to reach a goal. It is therefore important to formulate an objective first and answer questions based on: why, what for, for whom, what and when. The question of *how* can be discussed later. This will be expected if an institution submits

an application to a subsidy scheme, for which it is necessary to have well-defined proposals with clearly formulated objectives.

The foundation Digital Heritage Netherlands (DEN)⁷ encourages Dutch heritage institutions to formulate an information plan as an addition to the general policy plan. In an information plan, the institution lays down the IT policy. An information plan consists of three parts:⁸

- 1 the information policy plan
- 2 the digital archiving plan and
- 3 the durability plan

The information policy plan connects the general institution policy and the IT policy. To be able to get the optimum benefit from the possibilities of information and communication technology, there has to be a connection between the general institution policy and the IT policy. The information policy plan shows how the IT objectives that have been set are being achieved. It also provides an insight into the extent to which the institution is contributing to making cultural heritage accessible in a cooperative context at cross-sector, local, regional, provincial, national or international levels. The information policy plan is the point of reference for the digital archiving and the durability plans and also for projects that have not yet begun.

The digital archiving plan translates the IT policy to the IT practice in the institution: in which way, at which speed and according to which quality criteria is the collection of the institution to be digitally registered, documented, possibly provided with digital visual material and made available electronically?

The preconditions and operational rules for IT management within an institution are laid down here. This means that the digital archiving plan should be formulated before the implementation of the IT projects and sub-projects and carefully kept up to date. The stages in which the material to be archived in digital form and the accompanying documentation are selected and processed should also be defined. It should also have digital archiving guidelines and instructions for the further development of the stages into sub-projects. The priorities of the digital archiving plan will often be determined by other policy documents such as an exhibition, education, registration or collection plan.

In the durability plan, the institution registers the strategies for achieving durable digital accessibility of the (knowledge about) the collection. All institutions that are planning to create digital archives should be aware of the problematic nature of digital durability. How can durable accessibility to digital data be realised? To what extent can digital archiving contribute to the preservation of the physical collection? In connection with the determination of the durability strategy, the institution should consider whether or not to realise a durable storage medium in which the digital files and data can be kept.

The information plan is the frame of reference for digital archiving projects. In actual practice, however, many institutions begin to create digital data long before they have made an information plan, which means that they are not abreast of

events. In many cases, there has never been a clear decision process highlighting the whys and wherefores.

Some subsidy schemes, such as *SenterNovem – Digitaliseren met Beleid* (SenterNovem – supporting skilful digitisation)⁹ demand an information plan. For this reason, it is advisable to formulate an information plan. It is important to involve the whole organisation when formulating an information plan. Input from all departments will contribute to the plan being widely supported.

Target groups

In an information plan, it should be made clear which target groups will have access to the digital information and collection. A distinction can be made between internal users (museum employees) and external target groups such as museum visitors, visitors to the website, interest groups, colleagues, students etc. Depending on the target group, it can be determined how the information and collection is digitally recorded. For each target group, the level of the texts offered, the image and file format, the extent of documentation and study, the reproduction of personal and sensitive data, image and copyright and the manner in which data is accessed etc. will have to be determined.

By giving access to collections via Internet, a whole new market of target groups has come into existence. In the publication *Klik naar het verleden*¹⁰ (Click to the past), Wubs and Huysmans introduce the profiles of heritage enthusiasts and their behaviour on the Internet. They are grouped into nine clusters, including five groups of active users of digital heritage, namely:

- all-rounders
- art lovers
- society members
- collectors
- browsers

Which projects are intended for which target group can be stated in the information plan. The chapter *'Aanbevelingen: naar meer publieksgericht digitaal erfgoed'* (Recommendations: working towards a digital heritage that is more accessible to the public) in the publication by Wubs and Huysmans can be helpful here.

Project coordination

The start of the digital archiving of the collection is underestimated by many museums and often receives little attention. The coordination of such a major and long-term project demands full-time attention. It is important that priority is given

to the project at the policy level. To this end, a project manager should be appointed. This project manager can contribute to policy making in the field of IT within the institution and can, for example, take care of the information plan. The project manager can monitor and steer all current and future digital projects regarding access. Active support from the management is essential. The durability of the project can only be guaranteed if integration of digital activities into the work and the organisation is well thought-out at an early stage. This means completely new positions and new elements in existing positions. To this end, a number of FTEs of the permanent staff should be structurally reserved for making the collection digitally accessible. The project will include a cooperative arrangement between the various departments of the organisation and use the expertise that is distributed throughout the organisation. A number of coordinators for various activities can be appointed for the execution of the project, such as a coordinator for public access, collection access and knowledge access. The coordinators and the project manager constitute the IT committee. If necessary, employees with specific knowledge (such as an IT specialist or a restorer) can be added to this commission. The coordinators should make sure software and hardware is maintained, employees receive training, manuals and quality handbooks are written and kept up-to-date, activities are translated into plans and procedures that fit the software used, new applications are developed, input is validated and activities monitored. The coordinators are key figures in the project and steer the employees. In addition to the IT committee, a whole team of employees, such as network managers, application managers and media managers, data typists, registrars, archivists, conservators, collection managers, photographers, developers of multimedia and web applications and editors are necessary. If the size of the institution is limited or when there is a small-scale IT project, the appointment of one coordinator may be considered instead of the three mentioned above. It is important that all digital archiving activities are recorded in a quality handbook where manuals, agreements, plans and procedures are recorded. The quality handbook should be regularly kept up to date. Reporting the state of affairs is another important part of the coordination. By reporting to the management, employees and the subsidising body on a regular basis, good insights into progress and possible bottlenecks can be gained.

Cultural shift

The likelihood of a permanent digital archiving project succeeding depends largely on organisational embedding. This embedding should take place on various levels within the organisation. A cultural shift in policy and practice will be necessary in this case. This is an extremely important key point with regard to a digital archiving project. At the policy level, it should be realised that such a project is institution-wide and that a far-reaching collaboration between various departments is necessary. This

may often mean a different way of working, which may be interdepartmental in some cases. This will have to be propagated by the management and the heads of departments. In practice, this will mean that the employees will have to gear their own work to different activities and projects. In addition, it is important that all activities, including those that are in the developmental stages, should be available to the employees of the project group. Sharing documents on a network is part of this. Moreover, it is advisable to digitise all available collection information data and store it in a single system. In this way, everyone is able to access the available information at any time. This demands a large amount of discipline. All employees should record their work digitally and file this in the correct manner. Keeping notes on paper, in a file or even in your head is then a thing of the past. In this way loss of information and knowledge can be avoided. It is important to realise that the digital recording of data is not an extra burden but, in actual fact, part of the work. It is crucial that it becomes clear what the benefits are for his/her work. Most of the museum employees will have to make a cultural switch. If this cultural switch does not take place, the digital archiving project will have no chance of succeeding.

Step-by-step digital archiving plan

A digital archiving plan has various steps (see appendix 3). To begin with, a selection is made: what should be put into digital form first? Subsequently, the basic register system and the object locations of the selected collection are recorded. Digital photographs should be added to the basic register system so the objects can be identified. Then, the collection registration can be entered and validated. The (important) objects can then be given background information if so desired.

Before a digital archive can be produced for a collection, the objects that are to be accessed must be chosen, as must the objects or collections that have priority. With regard to large collections, it is imperative that well-defined projects should be formulated so that a result can be achieved as soon as possible. Within a project, it is also possible to record all cross-connections directly and to make all collection information accessible. It is essential that important items, fragile collections and exhibited objects are given priority. It is, after all, important for these objects that the documentation is well recorded. The whole collection can be divided into various categories (A, B, C) according to museological importance.¹¹ The most important objects should be dealt with first.

The basis of the collection management is the recording of the basic registration system and the object location registration. The collection can then be accurately identified, retraced and managed. The basic registration system includes an inventory number, the registration of acquisition data, location, origin, dimensions, and image registration.

The location registration can be registered by hand or through collection registration software such as The Museum System (TMS). It is also possible to automate the whole process. For this, barcodes and barcode scanners are necessary. Meticulously recording and keeping track of object movements is essential for watertight registration of the object locations. As soon as all locations are registered, checks can be made regularly. In addition, an overview can be given of objects for which the location can no longer be found; the so-called missing objects. Correct location registration is not only of importance to the internal administration, but also vital for insurance purposes. Two things are important for the registration of locations:

- 1 The objects have been given a unique (inventory) number
- 2 The locations (cupboards, shelves, etc.) have a location indication.

It is advisable to put numbers on the objects and/or affix labels with numbers to the objects.

If a barcode system is chosen, then the numbers and the barcode should be printed on a label and attached to the object with, for example, a piece of string. If an object is moved, the label should be moved with it. If something has to stay behind in the former location (for example, a fixed location in the depot) to mark the vacated space, an extra label or part of the original label can be used.

All locations where objects are (or can) be found, must have a unique location name (object location). Every shelf, drawer, rack, wall, etc. should receive a name. It is advisable to apply the names consistently. A classification according to a building, area, kind of storage, storage number and position within the storage area can be used. The idea behind the barcode system is that all locations and objects have a barcode and the new location is registered for each object movement using the barcode scanner. The software supplied ensures that the movements are automatically processed in TMS, for example. The data should be read from the scanner daily. The advantage of this system is that all object movements can be registered easily and quickly. The disadvantage is that all objects and locations must have barcodes. The whole collection could be given barcodes in one or more major campaigns so that the whole collection is labelled as quickly as possible. It is also possible to attach barcodes only to objects that have to be moved at that moment. In this way, all 'mobile objects' will gradually be labelled. When all object locations have been registered, it will be clear where the objects are and which objects are missing. It is subsequently important that the object locations are checked at regular intervals, for example, one depot each year. This also applies to objects that are on show in exhibitions.

An important part of the digital archiving of the collection is recording the image registration. Before the collection is due to be photographed, it is important to determine for what purpose the digital images are being made. If the images are meant for publications, the requirements will be higher than if they are only to be used for identification of the object. The various objectives could be: visual materials for exhibitions, illustrations for publications, multimedia applications, (collection)

website, collection identification and registration, loan activities, insurance, hands-off study, etc. The available budget, existing equipment or equipment that is yet to be purchased should also be taken into account. The quality will depend not only on the studio and the camera but also on the software in which the files are stored, the network and the method of backup.

The registration consists of importing the registration fields, e.g. titles, geographical and cultural origin, function, material, technique, dimensions, and dating, in accordance with the ObjectID¹² and Spectrum standards¹³ for the registration of collections. For the image collections, extra fields with regard to images and iconography can be added. The data can be entered by data typists or recorders. It is essential that this is done simply. It is advisable to record all agreements and procedures in a quality handbook. The registered objects should be checked by specialised archivists or conservators. They can check if the registrations are correct as regards content. As soon as the objects have been checked, they are regarded as 'validated'.

The documentation of the collection is executed by archivists and conservators. On the basis of current projects, for instance, publications, exhibitions, studies and new acquisitions, a selection is made of the objects that are to be documented. Background information is added to these objects with regard to pedigree, function, use and references. Illustrative visual materials, drawings, sound and moving images are also sought out and then linked in digital format to the objects concerned. If applicable, biographies and events can be added. The objects can also be linked to exhibitions, literature and loans. As a result, all documentation is directly available for study, collection management and public use. Documenting objects takes a lot of energy, effort and time. This can vary from half an hour to a day, depending of the amount of information available and study that has yet to be done. It is important that current projects benefit from the documentation and that current study is used for documentation. This allows two birds to be killed with one stone. After all, it would be a pity if material that has been collected for an exhibition, for example, is not digitally recorded. In this way, a great deal of knowledge could be lost. It has, hopefully, become clear that the digital archiving of a collection is not a short-term project but should be part of daily activities. It is important that the basic principles are clear and the target groups determined. Subsequently, the new method of working will have to be embedded in the organisation which will necessitate a culture switch. A solid and well thought-out project organisation will be necessary for this. A step-by-step plan can determine which digital archiving plans are given priority. An explanation will be given in the following chapters of how the Tropenmuseum has dealt with the digital archiving of the collection over the past twenty years and also which decisions have played a role and what the results are.

2 Tropenmuseum

History of the Tropenmuseum

The history of the Tropenmuseum begins with the establishment of the Colonial Museum in Haarlem in 1864. The founder of the museum was Frederik Willem van Eeden (1829-1901), secretary of the *Maatschappij ter Bevordering van Nijverheid* (Society for the Promotion of Industry). This society had as its objective furthering the prosperity of the Netherlands and its colonies. The museum was originally housed on the ground floor of the Pavilion Welgelegen in Haarlem. It was first and foremost a product museum, prominently featuring the raw materials and natural products of the Dutch overseas settlements and colonies. In 1871 it opened its doors to the general public. The few ethnographical objects in the collection were primarily regarded as examples of local techniques and exotic materials. These collections were brought together by individuals, societies and governmental agencies with economic objectives and administrative tasks in the colonies. From the museum's very beginning, photographs were included in the collection. They provide us with an interesting and relatively complete picture of the colonial society in all of its facets.

In 1910 the Colonial Institute society was established; its aims included construction of a new Colonial Museum in Amsterdam. The main goal of this institution was to illustrate the importance of tropical products, as well as forming a broad collection of ethnographical objects in order to spread knowledge about the indigenous cultures of the Dutch East Indies. In 1913 the ownership of the collection of the Colonial Museum in Haarlem was transferred to the Colonial Institute society. Around the same time, negotiations were going on to include the ethnological collection of the Amsterdam Zoo Natura Artis Magistra as well.

The new building of the Royal Colonial Institute Society on the Mauritskade in Amsterdam – now known as the Royal Tropical Institute (KIT) – was officially opened on 9 October 1926. Within this new institute, the diverse collections of ethnographical objects and tropical products were split into two. The latter were displayed in the newly created 'Trade Museum' within the newly opened museum. This trade museum

had its own staff and director. The department of ethnography also had its own staff, director and exhibition galleries. The two museums operated independently of each other, exhibiting their collections in their own allotted exhibition space within the spacious Colonial Institute. The Ethnographical Department possessed approximately 30,000 objects in 1926. Approximately 3,500 objects came from the ethnographical collection of the former Colonial Museum in Haarlem, and roughly 12,000 objects from the Amsterdam Zoo. Both collections can still be recognised by the 'H' and 'A' used for the object numbers and are still considered to be very valuable and unique components of the Tropenmuseum collection, which is now considerably larger.

The historical films and collection of photographs together form another valuable and unique collection within the Tropenmuseum. Between 1915 and 1940 these sub-collections grew steadily thanks to field assignments and donations, the majority of which consisted of separate films, photographs and negatives, photograph albums, lanterns and stereoscope plates. The music recordings on wax rolls were also considered part of the museum collection. Books and magazines however were not categorised as part of the collection and were stored in the central library of the Colonial Institute.

After the Second World War, international relationships – especially those between colonies and colonial powers – changed drastically. Staff members within the Colonial Institute still believed that pre-war relations between the Netherlands and the Dutch East Indies would be repaired in spite of the unilateral declaration of independence of the republic of Indonesia in 1945, but wanted to get rid of the emotionally charged 'Colonial' and therefore the names of both the institute and museum were changed to the Royal East Indies Institute and the East Indies Museum respectively. At that time the museum had more than 60,000 objects in its possession. Because of the intended focus on Indonesia, it was decided during this period to transfer the museum's extensive African collection to the ethnographic museum in Leiden, where it still can be viewed today.

In 1950, one year after the official sovereignty of Indonesia, the name of the institute was once again amended, this time to the Royal Tropical Institute. The museum became known simply as the Tropenmuseum. The general objective of both museum and Institute – the gathering and dissemination of knowledge – remained unchanged. Instead of focusing exclusively on the former East Indies, the Tropenmuseum broadened its scope to include the tropical and sub-tropical regions in their entirety. This meant, among other things, that curators travelled to India, Pakistan, Northern Africa, the Middle East and Latin America to bring together a collection that reflects the daily lives of the peoples and cultures around the world – the new goal of the museum's collection policy. To fill in the gap that was left after the transfer of the Africa collection to the museum in Leiden, the Tropenmuseum bought the Africa collection of the private collector G. Oudshoorn.

The museum reformulated its policies in 1971. This was done in cooperation with the Ministry of Foreign Affairs, which was now the museum's main financier. The

new goal was to provide information concerning the lives and work of people in the tropics and subtropical regions, as well as the global changes affecting their ways of life. A new emphasis was also placed on the relationship between societies 'there' and 'here'. In 1989, the museum's objectives were extended to become "an anthropological museum in which people and their cultures stand central, with special attention to the processes of change occurring in the tropics and sub-tropics, and the relations between non-Western and Western culture and society". This broadening of the museum's objectives logically had an effect on both the collection and exhibition policies of the Tropenmuseum. By collecting over a longer period of time within a certain region or on a certain topic, changes and influences from both sides become visible within the tangible culture.

In 1990, the exhibition *'125 jaar verzamelen: Het Tropenmuseum pakt uit'* ('125 years of collecting: the Tropenmuseum opens up its storage rooms') signalled an important change in the museum's collection strategy. The museum placed more and more emphasis on the dynamic role of tangible culture in the processes of cultural change. This was done to show that social changes do not come purely from outside, but are deeply interwoven within a continual process of internal cultural change. These socio-cultural changes, visible when objects from a certain culture or region are collected over a longer period of time – can then be illustrated in exhibitions. This shift in vision led to a re-examination of the museum's own collection history. The museum chose this moment to confront its colonial past head on. The collection is no longer viewed simply as a depository or storehouse of tangible culture, but as a source of information about historical interactions, processes of representation, collectors and the forming of dogmas. The result of this shift in vision is not just seen in the collection policy of the last 10 years, it has also had a major impact on the newly furnished museum galleries. In 2007 all the galleries of the Tropenmuseum were renewed, the culmination of a ten year project during which time the museum did not close its doors.

Despite the various shifts in name, policy and direction, the Tropenmuseum collection has remained remarkably consistent. This is partly due to the fact that the objects have been kept together for a long period of time and that they were collected by a relatively small circle of Dutch collectors who were heavily involved with Dutch colonial policymaking or development work. The acquisition of contemporary objects and visual material, with an emphasis on objects in daily use and spiritual/religious culture, has always played an important role in the acquisition process. These two elements were also indicated as the underlying strength of the Tropenmuseum collection by the international examination commission, according to their 1998 assessment of the collection (Newton et al., 1998). Another characteristic of the collection is that it has been carefully documented since its inception.

In 1999, the museum's historical films collection was transferred to The Film-museum in Amsterdam, and the historical audio collection was placed under the care of the Netherlands Institute for Sound and Vision in Hilversum.

In the period 1997-2007, the emphasis in collection policy was on improving collection management and digitising the collection documentation in order to make it available on the World Wide Web.¹

Tropenmuseum 2008

The Tropenmuseum and the Information and Library Services (ILS), Tropentheater (TT), KIT Biomedical Research (BR), KIT Development (DEV), Policy and Practice (PP) and KIT Intercultural Management & Communication (IMC) departments together constitute The Royal Tropical Institute (KIT). The mission of KIT is as follows:

“The Royal Tropical Institute (KIT) in Amsterdam is an independent centre of knowledge and expertise in the areas of international and intercultural cooperation.

The Institute aims to contribute to sustainable development, poverty alleviation, and cultural preservation and exchange. Within the Netherlands, it seeks to promote interest in and support for these issues.

- *KIT conducts research, organises training activities, and provides consultancy and information services. Central to KIT’s approach is the elaboration of practical expertise in policy development and implementation. The Institute stewards cultural heritage, organises exhibitions and other cultural events, and provides a venue for meetings and debate.*
- *A key objective underlying the Institute’s work is to enhance and exchange knowledge and understanding of different cultures.*
- *KIT is a non-profit organisation that works for both the public and the private sector in collaboration with partners in the Netherlands and abroad’ (Mission Statement).”²*

The Tropenmuseum has its own specific mission:

“The Tropenmuseum presents, studies, and promotes knowledge of different cultures and interaction between cultures. All museological means are used for this goal: exhibitions, collections and expertise, publications, the historic building, educational and other activities. The museum is innovative in its choice of themes and manner of presentation. It offers insight and a valuable experience to a broad and diverse public, strengthens the appreciation of cultural diversity, operates internationally in the field of culture and development and fulfils an important role within education.”³

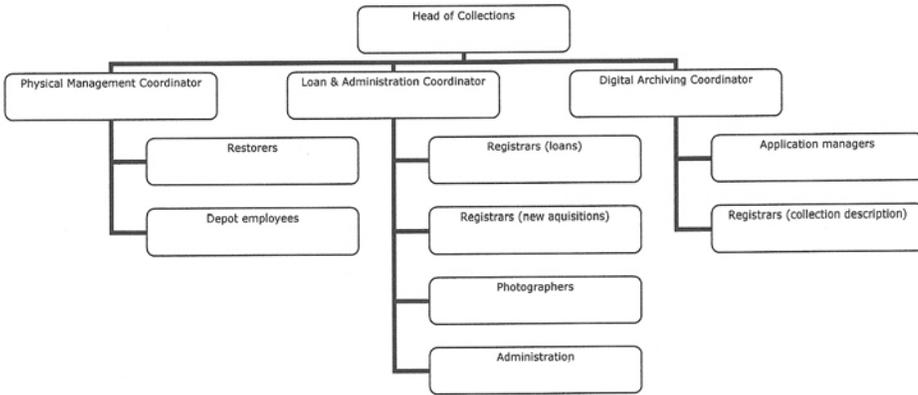


Fig. 1
Organisational chart of the Collections Department, Tropenmuseum, 2008

The policy of the Tropenmuseum and its execution are laid down in such documents as the *Beleidsnota* (Policy document), the *Collectienota* (Collection Memorandum), the *Informatieplan* (Information Plan), the *Digitaliseringsplan* (Digital archiving Plan) and the *Projectplan* (Project Plan)⁴. The Collection Memorandum is published every five years in the publication series of the KIT. The newest version becomes available in the course of 2008.

The Tropenmuseum has five departments, namely Operational Management, Museological Affairs, Tropenmuseum Junior, Collections, and General Public and Presentations. Museum activities such as exhibitions and IT are project based and form a matrix within the organisational structure. The digital archiving of the collection is primarily being carried out within the Collections Department.

The work in the Collections Department can be divided into three main activities, namely, Physical Management, Loans & Administration, and Digital Archiving (see fig. 1).

A coordinator has been appointed for each main activity. The three coordinators discuss policies and activities of the Collection Department with the Head of Collections and translate this into procedures and work instructions. They are recorded in the Quality Handbook and communicated to the work floor. Feedback from the work floor is discussed in the meetings with the coordinators and, if relevant, included in the Quality Handbook.

Tropenmuseum collections

The Tropenmuseum collections include approximately 600,000 objects of which 350,000 have been selected as category A.⁵ These objects have been digitised to a large extent and made accessible in TMS. The collections can be divided into two

main categories, namely the Image Collection and the Tangible Culture Collection. In addition, there are two more categories, namely the collection of the Tropenmuseum Junior (TMJ) and Miscellaneous (see table 1).

The miscellaneous objects are mainly non-museological objects such as props and exhibition objects (text boards, AV equipment etc.). These objects do not fall under category A, B or C and are therefore assigned category D. These objects are usually written off immediately and destroyed after an exhibition. The objects in the collection of the Tropenmuseum Junior (TMJ) are purchased for use in the TMJ exhibitions and then written off or included in the Tropenmuseum collection.

The tangible culture collections consist of the sub-collections archaeological objects, physical anthropology, musical instruments, natural objects, textiles and general objects; in total more than 175,000 objects. Within this collection, there are a number of limited series covering objects of which the origin and the original serial number are not known (the series 0-*, AA-* and BB-*). These series have yet to be examined. It is generally thought that most of these series will remain part of Category A.

The image collections can be divided into the Photo collections and Other Image Collections. The Other Image Collections include posters, books, documents, films, graphic art, picture postcards, paintings and drawings – 10,000 items in total.

The photo collections have their own development history. The *Koloniaal Museum* (Colonial Museum) in Haarlem had already started collecting photographic material. In 1915, the collection was transferred to a separate department of the General Secretariat of the Colonial Institute in Amsterdam. Eventually, this department was given the name *Centraal Beheer Fotodocumentatie* (Central Management of Photo Documentation), abbreviated to CBF. The CBF was transferred to the Tropenmuseum in 1980. In the period 1960-1985, the historical collection became less important and more emphasis was put on the present and the future, especially on development aid and Third World issues. Appreciation of the historical collection grew again during the nineteen eighties and nineties and this resulted in museological status being awarded to this collection. The *Fotobureau* (Photo Bureau) was closed in 2003 and the collection is now a balanced and valued component of the Tropenmuseum collections. The collections are managed by the Collections Department while research is carried out by the department of Museological Affairs. The photographic collection of the Tropenmuseum has around 400,000 objects: 175,000 photos divided over more than 2,500 albums, 20,000 loose photos, 80,000 historical negatives, 7,500 slides and stereo slides, 80,000 modern slides and 35,000 assorted items. Of these, two thirds to three quarters (250,000 to 300,000 objects) potentially belong to category A.

The modern material, from 1960 until now, is made up of negatives and slides and has not yet been selected as being category A; for this reason it cannot be accessed digitally. At this moment in time, a total of 140,000 objects from the photo collection have been selected and digitised. Of those 140,000 objects, 90,000 have been registered and 2,500 documented.

Table 1 Collection per sub-collection, registered in TMS

Collection	Sub-collection	Number of objects in TMS
Visual collections	(not allocated)	19
	Posters	377
	Books	399
	Documents	905
	Photographs	159,729
	Films/video	609
	Graphic art	3,601
	Postcards	6,988
	Paintings	2,208
	Drawings	2,273
Tangible culture collections	(not allocated)	122,513
	Archaeological objects	4,770
	Physical anthropology	495
	Musical instruments	5,893
	Natural objects	2,087
	Textiles	21,546
Total		334,412

Stichting Volkenkundige Collectie Nederland (SVCN)

The Tropenmuseum is part of the *Stichting Volkenkundige Collectie Nederland* (The Foundation for the Ethnological Collection of the Netherlands). The SVCN was founded in 1995 and arose from the *Overleg Volkenkundig Musea* (OVM) [Consultative Forum for Ethnological Museums], which originated in the nineteen eighties. What the SCVN wants to achieve is described on the SVCN website:

“The SVCN wants to act as a wake-up call for the cultural heritage managed by the eight associated museums by investing in IT as a medium for digital accessibility, presentation, documentation and education. In this way the provision of information will be greatly improved, internally as well as externally. With regard to the internal operational management of the museums, an added benefit is that activities such as collection administration, documentation and research are better supported. As the documentation is presented on a shared platform, the museums will also be able to make use of each other’s collections and documentation for their presentation policy. The shared database, moreover, offers insight into the composition of the collections and will therefore help the ethnological museums in developing their joint acquisition policy. The SVCN’s policy on information gives concrete form to the idea of one joint ethnological collection of the Netherlands in addition to the joint development of an

ethnological thesaurus and a joint acquisition policy. The SVCN presents itself together with the digital catalogue of the Ethnological Collection of the Netherlands and with digital productions about interesting sub-collections and/or subjects – the specials.”⁶

The SVCN also engages in ethical questions within the museum world:

“The ethnological museums are unanimous in working to combat the illegal trade in items of cultural significance. This is achieved by, among other things, categorically refraining from purchasing, acquiring, having on loan or exhibiting items of cultural significance if there is even the slightest doubt about the legality of the manner of acquisition.

The Ethics Committee of the SVCN was set up in 2004. Its members include representatives of the ethnological museums and a representative from the commercial community in addition to the independent chair (a lawyer). The committee advises SVCN museums about questions concerning human remains, the possibly illegal origin of artefacts and repatriation of objects or collections. For this purpose, the committee monitors the objects that the various ethnological museums acquire or receive on loan each year. This is recorded in a report. Indeed, the ethnological museums of the Netherlands already tackle these matters as if the UNESCO Convention of 1970 and the UNIDROIT Convention of 1995 were ratified by the Netherlands. The Netherlands will probably only accept a more extensive version of the UNESCO convention.”⁷

The Tropenmuseum collaborates intensively with the other ethnological museums. The Tropenmuseum takes part in, among other things, the registrar consultative forum (as regards registration and thesaurus development), the SVCN feedback group, the SVCN board of management, the web editing for the Project ‘Collection in Context’ and the joint acquisition fund.

In 1997 the then Consultative Forum for Ethnological Museums took the initiative to establish a joint fund for acquisitions within the context of the Ethnological Collection of the Netherlands. All the eight ethnological museums forfeit a part of their acquisition budget for the benefit of this fund. In preparing for this fund, a memorandum was written describing the characteristics of the various ethnological museums’ collections. Then the strong points and weak points of the ethnological collection of the Netherlands were mapped out. This was used as a basis for developing the guiding principles for an acquisition fund. The *Mondriaan fonds* (Mondriaan Fund) used this memorandum to develop an acquisition scheme. On 17 March 1998, the Ministry of Education, Culture and Science in the Netherlands (OC&W) adopted the acquisition memorandum and decided to donate a significant amount to this fund. This was probably partly because this was a unique situation in the Dutch museum world; eight museums working together in this way. An advisory commission

was established with five members from ethnological museums and an external chair, with a secretariat provided by the Mondriaan Foundation. This commission assesses the museums' applications. Applications for the acquisition of special objects or objects that belong to a collection or sub-collection are honoured as well as any acquisition trips taking place within the framework of a joint acquisition policy plan. From 1998 to 2001, the acquisition fund received financial support from the *Directie Cultureel Erfgoed* (Directorate for Cultural Heritage) at the Ministry of OC&W at that time. The Mondriaan Foundation has been the formal manager and co-financier of the fund since 1 January 2001.⁸

The collaboration between the Tropenmuseum and the other SVCN museums in the field of digital archiving started within the OVM in the early nineteen nineties following much consultation. This consultative period resulted in an intention to collaborate. For the time being, this collaboration was restricted to putting together a standardised list of words with regard to the Africa collections for a limited number of registration fields. The intention was to make a joint appeal to the funds of the Ministry of Welfare, Health and Cultural Affairs (WVC) in order to realise national computerisation of ethnological collections and a thesaurus.

In the nineteen nineties, the computerisation process of the Tropenmuseum was strongly influenced by the desire to work together with other ethnological museums in the Netherlands. However, with regard to the choice of software, the Tropenmuseum adopted a wait-and-see attitude:

“The fact that the Tropenmuseum did not lead the way has its advantages. After all, we can learn from experiences elsewhere. Moreover, software and hardware have developed rapidly.”⁹

When it emerged that the joint adoption of software was going to take time due to unforthcoming funds, the Tropenmuseum decided to go in search of its own software.

In 1999, the SVCN submitted a subsidy request to support an IT project for the purpose of the digital archiving of the cultural heritage, initially in four SVCN museums. However, the Tropenmuseum did not take part in the IT project, but it has adopted the goals and basic principles and realised these using its own resources and funds.

The basic principles of the SVCN's digitisation plans were 1) migration to a shared platform for information management and facilities; 2) making the ethnological collections of the Netherlands accessible in a straightforward way, whereby the ethnological thesaurus of the Netherlands would be given a central role; 3) the presentation of the catalogue on a joint website supplemented with specials and 4) internationalisation of the ethnological information provided by translating the

Dutch ethnological thesaurus into English and French.¹⁰ The first three points (migration, accessibility and presentation) have been realised and are being constantly improved. The last point, internationalisation, has still to be tackled. Developing the Dutch thesaurus was more complicated than first anticipated. The thesaurus sections on geographical origin, cultural origin, functional categories and object keyword were ready at the end of 2007 and only need to be supplemented deductively. At the beginning of 2008 the thesaurus exchange system was ready. This means the thesaurus can be managed centrally and thesaurus terms exchanged between the ethnological museums. As a result, it is now possible to go ahead with the translation of the thesaurus.

3 Tropenmuseum: from analogue to digital

Twenty years of computerisation and digital archiving

At the beginning of the nineteen nineties, the Tropenmuseum decided to formulate a computerisation plan based on the knowledge within the OVM in order to be able to make a start on the computerisation.

“As decisions cannot be constantly postponed and we are in danger of losing touch with our colleagues, the museum will have to draw on existing funds within the Institute. Collaboration with associate museums does offer major benefits such as combining expertise and enabling the exchange of data. The latter is of particular importance when it comes to research and organising exhibitions.”¹

This computerisation plan, made in 1991, said that a period of trial and error lasting at least six months should be taken into consideration. The target was to have recorded the entire collection within ten years. However, there was no mention of planning or of a timetable in this plan.

The Tropenmuseum has chosen to collaborate with the other ethnological museums in the Netherlands in the area of software choice. In 1990, a study into the available means for automating collections was carried out within the framework of the project *‘Geautomatiseerde ontsluiting Volkenkundige Collecties door het Overleg Volkenkundig Musea’* (Automated accessibility of Ethnological Collections by the Consultative forum of Ethnological Museums).² The aim was to give an insight into the differences between two automated systems suitable at that time for recording collections: the BRS/Search Software and TextSearch (formerly BIBSearch). These two systems had already been found suitable by the steering committee at an earlier stage. The guiding principle was that both the smaller and the larger museums should be able to use them. For this reason, two systems were offered from which each museum could make its own choice. The report concluded as follows:

“Both packages are suitable for the management and fast accessibility of texts. BRS/Search is usually applied in situations in which a large number of items have to be recorded. TextSearch is an alternative for applications that are less demanding, however a number of limitations have to be accepted.

“I therefore regard the use of a TextSearch configuration as a compromise that we can only settle on when the disadvantages of using a BRS/Search system far outweigh the benefits. This is very rarely the case in situations where large databanks are being built; choosing such a system is then highly to be recommended.’³”

In the Tropenmuseum’s memorandum in 1991, preference is given to the same software as was chosen by the Museum of Ethnology in Rotterdam (BRS/Search). The reason for this was, on the one hand, that this system had been tested over a long period of time and found to be very satisfactory and, on the other hand, that it offered optimum possibilities for close collaboration. At that moment in time, there was no known system that would better meet the requirements.

In 1992/1993, tenders were invited from four companies for the computerisation of the collection data. The costs and functional demands of three software systems were eventually compared, namely Tinman, Minisis and BRS/Search, in the memorandum *‘Automatiseren in het Tropenmuseum’* (Computerisation in the Tropenmuseum) of 1993.⁴

“Based on a comparison of the three suppliers in five areas – the functions of the system, general impression of the software, hardware provided, references and general impression of the supplier, costs – the Mega Media Museum by BRS/Search turned out to be the best.

“For this reason, I propose purchasing this system for the Museum.’⁵”

The schedule of requirements, benefits, and the organisation of the computerisation project were worked out in the same memorandum. A period of ten years was reserved for the registration of the 100,000 objects of the Collection Department, starting in August 1993. Five years was reserved for the registration of the Photo Bureau albums. The recommendations were phrased as follows:

*“The computerisation project of the museum is extensive and complicated. It is therefore advisable to introduce the system in phases in the following manner:
1 The system for the location administration, the registration/documentation of objects and the storage of object images will be set up together with the supplier. The Africa collection will be entered retrospectively following a system test (8000 descriptions and images). The four collections researchers, the*

photographer, the Africa curator and the project supervisor will be involved at this stage.

2 With regard to the Photo Bureau, the system will be set up for the description of the albums and photos as well as for the image storage. After the system test, 3000 photos and negatives, which have already been documented, will be entered. Two collections researchers, the reproduction photographer and the project supervisor will be involved at this stage.

3 After this stage, the system will be evaluated and the planning for the next stage determined.”

In 1993, the decision was finally made for the Tropenmuseum to develop its own database on the basis of BRS/Search (Mega Media Museum), with the name of *Object Documentatie en Ontsluiting* (ODO) [Object Documentation and Accessibility]. This was to be done by the company Textinfo⁶, the distributor of BRS/Search. All activities necessary for the description of the collections, loans, insurance, exhibitions, depot and location management and reports about restoration activities were to be integrated in this one system. All those employees of the Tropenmuseum engaged in managing collections were to use ODO for their work. The investment for the first stage of the introduction of the Mega Media Museum would come to almost 300,000 guilders, including software (eight users), a network server, image recording equipment, workstations, supplier support and the cost of the project manager's salary.

The costs of a temporary employee for the location administration as well as those for the Photo Bureau photographer would be at the expense of the Museum. The maintenance costs for hardware and software, as well as the replacement of the work stations, would also be at the expense of the Museum budget. The anticipated costs in subsequent years included extending the software licence and purchasing equipment for image registration, as well as the cost of the project manager's salary.

A number of alterations to activities had already been implemented in preparation for the computerisation. A start was made on entering collection numbers and location records in WordPerfect and Excel, for instance. In 1999, a number of data entry screens had been completed and were in use. Manuals were compiled for their use and training was given. At the start of 1999, two data entry operators began entering object descriptions in ODO. The first step towards computerisation made in 1991 was worked out in detail mid 1999 to become the implementation plan for the computerisation. This plan distinguished five processes: 1) the entry of control data; 2) the entry of documentation; 3) the entry of tables, such as relations, literature etc.; 4) scanning/digitising; 5) the building of a thesaurus.

The guiding principle was that the processes should be finished in seven years. The following considerations played a role in this: a) agreements with the subsidising body, the Ministry of Foreign Affairs/Development Aid and b) the fact that the Tropenmuseum wanted to see a result as soon as possible and also wanted a

manageable time schedule as the motivation for the whole project would drop off over a longer period. In the end, the ODO software turned out not to meet the requirements and an alternative was sought. The ambitions, target and the results to be achieved were unchanged and still matched the SVCN's project plan. It was therefore not surprising that the Tropenmuseum decided to investigate the developments in the field of IT in other SVCN museums.

In the 1999 memorandum *'Alles uit de kast, verzoek van de Stichting Volkenkundig Collectie Nederland om ondersteuning voor een IT project ten behoeve van het culturele erfgoed'* (Pulling out all the stops; a request by the SCVN for support for an IT project for the benefit of the cultural heritage'), the choice of The Museum System (TMS), is described as follows:

*"The SVCN wants to make a vigorous start as early as 1999 with the migration towards a shared software platform as a first step towards complete consolidation and with the preparation of the presentation plans; the multimedia specials. The intended software platform is The Museum System package from Gallery Systems Inc. in New York. This package encompasses modules for collection administration, management, documentation and presentation for both intranet and Internet. At the moment, it is used to full satisfaction in the National Museum of Ethnology in Leiden, the Museon in The Hague and the Ethnological Museum Nusantra in Delft. Migration to this package is not feasible for the other partners for various reasons. The SVCN asks for financial support in order to enable these institutions to make the decisive step towards a shared platform and also to be able to complete the execution of the migration and consolidation process."*⁷

Partly due to this report, the Tropenmuseum decided to switch from ODO to TMS within a period of less than a year (1999-2000). The main reasons were the collaboration with the SVCN museums and the choice of a commercial system with technical support.

As soon as the decision to change to TMS was final, the real digital archiving project could begin with J.H. van Brakel as the project manager. The process of digital archiving of the collection and the accompanying background information in TMS consists of an implementation and a realisation process.

The TMS implementation process can be divided into two stages. At the start of the TMS implementation process (mid 2000), the basic records of the whole tangible culture collection and the basic records of part of the photographic collection were available in ODO. The conversion of the data from ODO to TMS was carried out in the first stage of the implementation.⁸ The transfer covered acquisition details, origin (converted in accordance with the geographical and cultural origin in the thesauri), a short description (title) and the location. The hardware and software were

subsequently installed (October 2000). A special TMS server was purchased together with the IT Department of the KIT. The database and digital files were stored on this server. The second stage consisted of introducing TMS to the employees (November 2000). This was done under the supervision of a project manager on secondment from CIT.⁹ The demonstrations and training were given in groups. In addition, a TMS and input instruction manual was developed. This instruction manual was the forerunner of the current Quality Handbook. The development of good instruction manuals and a quality handbook costs a lot of time and energy, but this investment saves time for the users as they can immediately find all the agreements that have been made. It is also an essential tool in the training of new employees. Initially, an investment in time of approximately a fortnight should be allowed for. Keeping it up to date will cost at least two weeks a year, depending on the number of additions. It currently takes almost four weeks each year to keep the current Quality Handbook of the Tropenmuseum up to date.

The realisation stage includes integrating TMS into the daily activities and making data digitally accessible. After the technical implementation and the training of employees, the first step was for data entry operators and registrars to check the converted data and enter the missing data using the registration manual. In the period 2000 to 2003, the emphasis was mainly on digitally recording the collection information, as well as on individuals and institutions with regard to the acquisition and the digital images. A start was also made on registering the photographic collections. These collections had been partially registered in ODO. The basic registration of part of the photographic collections had been registered in Word Perfect. These files were also been converted to TMS. The same registration process was subsequently followed as with the tangible culture collection.

Concurrently with the registration, the objects were provided with digital images. The slides of the tangible culture collection that were already available were digitised by an external company. The reproduction negatives and glass negatives were digitised at the same time. The files were delivered on CD once a month and immediately transferred to the TMS server and linked to the objects in TMS. The photographer was taking analogue photographs of the tangible culture collection up until 2002. From then onwards, all images were directly recorded digitally. At the end of 2003, almost half of the collections had digital images and at the end of 2007, this was more than 75%.

The second step in the digitising of collections had already started in 2000. A cautious start was made with the digital documentation of objects. A number of collections researchers devoted some of their time to documenting objects in TMS. Over the years, a manual was also developed for this. However, it has proved difficult to make documenting part of the daily activities of collections researchers and curators.

From 2004, a start was made with the third step of digital archiving. This consisted of recording the background information on the collections such as literature

references, the exhibition archive, biographies, events, digitising inventory cards, loans and digital files (such as photographs and text files) in TMS.¹⁰

The fourth step of digital archiving is to make knowledge, associative information and intangible heritage digitally accessible. This was initiated in 2008. Registering collections retrospectively will continue at the same rate in 2008, as will taking digital photographs of the objects.

At the moment, the Tropenmuseum has fifteen complete TMS licences, which means that fifteen people can use TMS at the same time. There are at least 70 TMS users in total within the KIT.

Table 2 The digital archiving process at the Tropenmuseum

Year	Process
1980-2000	<i>Registration</i> of new ' <i>zettels</i> ' (inventory cards) by hand
1990-1994	Orientation regarding choice of software together with OVM
1994-1999	Development of ODO
1994-1999	Entering <i>basic registration</i> in Excel/WP
1999	Entering <i>basic registration</i> in ODO
1999-2004	Digitisation of analogue images
2000	Conversions and implementation of TMS
2000-...	Entering <i>registration</i> in TMS
2000-...	Entering <i>documentation</i> in TMS
2003-...	Digital accessibility of <i>Handboekerij</i> (handbooks) [15,000 titles]
2004-...	Digital photographs of MC collections
2004-...	Making background information and files digitally accessible
2008-...	Making intangible heritage and contextual information digitally accessible

Analogue documentation

For more than a hundred years, the collections of the Tropenmuseum were recorded in a paper archive. The paper archive consisting of such items as the inventory cards (*'zettels'*) and acquisition lists (*'lange lijsten'*) is still present, but is no longer updated since the introduction of TMS in 2000. The historic data is however essential to the digital accessibility and forms the point of reference for the registration and documentation of the collection.

Over the years various kinds of inventory cards have been used. The oldest cards are from *Artis en Nederlandse Koloniale Vereniging* (Artis and the Dutch Colonial Society) (see fig. 2). The Artis and Haarlem objects were given a new inventory number and '*zettel*' on arrival. These '*zettels*' were designed based on the collection catalogue of the National Ethnological Museum (the current National Museum of Ethnology, Leiden). The '*zettels*' had documentation and in some cases drawings of the object. This kind of '*zettel*' was used for more than sixty years (see fig. 3). At the

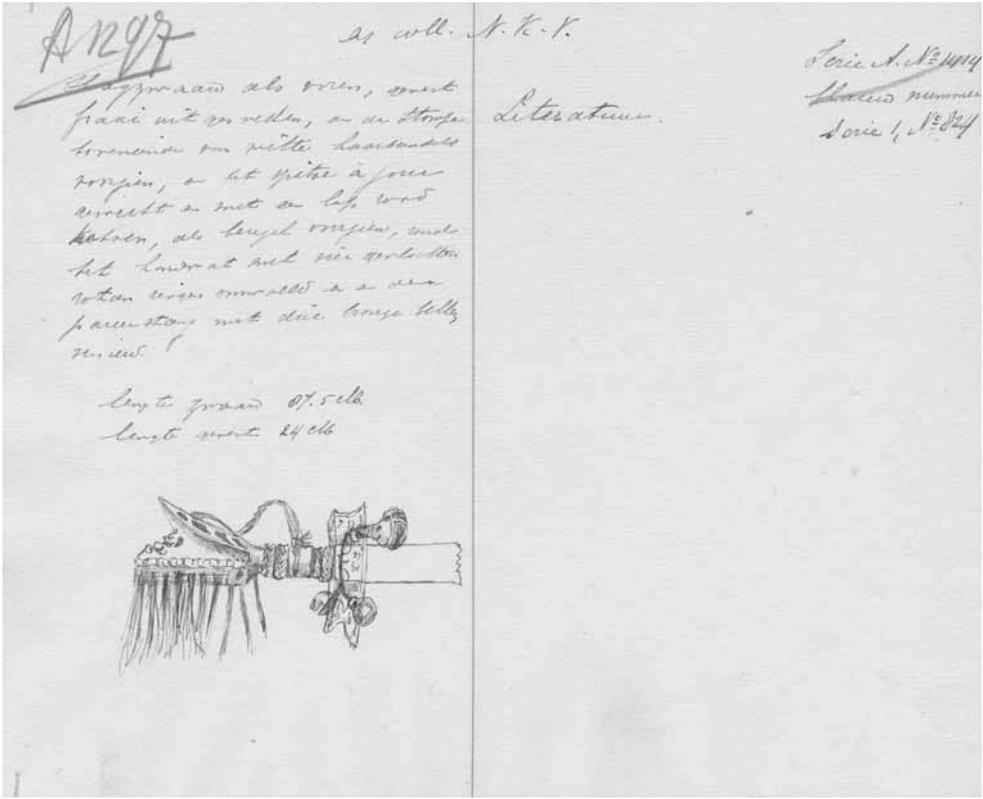


Fig. 2
N.K.V. inventory card

end of the nineteen eighties, the Tropenmuseum designed a new documentation card according to the standards of the Museum Documentation Association (MDA)¹¹; this card had to be geared to the future computerisation of the collection. Seventeen categories can be filled in on this card with a total of 25 fields. The fields are the frame of reference for the current registration and documentation fields (see figs. 5 and 6). The photographic collection has been documented since the nineteen thirties using so-called UDC cards (see fig. 4). Copies of the photographs were glued to the cards together with a description of the image and data on the origins. The photographs were given a UDC code (Universal Decimal Classification¹²) with a serial number. The cards were sorted according to this code and, if necessary, duplicated and filed under various categories. In the nineteen fifties the museum stopped using these cards and some were even discarded. The documentation of the photographs was started again in the nineteen seventies and some of the missing cards replaced.

In addition to the paper documentation, there is a large archive of analogue images of the object collection in the Tropenmuseum; it consists of photographs, negatives

GROEP IX-2-a

SERIE 3859
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AFKOMSTIG:
KENYAH-KAYAN
cultuurcomplex.

Centraal en
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SCHENKING/AANKOOP
RIJLIGHEID/LEGAAT
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De Boer

Stadionweg 55^F

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DATUM

24 NOV. 1969

COLLECTIE KONINKLIJK INSTITUUT VOOR DE TROPEN, AMSTERDAM
Afdeling Museum

blad 1 van 3 zettel(s)

heshoekig houten schild, beschilderd met gestylde figuren
en behangen met besjes menschaar.

Inheemse naam: KLEBIT BOK (III, dl. 1, p. 108
(IX, pag. 263)

Materiaal: Hout, ijzer, haar, rotan en verfjes.

Vorm: zie hiernaast! (KOPIE VAN DE AFBEELDING VAN EEN
KAYAN-SCHILD, IN: H. LING RICH - THE
NATIVES OF SARAWAK AND BRITISH
NORTH BORNEO, VOL. II (1896), pag. 47)

heshoekig houten schild, van buiten convex met een
scherpe lengterichel van punt tot punt, van binnen concav

Afmetingen: LENGTE: 119 cm. DIKTE: 9 cm
MAX BREEDTE: 36 cm.

Literatuur: zie laatste blad van deze zettel!

Publicaties/Tentoonstellingen:

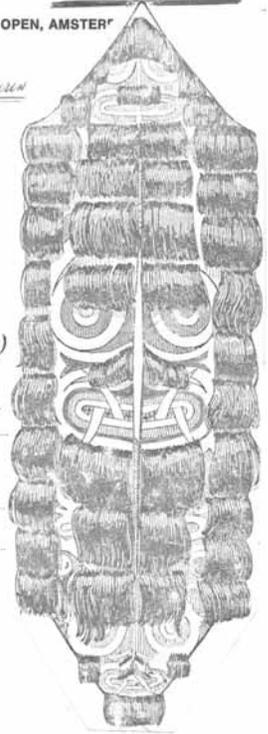
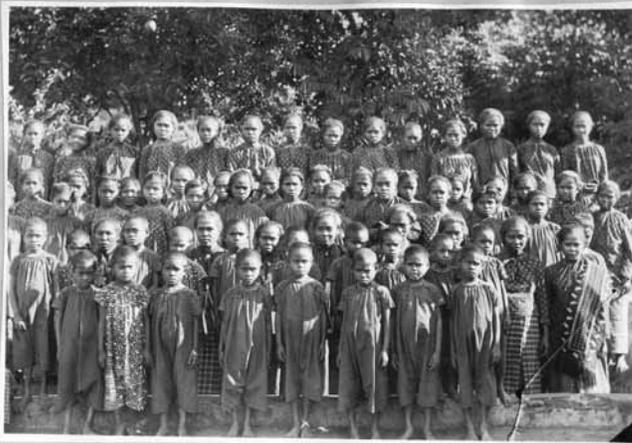


Fig. 3
TM 'zettel'

Fig. 4
UDC card photo collection

No.: 266.: 282. No. 51
Omschr.: Oost Flores en Soloreilanden. Groep meisjes van het R.R. Internaat der zusters te Iarantoeke.

00007505



Neg.: 6. 13x18.



Ak.A.I.V. Aerns-
bergen, J.J.

Dat. opn.:

Dat. onv.:

Cliché:

Bijzonderheden:

gebied nr.
hava 2.
oh.

	15				
DOCUMENTATIE	16	aard ref., auteur, titel, deel/jg, datum		neg. no.	
	17				

COLLECTIE KONINKLIJK INSTITUUT VOOR DE TROPEN, AMSTERDAM
Afdeling Museum

Kaart van	1	inventarisno. 3859-2	onderdelen	class. <i>II-3-6</i>	standplaats
IDENTIFICATIE	2	naam] Hoofddeksel	spec. naam		
	3	herkomst	Zuidoost-Azië, Indonesië, Kalimantan (eiland), Dayak (volk)		
	4	materiaal	Rotan		
	5	toestand	Gaaf		
	6	behandeling	uitvoerder	datum	bijzonderheden
	7	afmetingen (in cm)	i. 19,8 cm b.	h. 8,8 cm Ø	gewicht
VERWERVING	8	afkomstige schenking van de afkomstige			van de
		adres	Stadionweg 55		J.H.Spanjaard-de Boer
		plaats	Amsterdam		
		datum	24.11.1969		

Fig. 5
TM inventory card – front

	9	voorwaarden
	10	prijs verz. waarde datum
BESCHRIJVING	11	vorm Ovaal gevlochten rotan mutsje.
	12	inscriptie transcriptie, methode, positie
	13	compleetheid afwijking toevoeging wijziging
/ERVAARDIGING	14	methode/rol verv., persoon, plaats, datum Handwerk. Gevlochten in banen van vier of vijf.
	14	
SSOCIATIE	15	aard, persoon, plaats, datum, gebeurtenis Hoofddekseel. Vechtpetje. Vgl. ook 3572-71.

Fig. 6
TM inventory card – back

and slides. Although these images do not meet today's requirements, they suffice for the identification of the objects. The greater part of these images have been digitised by an external company and subsequently linked to the objects in TMS. Because of this, some of the physical descriptions of the object (for example, form and colour) did not have to be transferred onto the computer. In 1992, a manual was compiled containing instructions on how to enter the registration of photographic collections.¹³ This manual was intended for filling in the inventory card or format (digital inventory card) for photographs and slides belonging to the Photo Bureau in preparation for the registration software that was due to be purchased.

Information and digital archiving plan

The Tropenmuseum committed an information plan to paper in 2006. However, there was much that preceded this. At the end of the nineteen eighties, consideration was given to the question of how to make the collection more accessible. This was the start of discussions regarding the possibility of digitising collections. The Head of Collections, Mr J.H. van Brakel, put this into words in his memorandum *'Aanzet tot een geautomatiseerde ontsluiting van de collecties van het Tropenmuseum'* (First step towards opening up the Tropenmuseum collections using computerisation). In the introduction, he wrote the following:

*"Both the Tropenmuseum and the Ministry of Welfare, Health and Cultural Affairs have gone for the policy of giving more attention to managing collections than in the past. In concrete terms, this means more emphasis on registration, conservation/restoration and documentation of the collection. As I will endeavour to clarify in this memorandum, the first step for the Tropenmuseum should be the computerisation of the data files. After all, having precise data at our disposal regarding such matters as how many objects we own and their condition, is a sine qua non for responsible policy choices with regard to acquisition and conservation/restoration. 'Computerisation' is taken here to mean 'the automated processing of information about the museum's collection for the benefit of collection management, public duties and scientific research'."*¹⁴

It is clear from this that people were thinking about digital archiving and already realised its importance from a very early stage. (Computers and collection digitisation in particular were still far from commonplace in 1990!) It would take another ten years before the actual implementation took place. In the same memorandum, the importance of digitally recording data was emphasised in the answer to the question 'Why computerisation?'

“Computerisation is important in order to achieve an improvement in the quality of the collection management, the public duties and the scientific research so as to optimally realise the objective of the museum as it was formulated in 1989, namely: As an anthropological museum centred on human beings and their cultures, the Tropenmuseum wants to inform the public and provide insight into:

- *the life of human beings in countries and regions in the tropics and subtropics and the changes that are taking place there.*
- *the relationship between the non-Western cultures and societies and the West, especially Dutch and European society.¹⁵”*

The objective of the museum has been adapted over the years, but the central focus on computerisation and digital archiving has remained unaltered.

In 1993, the following bottlenecks were listed and the following benefits given¹⁶:

- Repetition of actions is avoided. Shared data only have to be registered once.
- Restoration plans can be drawn up due to better insight into the physical state of the objects and/or the albums. The collection is more under control. The objects and photographs themselves no longer function as ‘an information system’, which offers great advantages from a conservation point of view.
- Better insight into the composition of the collections and possible deficiencies enables a more focused acquisition policy and disposal policy is possible.
- The collection is more accessible. The number of search options is greater. Questions can be answered more quickly and more adequately.
- Support activities can be implemented more efficiently. Knowledge about objects and photographs is better preserved for the future. More information about the way in which tasks are carried out (management information) can be accessed more easily.

In 1999, the objective of implementing the computerisation of collection data was formulated as follows: “The system is, in the first instance, intended for internal use, namely:

- Providing support for preservation and management (basic registration, location management, loans, acquisition data, the state of preservation, etc.).
- Providing support for scientific research and developing exhibitions.¹⁷”

This sums up the main motives for digital archiving. These are to be found again, years later, in the collection memorandum and the information plan of the Tropenmuseum. The 2006 information plan¹⁸ states that the provision of information was a core part of museum operations in the period 2003-2007. On the one hand, digitisation of information about the collection means an enormous increase in the search options for the collection, the handling options in conjunction with the location registration, and the ability to keep track of the condition of the objects and monitor their presence. In addition, endless new options are being offered for the

creation of new associations, breaking through existing category classifications, and for the broadening of access to information about the collection and with that, the mobility of the collection. On the other hand, making collection data accessible via the computer and Internet means that the existing information must be assessed, privacy problems solved such as author copyright and imagery copyright, stereotype perception discussed and methodological questions raised with regard to the relation between object and representation. In the digital archiving plan of 2006¹⁹, a translation at the operational level was given of the information plan, namely, in what way, at what speed, and according to what quality criteria should the institute's collection be digitally registered, documented, given digital image material and made digitally accessible. This digital archiving plan laid down the preconditions and the operational rules for IT management within the Tropenmuseum. In the collection memorandum for 2008-2012 the collection digital archiving again constitutes an important part of the planned work. This is formulated as follows: "the approach to digitising... means enriching and expanding the descriptions in the quality handbook of the processes, procedures, tasks and responsibilities of all employees researching the collection and making it accessible. It is very important that the method is properly embedded in the organisation". Digital archiving is thus explicitly included in the Tropenmuseum policy.

Project coordination

The digital archiving process in the Tropenmuseum is the result of 20 years of considering digitising and 10 years of actual digitisation. As has already been mentioned, in the nineteen eighties the Collections Manager of the Tropenmuseum took the initiative to register and document the collection in preparation for computerisation. The Tropenmuseum was already fully aware of the importance of computerisation and digital archiving in the nineteen nineties. After an introductory period of several years, the Head of Collections was released from his duties for a period of four years (2000-2003) to assume the position of Computerisation Project Manager. Thus this project manager was in charge of implementing the digital archiving process from the beginning. While the registration and documentation system 'The Museum System' (TMS), introduced in the Tropenmuseum in 2000, was being implemented, it was also integrated into the activities of the museum employees step by step. The project manager was supported in this process by the TMS application administrator who was responsible for the practical side of the implementation. The project manager also had a secretary and two data entry operators at his disposal. In 2004, the entire project was incorporated in the Collections Department. Thus it was the Collections Department employees who carried out the digital archiving and were responsible for it. Over the years, more and more departments at the Tropenmuseum became involved in the digital archiving

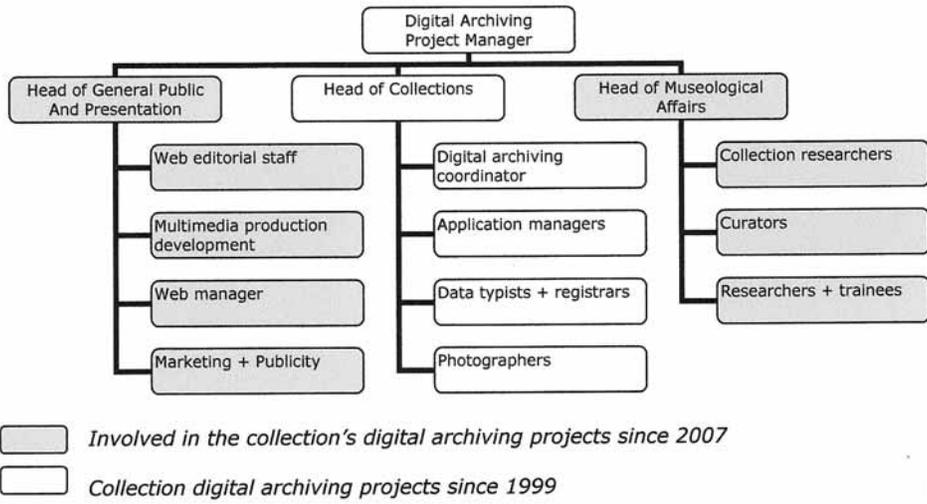


Fig. 7
Organisational chart of digital archiving projects at the Tropenmuseum, 1999-2007

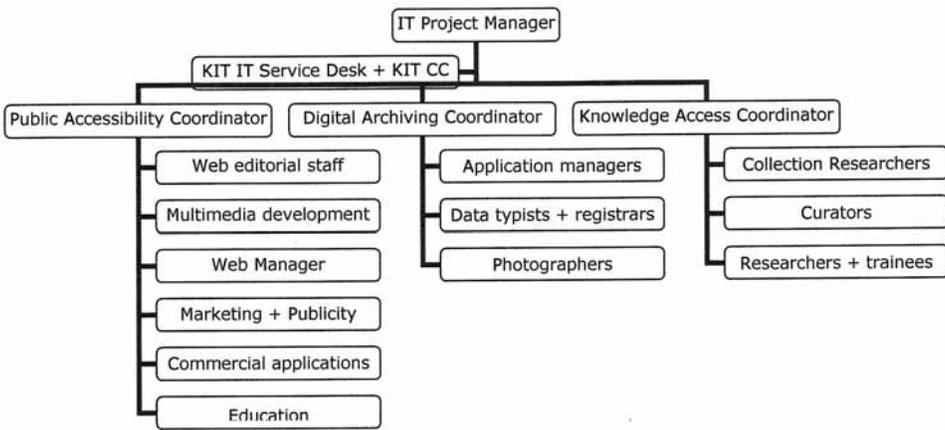


Fig. 8
Organisational chart of IT activities at the Tropenmuseum, June 2008

process, which meant that the project moved from the Collections Department to being a museum-wide project (see fig. 7). At the beginning of 2008, an IT committee was established; this formulates the policy in the field of IT and digital archiving and discusses new projects. If major decisions need to be taken, they will be submitted to the steering committee of the Tropenmuseum, the *Dagelijks Hoofden Overleg* (DHO) [Daily Managers Meeting]. The IT Project Manager chairs the IT committee, which also includes the coordinators responsible for knowledge accessibility, collection digitisation and public accessibility. The coordinators represent the employees of various different departments (see fig. 8). Ideas for new projects are put forward by the various consultative bodies within the departments, and they also collect up questions and problems. After the projects have been

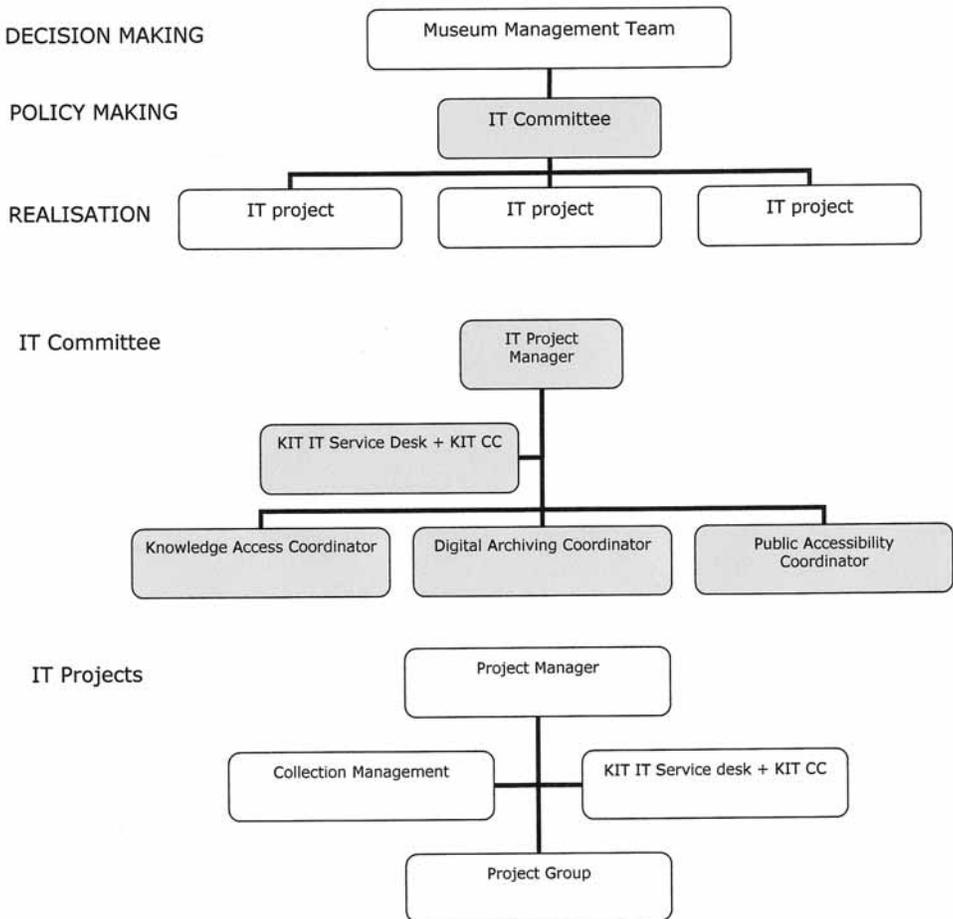


Fig. 9
Process for IT projects at the Tropenmuseum, 2008

approved, they are executed by the relevant project groups. (see fig. 9). In addition, work is being done within the museum on developing the details of the IT policy and making sure it fits in with the other departments of the Royal Tropical Institute. The Tropenmuseum TMS application administrator has been keeping a Quality Handbook right from the start of the digital archiving process. The handbook is used as a basis for all activities in which digital archiving plays a role: collection management, research and applications for the general public. The various sections of the Handbook have been developed and put together with the help of people in the workplace and based on their demands. This so-called bottom-up principle ensures that new working methods are more easily accepted and more likely to be applied. The Quality Handbook is constantly changing and is updated a number of times each year. As of 2008, work is being done on compiling a completely revised version of the Handbook. The procedures as described in the old version are further specified on the basis of the Spectrum Standard for Museum Documentation. A clear distinction is made between procedures, work instructions and software and other manuals.

Target groups

The following external target groups are mentioned in the information plan of the Tropenmuseum for the four core tasks (Building up museological capacity in developing countries, Creating, preserving and managing collections, Strengthening the international position through exhibitions, Information and education)²⁰:

- Professional heritage sector in ODA countries²¹, international academics, policy makers.
- Professional heritage sector in ODA/non-ODA countries; international/national academics.
- The Tropenmuseum's public, national and international professional heritage sector; national and international policymakers and academics.
- The Tropenmuseum's public, the education sector, policymakers and academics.

In addition, the Tropenmuseum has formulated a number of internal target groups for the digital provision of information:

- Spectators: employees who only look up information about the collection but do not add new information. To be found in all departments of the Tropenmuseum.
- Registrars: look after data entry concerning the collections, people and institutions, exhibitions etc.; they work in the Collections Department.
- Collections researchers and curators: look after the provision and/or entry of background information regarding collections, consult the digital information for research purposes and answer external queries; they work in the department of Museological Affairs.

- Employees in the General Public and Presentation Department: use digital information for making applications for the general public. The digital results of the applications for the general public (texts, multimedia publications, leaflet material etc.) are delivered/entered by this group; they work in the General Public and Presentation Department.
- Collection Management employees: record conservation activities such as location registration, surveys and loans; they work in the Collections Department.
- Photographers: deliver image materials; they work in the Collections Department.
- Employees of the corporate photographic archive: archive and document the KIT corporate photographic archive; they work in the KIT Department of Corporate Communication
- Trainees and interns: various activities.
- Employees of Tropenmuseum Junior: registration and documentation of the TMJ collection; they work in the TMJ Department.
- Education employees: they look up information about the collection for educational purposes; they work in the General Public and Presentation Department and the Junior Department of the Tropenmuseum.
- Employees of the KIT Central Library: they look up information about the collection as well as the Tropenmuseum's collection of books: employed by the KIT Information and Library Services Department.

The various target groups have their own rights and obligations with regard to digital archiving. In addition, there are various applications available for specific purposes. The accompanying procedures have been laid down in the Tropenmuseum's Quality Handbook.²²

Culture switch

In the Tropenmuseum, the digital archiving process has mainly been the concern of the Collections Department as the first stage of the digital archiving process consisted of recording the collection registration. Thus all the employees of the Collections Department had to register their work (new acquisitions, collection registration, location registration, image registration) in the computer. For some, this was a major culture switch. Not only were they expected to adopt a different way of working, they also had to change their way of thinking. A method of working was required that was structured and procedural. In addition, the activities had to be coordinated to a greater extent. As staff eventually saw the advantage of working in this way, it was possible for them to implement the 'digital activities'.

The intention was that the collections researchers would continue their manual documentation activities in digital form and the curators would be encouraged by them to record their knowledge in TMS. However, this hardly happened. Fear of computers was one of the reasons that the collections researchers and curators failed

to keep up in the digital archiving process. Sadly, a number of people have still not conquered this fear. Another reason was the order of priority given to activities. The remaining collections researchers were given extra tasks and the curators are mainly engaged in research, organising exhibitions and international activities. Documenting the collection is liable to suffer because of this. When research is carried out on a collection, the information that has been accumulated is used exclusively for the purpose of the research objective – a publication or an exhibition for instance. Very little of the acquired knowledge is made digitally available which means that a great deal of knowledge and expertise is lost. For this reason, the culture switch from manually documenting to digitally recording knowledge about the collection has not yet been realised to its full potential.

The General Public and Presentation Department actively uses the digital information in TMS. They consult the database for information about the collection and digital images, and they provide information and digital files to be stored in TMS. They use the system as an information source for research into collections for use in exhibitions.

The culture switch has been successful in the area of public accessibility. The museum has changed from being a closed to an open and transparent knowledge centre. Half of the collection can be accessed via the Tropenmuseum website and the whole collection via the professional site. Most of the questions about the collection that are posed by the general public can be dealt with using the digitally recorded information. Manually searching for information in one of the card systems or archives is now a thing of the past.

4 Digital archiving projects at the Tropenmuseum

Selection

In the nineteen nineties, during the initial phase of the digital archiving project, a practical selection of objects was made. The decision was made to describe and digitise part of the Africa collection. Within the SVCN, Africa would be the first to be compiled for the geographical origins facet of the thesaurus. Subsequently, one by one, important sub-collections were selected for digital archiving. The selection took place on the basis of the museological importance of the collections. The collections in category A were given priority for digital archiving.

The Tropenmuseum collections are divided into three categories (A, B and C¹) in accordance with the existing museological guidelines. Category A concerns core collections that are essential, crucial and irreplaceable. The B collections are important for the collection as a whole. Category C concerns objects that do not meet the criteria for A or B. These collections do occupy an important position in the work of the museum as they can be considered for exchanges, loans or disposal. At the moment, the physical anthropology, China, Korea, North America and Europe collections can be found in category C. The unregistered natural history items from the former *Handelsmuseum* (Trade Museum) also fall under category C. The KIT's *houtkabinet* (Wood Collection) has already been disposed of.

The distinction between A and B collections is mostly in the photo collection. More than 100,000 objects assigned to the A category have now been selected from a total of 350,000 images. These objects have been digitised and are being registered and documented. The other objects fall in category B and will be made accessible at a later stage. If necessary, an object from category B can be promoted at any moment to category A (see appendix 4).

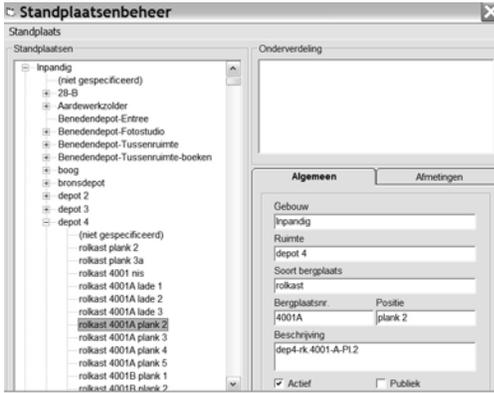


Fig. 10
Location management in TMS



Fig. 11
Barcode hanging label



Fig. 12
Barcode location stickers

Location registration

In 2003, the Tropenmuseum started on the implementation of the barcode system (see appendix 4). The barcodes on the labels mean that hand-held scanners can be used when carrying out location registration, location checking and digital photography. In addition, this system will make it possible in future to select objects for, among other things, exhibitions, loans, research and restoration. It will also be possible to automate condition reports and surveys. When all the objects have been labelled and scanned, a list can be made of objects that have not been found.

To be able to use the barcode system, the (object) locations should be tidied up in the locations module in TMS and made into a well-organised, hierarchical list of locations (see fig. 10). Subsequently, the labels should be printed for the objects concerned and then attached. A range of information is given on the labels: inventory number, barcode, title, thesaurus terms for geographical and cultural origin, department and sub-collection (see fig. 11). In addition, the location stickers (see fig. 12) can be printed and attached to the locations concerned. If both the objects and the location have a barcode, hand-held scanners can be used. In order to make a good start, Cit was called in to attach labels to objects during a number of projects that lasted several months. They also checked and registered the locations of these objects.

In future, depot employees will carry out this project. All objects that are handled immediately receive a barcode label. This applies in particular to new acquisitions, loans and objects that are selected for exhibitions. In addition, all objects that are already on loan or in an exhibition, receive a barcode label, which is kept till the object can be stored in the depot again. Once a barcode label has been made, the old location cards are no longer used. The location cards are sorted and kept according to inventory number. At the end of 2007, 80% of the tangible culture collection already had a barcode. Of the image collection, only 15% has a barcode.

In the period 2003 to 2005, a number of employees from Cit gave 100,000 objects barcode labels and locations. On average, the Cit employees can attach and scan 200 labels per person per day. 3% of the total number of labels could not be attached to their objects because they could not be found at the location indicated. This will have to be investigated by the depot management.

The labelling project by Cit was also intended to check the locations of the collection items in the depots (see appendix 4). In the past, location checks were never done systematically except when (parts of) the collections were moved. During the barcode projects, all problems from the last hundred years emerged. All the problem cases were looked into by depot employees and the location registration was corrected if necessary. The only way to be certain that the location registration is kept in order is to check the depots regularly. From 2008 onwards, the Tropenmuseum will check one depot thoroughly each year.

In 2005, a check was begun of the locations of the objects presented in the exhibitions in the museum. Manual location registration of parts of the exhibitions had not been carried out accurately. In addition, there was no record of the props that had been used. The lesson that had to be learned was that this registration should be put in order in the case of new exhibitions. In 2007, a project assistant from Cit was employed to check the locations of all objects presented in the museum and to make corrections as necessary.

Collection photography

Before starting the various photography projects, the Tropenmuseum determined what the digital images were going to be used for. The digital images are in the first instance meant for the identification of the object and can be viewed on a computer screen. The digital images can be used for multimedia applications, (collection) website, collection identification and registration, loans, insurance and hands-off research.

At the moment, there are a large number of file formats that can be used for various purposes, such as BMP, JPG, TIFF, DNG, PNG and GIF. Printers often ask for TIFF files of 300dpi². However, it is often the case that special demands are made with regard to image, for example in terms of perspective, background colour or a cut-out of a detail. (see appendix 4). This is very difficult to anticipate. For this reason, it is difficult to formulate demands beforehand that will suffice for all applications. An option is to keep the 'digital negative' or the original format of the photo as recorded by the camera, also called RAW. RAW is used by Canon and Nikon in particular. An advantage of this format is that it is relatively small compared to TIFF, while there is still the possibility to make a TIFF file from RAW without loss of quality. With RAW, the processes that are usually completed in the camera when the picture is taken are delayed. The photographer can determine the best settings for white balance, sharpness, colours and contrast afterwards. The RAW files should be saved in photo editing software so that they can be used in other applications. RAW can for example be saved as DNG (Digital Negative Specification) or as TIFF. RAW is supported by the new versions of Adobe Photoshop. The question is whether the original RAW file, which can only be opened in a photo editing program, should be saved or if the DNG or TIFF format should be chosen. The choice depends on the reason for keeping the large format. If the files have to be directly accessible, a file format should be chosen that is supported by the existing software. If the files are only used for viewing via a computer screen or when no great demands are made on the prints (max A4), the JPG format is then sufficient. JPG is at least ten times smaller than TIFF because of its compression method. The advantages are that less storage capacity is needed on the server and the files can be opened quickly. If the files are also saved at 300dpi and have a format of 800x600 or larger, then it is possible to zoom in several times and make very sharp prints at A4 size.³ Allowances should also be made where files are being made public. If images are shown on a website then there is the possibility that they will be (illegally) copied. To prevent this from happening, the files can be secured or only offered in a small format.

After the purpose of digital photography has been determined and a format for storage has been chosen, the next step is choosing a digital camera and the accompanying software. A digital single lens reflex camera of about 10 megapixels meets the requirements. It is important to purchase a good objective lens 28-70mm. The quality depends on the focal length: f2.8 is very good, the greater the f value,

the more inferior the lens. A macro-objective can be purchased for photographing small objects. In addition, a computer with a fast processor and a lot of RAM (2GB) and backup is needed for processing the files. If the camera is operated directly from the computer, software will be needed for importing the files and operating the camera. This software is usually delivered together with the camera. Moreover, it is advisable to acquire programs such as Adobe Photoshop CS3 (€1,000) and IrfanView (free) for editing the files. The total cost of a studio such as this will be in the region of €10,000. A camera that is ideal for collection photography that has to be at a high standard is the Nikon D300 (€2,000) or the Nikon 3 (€5,000) with a 28-80mm f2.8 (€700) and macro 60mm f2.8 (€1,000) Nikon objectives. An optimum photo studio including a camera, lamps, photography table and computer could easily cost €20,000. If the budget does not stretch that far, a simpler digital (single lens reflex) camera can be chosen, depending on the purpose for which the files are being made and the accompanying demands. The Tropenmuseum has two photo studios. The first is in the depot and is used for photographing tangible culture collections. The photos are intended for digital applications such as TMS and the website and are recorded in JPG. The second studio is specially equipped for making digital images for publications and other printed matter. In addition, the photo collections can be digitised here. The photo studio for publication photos and for digitising photo collections of the TM is equipped with a Nikon D2x (15 megapixel) camera, three scanners; an Imacon Flextight (from small images through to 4x5”), Nikon Coolscan (for 135 film negatives and colour slides) and HP Scanjet flatbed scanner (not professional), Bowens studio flashlights and a light box for digitising (glass) negatives, the Gepe Slim Lite 5000 Illuminator (5000 kelvin, standard light). The photo studio for image registration is equipped with a Nikon D1X camera and the software is also from Nikon: Nikon capture 2.0.1 in combination with Photoshop 6.0 and Photostation 4.5. The computer that is used is a run-of-the-mill multimedia PC.

The cost of digitising negatives, glass negatives and slides (see appendix 4) varies at the moment from €0.34 to €15.00 each. This depends on the company and the method. If there is a photographer employed by the museum who can do this work, then twenty images a day can be digitised on average (both the photography and the scanning). The number of objects photographed for image registration amounts to 40 a day on average. Photography for publication needs more time and attention. If there are objects that are all the same size and can stand (independently) on the photography table, then about 30 to 40 can be photographed per day, including computer processing. If there are textiles that have to be pinned down on cloth, the production will be 20 a day. Objects that stand or lie on the ground, such as a kris, clubs, spears, sculptures, furniture, can be recorded at 15 a day (see appendix 4).

The way in which the photo files are stored is of the utmost importance for accessibility and archiving. It is advisable to save all files on a server if possible. The advantage of this is that all network users have access (important: do not forget to establish rights and security) and that files can be included in the regular backup. If

TIFF files have been chosen, the speed of the network and the computers has to be taken into account. Opening large files can take a lot of time in some cases and slow down the network. It is also possible to save the files separately, for example on a file server, DISC Jukebox⁴ or an external disk. Costs, durability, and user-friendliness differ greatly. The Tropenmuseum has chosen to save small files (JPG) on a server that is especially equipped for TMS. In addition, all large files (TIFF, RAW, AV material) are saved on a DISC Jukebox with Blu-Ray disks. The backup of small files is carried out once every three months on an external disk which is kept in the photo collections depot. Backups of larger files are made in the jukebox on Blu-Ray disks and stored off site. As regards the website, copies of the files are stored on the server of the website. No backups are made as these are easily generated copies of the originals on the TMS server.

Collection registration

The Tropenmuseum has divided the digital archiving of the collection into four stages: basic registration, registration, validation and documentation. The employees have their own activities and responsibilities within the four stages. The project manager coordinates all activities and the applications manager looks after the practical support on the shop floor. The Tropenmuseum has chosen to implement the basic registration system for the whole collection first (in Excel/ODO). Subsequently, sub-collections were chosen for the import of registration fields, such as textiles, music instruments, South America, Indonesia and the Islamic area of culture. The selection of documentation is especially aimed at publications, exhibitions, new acquisitions and ongoing research.

With regard to the greater part of the collection, the basic registration (excluding measurements) has been imported into TMS via a conversion from old files. These old files were imported by data typists on the basis of the basic registration that was already present on location cards. The location history plus the basic registration was stated on these cards. By copying this data, it was possible to make large sections of the collection accessible quickly. From 2000 onwards, new acquisitions have been entered directly in TMS and given basic registration details. The responsibility for recording the basic registration of new acquisitions – not only the museological objects but also the props – is in the hands of the New Acquisitions Registrar. For incoming loans, the same process applies and this is executed by the Loans Registrar. Adding image registration is carried out via a different route. The basic registration takes approximately five to ten minutes if the data is readily to hand. This means that fifty to a hundred objects can be provided with the basic registration per day.

Registration in the Tropenmuseum includes checking the basic registration system and the entry of registration fields such as titles, thesaurus terms, measurements and dating. Specific input fields of various sub-collections have been described in the

quality handbook (see appendix 2). For the image collections, extra fields such as representation have been included. The retrospective input is done by means of the *'zettels'*. The information available on these cards is interpreted and converted to the registration fields concerned. This input is done by a registrar. The registered objects are checked by specialist collections researchers and curators. They check if the registrations are correct in terms of content. The technical check is done by the applications manager. This check ensures that all fields have been correctly completed and entered according to regulations. As soon as the objects have been checked, they are considered 'validated' and can be used for public applications such as exhibitions, publications and the Internet. The validation of the objects is done by means of sets of similar objects. The registrations are checked one by one or randomly depending on the quality of the available information on the *'zettels'* and the knowledge and skill of the registrar. Comments and remarks are passed on to the registrar and corrections are implemented. It has been agreed that all registrations will be validated as soon as possible and as a result they will shortly be accessible to the public. The registration of the new acquisitions is carried out by the new acquisitions registrar. The loans are registered by a registrar or by the loans registrar. The registration takes about ten to fifteen minutes. On average, a registrar at the Tropenmuseum is able to register 40 objects a day. If the data is not available on the *'zettels'*, the curator concerned is asked to provide the information or to enter it in TMS himself.

Thesauri

An important part of the object registration is allocating thesaurus terms. A thesaurus is a hierarchical list of terms, in which the terms have a significant meaning. The use of the thesaurus prevents typing errors and improves the possibilities for searching through the collection. A great deal of work has to be done before a thesaurus can be used. First of all, the means in which a thesaurus should be developed have to be determined. At the beginning of the nineteen nineties, the SVCN began developing the thesauri of cultural and geographical origin and the OVM categories (function and use). In 2006, the object keyword thesaurus, derived from the AAT (Art and Architecture Thesaurus) was eventually compiled. In the thesauri, only those terms that are applicable to the ethnological collections of the connected museums are included. Reaching a consensus between the seven connected museums about the terms to be included is a difficult process. Moreover, these are tasks that all museums have to carry out alongside their daily activities. It is therefore not surprising that it takes a great many years to develop a thesaurus. The SVCN thesauri are managed centrally by an employee of the SVCN in a thesaurus called 'The OVM thesaurus'. Special software has been developed for this, known as the Central Manager. Each museum can now add new terms to the TMS Thesaurus manager. All connected museums have a FTP application⁵ (Local Manager) at their disposal with which

private collection in a new cultural centre that was then being built. The first request resulted in an international research and exhibition project in which Surinamese partners were also involved (including the Surinaams Museum in Paramaribo); the second in long-term technical assistance in the establishment of a new museum. A project supporting the construction of a new storage facility in Suriname grew into a multi-faceted collaboration in which photo collections were digitised and the Tropenmuseum transferred its Sticusa collection to Suriname.⁶

In July 1993, the Getty Art History Information programme met with representatives of the Conference for Security and Cooperation in Europe and many other organisations such as ICOM, Unesco, Interpol and so on. The aim of this meeting was to discuss the role of documentation in the protection of cultural heritage and to explore the possibilities for defining international standards for a minimum level of documentation. In developing the standards, Getty not only spoke with museums but also with insurance companies, the art trade and law enforcement agencies. The result was the ObjectID checklist of nine norms, a description and a photograph. The ObjectID checklist was presented at a major conference in Amsterdam in May 1997. Representatives of developing countries were however conspicuously absent. One of the topics discussed at the conference was the computerisation of the ObjectID checklist. Getty, KIT, Tropenmuseum and the National Museum of Ethnology in Leiden followed up on this suggestion and staged a pilot project, with the support of the Netherlands Ministry of Foreign Affairs. This included the development of a software programme that was introduced in the National Museum of Mali and the Cham Museum in Vietnam. In December 1999, the Tropenmuseum was invited by the same Ministry to formulate two cultural programmes for a number of national museums in developing countries. One of the programmes formulated was the improvement of the ObjectID software and the identification of 14 museums in developing countries to receive the ObjectID software. In general, most museums responded positively to the ObjectID software, although there were some setbacks and problems to overcome. During the first visit, a Tropenmuseum curator and a KIT IT expert delivered hardware (computer, scanner, and camera) and introduced the ObjectID software. Although the ObjectID software had been designed to protect cultural property against theft and illicit trade, many of the museums also wanted to use it as a tool for collection management. The software was however not suitable for this purpose. At that point in time, most museum organisations were not yet ready for a complicated computer programme either. It is not only a question of implementing a programme, a computer and Internet; it demands a totally different organisation. These initial implementation and training sessions were followed by a second phase comprising a five-day monitoring session and the installation of a software update. The improved software was more convenient and free of most bugs. The update contained an additional window, requested by various museums for collection documentation, and eleven fields for information about acquisition and the actual location of objects. In hindsight we

could ask ourselves the question if it was a wise move to add new fields. Although it was in response to a request from the participants, it did complicate matters because it was not what ObjectID was meant for. A second update to the programme was sent to the participating museums in July 2003. In 2005, Tropenmuseum staff discussed the prospects of the ObjectID software. At that time we had more or less lost contact with the 14 museums. In the meantime other software packages had been released, some even for free. We thought it was not correct to implement only the ObjectID software while other programmes might be more suitable in some cases. Furthermore, after the implementation we are not able to play the role of helpdesk for ever after. The museum is also not equipped to continue bringing out updates. The museum staff considered the option of discontinuing the ObjectID software altogether. At this point the head of the Curators' Department, Head of the Collection Department and the ObjectID project leader discussed the matter with ICOM in Paris. The outcome of this discussion was that we would not abandon the ObjectID software, because there still was the need for a simple and cheap software package for the protection of cultural heritage including some basic collection management fields. It was decided that the Tropenmuseum (together with the software company Furore) would make a final update of ObjectID which would also offer the option of downloading the programme for free from the Internet, preferably via the website of ICOM.⁷

The Tropenmuseum decided in 2005 to evaluate the ObjectID project by visiting a selection of the participating museums. In total 8 museums participated and 6 museums were visited in April and May 2006. The other museums will be asked to fill out a questionnaire. The main goal of the evaluation was to determine if the participating museums want to continue the ObjectID project. We also conducted the evaluation for internal use, mainly to improve future projects. The Tropenmuseum developed a questionnaire with questions about the museum in general, hardware and software, the basis for the ObjectID project, working with ObjectID, the implementation by Tropenmuseum and the future of ObjectID. The main evaluation points were:

- Is the ObjectID software still being used? If so, what for?
- To what extent is ObjectID integrated into museum staff members' everyday work?
- What (structural) costs are associated with the use and upkeep of ObjectID and how are these financed?
- How many objects have been entered, how many are illustrated digitally, and how much time has been spent on this?
- Is ObjectID used for reporting missing items? If so, how often?
- What would users like to see in the future? Is ObjectID in keeping with the museum's (future) requirements, or is a switch to some other software package desirable?

- Does ObjectID fulfil the declared objective of “realising an internationally accessible, efficient and automated information system that encompasses man’s cultural heritage, intended to put an end to illegal trade worldwide. The system enables customs officers to determine whether objects in transit are being transferred illegally and it enables forensic services to identify the object.”

The results of the evaluations produced five main issues that are important for the future of the ObjectID project and software:

1 Collection registration

The software was designed to enter information about valuable objects that can be stolen easily. Some museums have made a selection of objects to enter in the programme, others just randomly choose objects. The ObjectID software is still in use at two of the eight museums. The National Museum of Ethiopia entered 10,000 objects, but the data was lost after an update. They started entering the data from scratch. Now they have entered 455 objects. The National Museum of Mali entered 3,668 objects during the last 6 years and are still entering data gradually. Three museums (Tanzania and Vietnam’s Cham Museum and History Museum) entered some objects in the first years of the project, but are not using the programme actively nowadays, due to a lack of time. Three museums (Ghana, Vietnam Museum of Ethnology and Zambia) did actually terminate the use of ObjectID.

2 Technical difficulties

Many museums suffered technical difficulties. In some cases hardware broke down or the ObjectID software did not work properly. A couple of museums lost data and images after installing updates. Another issue is the replacement of hardware. Replacement has to be paid by the museum. No technical manual was available and support by mail and phone from KIT has not been successful in many cases.

3 Language

Some museums such as the Vietnamese museums find it very difficult to enter data in English, one of the languages provided. They would prefer to enter the data in Vietnamese and translate the information if necessary (for example in case of theft).

4 Theft reports

None of the eight museums ever used ObjectID to report a theft. In some museums no objects were stolen the past 6 years. But in other cases objects were stolen and reported to the authorities in the ‘old-fashioned’ way, using the paper documentation.

5 Support

One of the most important issues is the support of the implementation of the software in the workflow. It is very difficult for an organisation to integrate a (new) software package in everyday work. A training course of two weeks was not sufficient and neither was the support by e-mail. More support and a implementation project on the long term will be necessary in future projects.

The pyramid of capacity building (C. Potter and R. Brough, *Systemic capacity building: a hierarchy of needs*, Oxford, 2004) may be very helpful. A key issue is the training of staff who can further train other staff and who can coordinate the ongoing digitalisation processes.

The Tropenmuseum and the software company Furore have developed an update to the ObjectID software. The new version will be released under a new name, Object Identification and Registration (OIR), and will be accompanied by a technical and user manual. One of the changes is that the ObjectID categories are recognisable by the white background of the input field. The non-ObjectID fields are grey and not mandatory. The other major change is the addition of 6 new fields that can be renamed by the individual museum. To make OIR a success it is mandatory to make a selection of the most valuable objects. Entering these objects should be prioritised. It is also important to mention the capability of transferring data from OIR to other software packages in future. A museum can start using OIR and switch to a collection management system later on. As mentioned before, an implementation project supported by external or internal staff is mandatory to guarantee the continuation of the digital archiving project and of the OIR software too. Although some museums would clearly like to have a collection management tool, we think a second lifecycle is possible for the ObjectID software. The ObjectID software is well known and some firms even use the name of ObjectID to promote their own software. The OIR software will still be a great help in the protection of cultural heritage. It still fulfils the need of a digitised version of the ObjectID categories. The Tropenmuseum will continue to implement the OIR software on demand. However we also have developed a questionnaire to help us to assess the needs and possibilities of any museum that wants to implement a computerised system such as a collection management system or a tool for the protection of cultural heritage. Our toolkit consists of multiple software programmes as well as ObjectID.

The following 17 museums in 14 different countries are linked to the project. The museums marked with an asterisk (*) are evaluation participants.

- Bangladesh, National Museum, Dhaka
- Benin, Historical Museum, Abomey
- Bolivia, Vice-Ministry of Culture, La Paz
- Burkina Faso, National Museum, Ouagadougou
- Egypt, Coptic Museum, Cairo
- Ethiopia, National Museum, Addis Ababa*
- Ghana, National Museum, Accra*
- India, Crafts Museum, New Delhi
- Mali, National Museum, Bamako*
- Mozambique, Nampula Museum, Nampula
- Sri Lanka, National Museum, Colombo

- Sri Lanka, Museum Polonnaruwa
- Tanzania, National Museum, Dar es Salaam*
- Vietnam, Cham Museum, Danang*
- Vietnam Museum of Ethnology, Hanoi*
- Vietnam History Museum, Hanoi*
- Zambia, Livingstone Museum, Livingstone*

5 Knowledge access at the Tropenmuseum

Digital knowledge access

The original objective of the Tropenmuseum was “to improve the quality of the collection management, the duties concerning the public and the scientific research”. This has been set in motion by the digital archiving of the collections. However, the digital archiving of the collection and image registration is only the first step towards the realisation of the final goal. The availability of digital information for the public and for research will only be at an optimum when the collections and activities of the museum are made digitally accessible. The (basic) registration is inadequate for this purpose. It is important that the collection documentation, contextual information about the collections, biographical data, intangible heritage and the history of the museum become digitally accessible. Until now, background information and research data are primarily used for projects such as exhibitions, publications and web applications. After completion of the project, part of the used data is recorded in TMS (see fig. 15). Due to this method of working, a lot of information is lost. In future, the research results will be registered directly in TMS and the research group can subsequently draw information from here. The research results concerned will also be directly accessible for other projects (see fig. 16).

The Tropenmuseum has not yet succeeded in fulfilling its desire to provide all new acquisitions and objects that are used in exhibitions, publications, multimedia productions and loans with information about the method of acquisition, pedigree and background (see appendix 2). This kind of information is only sparsely available in TMS.

It has emerged that making documentation accessible is no longer top of the employees' priority list. This means that a great deal of information is lost and there is not enough information about the collection available digitally for the public and researchers. One solution to this problem would be to appoint a Knowledge Access Coordinator who ensures that agreements made in the field of knowledge access are

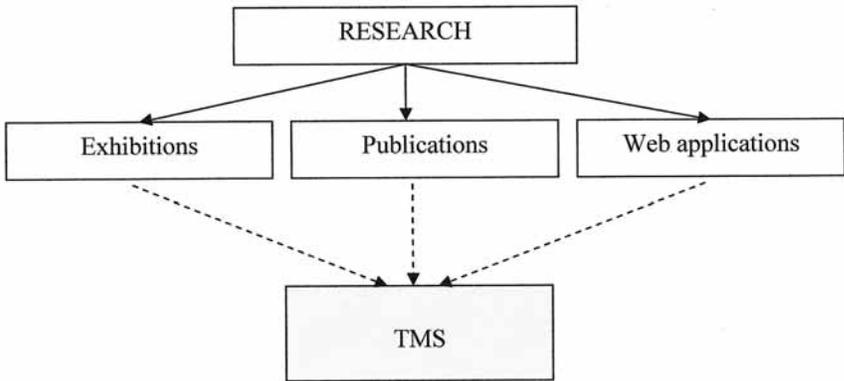


Fig. 15
Data flow of knowledge access for the Tropenmuseum collections

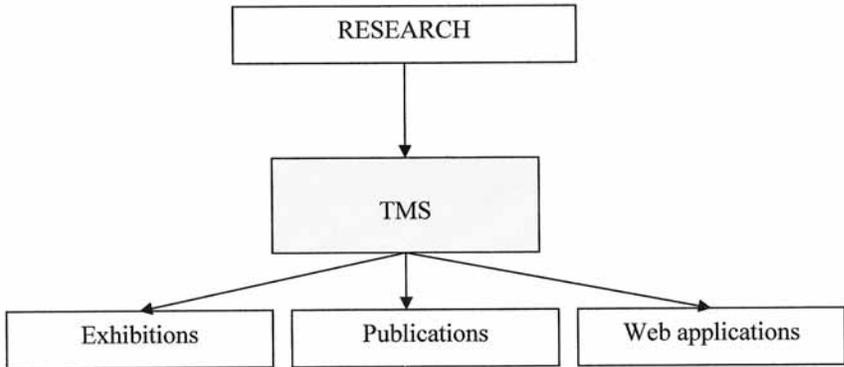


Fig. 16
New setup of the data flow of knowledge access for the Tropenmuseum collections

observed and who encourages the employees to digitally register the information present digitally. In addition, multidisciplinary digital archiving projects are being formulated of which the documentation is an important part. It is the intention to register the information in TMS directly so that project groups can use it. The object documentation cards can already be consulted digitally and serve as a historical source of the acquisition history and as supplementary information with every object. This makes it possible to carry out research into the way the museum viewed the collection over the past century.

The traditional method of documenting collections focuses on the object. With the digital archiving of the collection, the focus is no longer on separate objects. It is not about the 'text for each record' but about content, the relationship between records that form the story that we want to tell. All those stories originating from multiple cross-connections are written by the museum's scientific staff and by external experts.

These stories can be linked in TMS. Not only photos and texts for separate objects but also information about collectors and sub-collections are also directly accessible from the story or theme. Links can also be made to the photo collection, the card room or to the central library of the KIT.

A large number of key people and institutions have played a role in the history and in the accumulation of the museum's collection. The biographies of these constituents are a valuable addition to the collection documentation. The biographical details and the relationship with the Tropenmuseum and the collection are described with images and text. The relationship to the collection is illustrated with links and references. In addition, important events can be shown that have played a role in the development of the collections and the museum. Examples of this are expeditions to the Dutch East Indies and New Guinea. These exhibitions are described in the same way as the constituents, provided with visual material and linked to the collection object concerned.

In 2003, specialist literature present in the employees' library (the *Handboekerij*) in the museum was made digitally accessible in TMS. This took place after tidying up the existing book collection. Books that were out of date or books and magazines that were not essential for current museum policy were transferred to the central library of KIT. The specialist library can be consulted in TMS as a literature catalogue along with objects and photos. In the coming years, the book collection will be expanded with publications that fit in directly with the formulated collection and policy plans of the KIT Tropenmuseum. In addition to the more traditional subjects such as technology, tangible culture and art, more systematic attention will be paid to museology, active and passive conservation of the objects, cultural imagery, shared cultural heritage and individual and/or museological collection histories. This will also contribute to the strengthening of the research environment for third parties at the museum itself.

The Tropenmuseum is working on a digital archive in which all exhibitions within the Tropenmuseum are documented. At the moment, 350 exhibitions are registered according to exhibition name and date. The exhibitions since 2005 have been completely documented and past exhibitions are being retrospectively processed. All objects used in exhibitions are being made accessible in TMS. The collection documentation available in TMS can be copied directly from TMS and used for example as text for an exhibition. Subsequently, all documentation is archived straight after the opening of the exhibition. All new exhibitions are produced in TMS using TMS schedules. The TMS schedules are a completely different story. There is no ready-made solution for organising an exhibition in TMS. Nevertheless, there is a very extensive exhibition module available. This is however not suitable for organising an exhibition, but specifically for archiving it. The Tropenmuseum organises at least one major exhibition a year, plus a number of smaller ones. In the past, schedules were made in Excel. The drawback of Excel was that it was very labour-intensive and not available to everyone. All collection information was

copied from TMS to the Excel file. If the information was not available in TMS, it was entered directly in the Excel file instead of TMS. This meant that the data in TMS and Excel was not synchronised. To circumvent this problem, a method was developed that allows everyone at any given time to have the most up-to-date information at their disposal. All exhibited objects (collection, props, loans and exhibition material) are registered in TMS with their own numbers. The exhibition project group can then make sets with objects for each exhibition section or for each display case. These are called schedule working sets (object packages). These sets state in which display case which object will be shown. To get an overview of the objects in a certain section or display case of the exhibition, a report listing the objects concerned can be drawn up. Depending on the purpose of the report (survey, restoration, registration, research, layout), a specially designed report can be printed out. TMS generates the report in question, which contains collection information, exhibition requirements, exhibition locations and/or a digital image. All changes are processed directly in TMS and all information is accessible for everyone at any given time.

Other challenges are about making the objects available in an alternative manner. It is for example possible to make 3D photos so that the public can see an object from all angles. A similar project is the 'living book' by Stedman called *'reize naar Surinamen en door de binneste gedeelten van Guiana'* (Journey to Suriname and through the interior of Dutch Guyana). This book is from the collection of the central library of the KIT. All the pages of this book have been digitised and it is possible to leaf through the book by touching the screen. This application is already available in the Knowledge Centre and in the Suriname Museum in Paramaribo. This approach can be applied to all museological documents and to books that normally cannot be handled.

Applications for the general public

Since 2002, it has been possible to view a growing number of objects via the website of the Tropenmuseum¹ and the website of the SVCN.² In addition, a selection of the collection is thematically accessible through both websites and through multimedia productions in the exhibitions.

The Tropenmuseum collections are available digitally via the museum's collection site. As well as collection information, it is also possible to request data about people, institutions, exhibitions, literature and events. All described and validated objects with digital images can be found on the regular (public) website. At the end of 2007, there were more than 100,000 objects listed. Confidential information such as acquisition data is not available. The collection database is managed by the TMS Application Manager of the Collections Department at the TM. The data and digital images are copied by means of a 'filter' (Collection Connection software) to the

webserver, from where all the data on the websites is shown. The content of the data is checked by the curators and a web committee. The site is divided into two parts, the public site and the professional site. The professional part is only accessible with a password. The professional website is only intended for employees of (ethnological) museums and academics who are doing research into the collections of the Tropenmuseum. They have the opportunity to consult the whole collection from their own place of work or at home. The whole collection of the Tropenmuseum is shown on the professional website, including all the objects that have not yet been described and objects without a digital image. Confidential information is, of course, not shown on the professional website.

The Tropenmuseum regularly works together with other organisations that make collections digitally available on the Internet. For this purpose, data for a selection of digitised collection items is delivered to the website concerned. This may be a one-off dump of data, or an index³ that is periodically written to the webserver and used by the website concerned. The whole collection is shown on the SVCN site⁴. This has come about through an intensive cooperation between the Dutch ethnological museums. Examples of other websites are Asemus⁵, Virtual Museum Arabesk⁶ and Atlas of Mutual Heritage⁷. The way the data is managed depends on the project. The Tropenmuseum also works together with the website *'Het geheugen van Nederland'* (The memory of the Netherlands)⁸. The collection of photographs from New Guinea has been made accessible in this way and the image collection of the Netherlands Antilles and Aruba will be available at the end of 2008.

The wish to publish digitally has existed for some time within the Tropenmuseum. This has not yet been made concrete. The purpose of digital publishing is to offer contextual information by means of an electronic publication possibility. A search for a user-friendly application is ongoing. It must be possible for all employees to introduce changes and additions to the content. In a Content Management System, the content, design, and structure are kept separate from each other so that knowledge of HTML is no longer necessary to manage the website. The content can include text, image and sound. In addition, it should be possible to integrate content and change the layout itself. It should furthermore be possible to search the site as well as the collection, preferably in multiple databases simultaneously. Examples are the websites of the National Museum of Ethnology and the SVCN. The layout is still traditional but includes aspects of digital publishing such as the option of making footnotes and illustrations directly readable (through pop-ups).

To reach a broad public interested in ethnology as well as the professionals, the collection will have to be accessible in at least two languages. The process of making the collection and background information available in multilingual form will receive more attention next year. The aim is to make the website accessible in English with an English presentation title, dimensions and thesaurus fields. Summaries of specials can be offered in English if so desired.

Table 3 Available on the public site Collection Online (31-Dec-2007)*

Collection	Sub-collection	Number
(not entered)	(not entered)	77
Image collections	(not entered)	16
	Prints/drawings**	4,147
	Books	72
	FC	46,373
Tangible collections	Paintings	1,159
	(not entered)	36,352
	Archaeological items	3,158
	Physical anthropology	4
	Musical instruments	4,580
	Natural items	72
	Textiles	8,626
Total		104,636

* Validated objects with registration fields and image registration

** Including posters, documents, graphic art, picture postcards, drawings

Table 4 Links available on the public site Collection Online (31-Dec-2007)*

Link type	Linked objects	Linked to
Objects to literature	4,984	360 publications
Objects to exhibitions	20,806	92 exhibitions
Objects to events	3,901	44 events
Objects to People/institutions	79,630	7,031 people and institutions

The website of the Tropenmuseum and the accompanying collection website can be accessed in the Knowledge Centre of the museum (currently only accessible via the museum). The website can also be consulted via the Central Library of the KIT. In addition, a number of digital productions of exhibitions and specials are accessible. The management of computer applications is carried out by the helpdesk of the KIT, in collaboration with the Multimedia Productions developer at the Tropenmuseum and the TMS application manager. If necessary, new applications are developed by or in consultation with the Multimedia Productions developer of the Tropenmuseum and the TMS application manager. The following innovations are essential:

- Making the collection of '*Geluidsfragmenten*' (sound bites) that has been transferred to the Netherlands Institute for Sound and Vision digitally accessible via public computers.
- Collaboration with the Tropentheater, for digital accessibility of concert material.

- Making multimedia productions about the new permanent exhibition on Africa and India accessible.
- Follow-up to the 'living book', Indonesia theme via public computers and touch screens.
- Adding current world music and anthropological fragments of music to audio facilities.
- Audiovisual tour of important items of the exhibitions on monitors, in the Knowledge Centre as well as in the entrance hall and the restaurant.

Bottlenecks with regard to improvement of the information provision are mainly related to the way in which information is made accessible to the public. The website will have to be adapted in order to ensure documentation can easily be found. For this, a user-friendly, associative search engine will have to be found. This will be realised in the SenterNovem project '*Digitale Associatie*' (Digital Association). The user will have to be taken into account: what would the user like to see, and what kind of information is needed? Consumer research will have to be carried out for this.

Intangible heritage

In the Tropenmuseum, intangible heritage has been an inherent part of the collection management for a long time, even when it had not yet been given this name. However, there was almost no (digital) access to it. The information was primarily used for the projects concerned. UNESCO defines intangible heritage as "the practices, representations, expressions, knowledge, skills – as well as the objects, instruments, artefacts and cultural spaces associated therewith – that communities, groups, and in some cases individuals recognise as part of their cultural heritage".⁹ In a summary in concrete terms, this means epic stories, music, songs, dance, puppetry and theatre traditions, plus social practices, rituals, festivities, as well as traditional knowledge systems with regard to nature and the universe. With regard to the Tropenmuseum, the following building blocks are used:

- **Music, dance and intangible heritage**

The Tropenmuseum has a long tradition of ethno-museological field work that goes back to Jaap Kunst, reflected in important collections of instruments, puppets, masks and costumes. In addition, there is an almost completely digitised collection of music recordings by the NIBG that dates back to the nineteen twenties. The collection is now the core of the ethno-musicological archive of the NIBG. Music is linked to objects in TMS if and where relevant.

- **Epic stories, chronicles and documents**

The manuscript collection of the Tropenmuseum has a variety of stories, chronicles and documents that have been drawn and written on carriers ranging from rag paper to tree bark. They complement the puppets and the theatre costumes, which

also support the same stories. The priority is now on making these stories accessible in TMS and making cross-connections to the various carriers of these stories.

- **Traditional knowledge systems**

The fact that the museum was in the past embedded in the colonial policy applied by the Royal Tropical Institute and the development work they carried out has led to the museum having many collections that are connected to traditional knowledge systems relating to agriculture, industry and health. In this context, documenting the black and white photo collections in TMS has priority as well as connecting these to the tangible culture. Selecting the more recent collections of colour slides from developing countries and making them available digitally in TMS also has priority.

- **Reconstruction of collection contexts**

The museum wants to be complementary to the Central Library of the KIT in all aspects of the connection between tangible and intangible heritage. The documented history of the book and manuscript collections also has information about the context in which the museum collection was acquired. Internal discussions are being held about equivalent, relevant search capabilities for TMS and the library system CDS/ISIS.

- **Exhibition practice**

Preliminary field work with audio visual reporting as an integral element has often been done for exhibitions. As a result, there is an extensive photo, film and sound collection.¹⁰

In 2006, a start was made on testing the digital accessibility of the intangible heritage in TMS and on the website. Standards have been laid down in the quality handbook with regard to this. More detail is continuously being added to the procedures, norms and standards. For each exhibition or publication, a selection of the collection pieces used will be chosen for each theme, and the intangible aspects should also be made accessible. Making intangible cultural heritage accessible can be done entirely in TMS. Extra space on the server is necessary for storing the files. The Collections department acquired a special media server (DISC Jukebox) for this at the start of 2007 with a storage capacity of at least 5TB.¹¹

The Tropenmuseum has been awarded a subsidy in 2007 for the project *Digitale Associatie* (Digital Association). As part of that project, the Slavery theme has been used as the point of reference for making a limited selection of intangible heritage items accessible.¹²

SenterNovem Project: ‘Digital Association’

In 2007, the Tropenmuseum received a subsidy from the Dutch Ministry of Education, Cultural Affairs and Science (OC&W) for the project *Digitale Associatie* (Digital Association). Through the subsidy scheme *‘Digitaliseren met Beleid’*

(‘Supporting skilful digitisation’), the Ministry wants to embed the digital archiving process permanently in the organisations, policies, and working processes of cultural heritage institutions. The scheme started in 2006 and is being implemented by SenterNovem. The subsidy is intended for cultural institutions such as museums, (audiovisual) archives, institutions that are concerned with listed buildings, archaeology and (university) libraries. They have the task of managing and making their own heritage collections accessible. The aim of the scheme is to make the cultural heritage of the Netherlands more accessible, traceable and usable for everyone, both now and in the future! SenterNovem’s subsidy scheme *‘Digitaliseren met beleid’* will continue in 2008. The Dutch Ministry of Education, Cultural Affairs and Science has made the sum of four million euros available.

The Tropenmuseum development project has the working title *‘Digitale associatie: digitale ontsluiting van contextuele collectie-informatie en immaterieel erfgoed’* (Digital association: making contextual collection information and intangible heritage digitally accessible). The project began on 1 January 2008 and will be completed at the end of 2009. It involves not only all departments of the Tropenmuseum, but also ILS, the SVCN museums, the *Nationaal Instituut Nederlands Slavernij Verleden en Erfenis* (NINSEE,¹³ The National Institute for Dutch Slavery and its Legacy, *Stichting Surinaams Museum te Paramaribo*¹⁴ (Suriname Museum in Paramaribo) and the *Nationaal Archeologische en Antropologische Museum Curaçao*¹⁵ (National Archaeological and Anthropological Museum in Curaçao). With the help of a ‘digital scout’, users can process search tasks in an associative manner. It is possible for example to use the scout to make connections between everything that can be discovered and learned about heritage objects, together with people, stories, images and sound. In addition, the scout has interactive features such as asking and answering questions. The digital scout can also be used at exhibitions, in the Knowledge Centre, the Central Library and with educational products. In this way, the KIT hopes to build a bridge between itself as a knowledge centre and the public.

The software application to be developed should ensure that a digital scout can answer the questions of the visitor (to the museum, library, Knowledge Centre or website) at any given moment and provide contextual information and intangible aspects of the collection. On the one hand, it must be a powerful and intuitive search engine, and on the other it must be able to give suggestions about information associatively.

A digital scout is the answer for the presentation of the information. The scout has unlimited knowledge about the KIT and the collections. TMS and all other digitally available information can be used for this. Questions about objects, themes and the context of heritage collections can be put to the scout (‘demand’). The scout will offer extra information to the visitor (‘supply’). The digitally accessible intangible heritage (music, dance, theatre, oral traditions, and stories behind the collections) will be especially suitable for showing to the visitor in this way.

An example of associative searching is when the search term 'paramaribo' – the capital of Suriname – is used and subsequently all related, relevant themes are shown, such as sleeves (textiles), oil paintings (image collections), Saramacca (culture) or Nickeri (place). Users can see all the existing information in this way. All the items displayed are sorted according to the relevance as determined by the search enquiry. This allows people without prior knowledge of the heritage collection to search quickly and simply and explore data.

The associative suggestions can be very helpful for those who are interested in ethnology as they may discover information and collections that are not obvious. A special scout will visualise these associations for this group. The thematically accessible items will be available in Dutch and English, which means that the information is accessible for both Dutch and foreign web visitors. This will be interesting for visitors from the countries of origin of the collections in particular. School pupils will also be able to use the same search method with a specially adapted scout. The scout will lead the pupils to objects that have significant information for them. Professionals will be able to use the interface that is shown above. Using concepts and weighting them with sliders, it will be possible to conduct a precise search. It will be easy for them to discover cross-connections between the various collections in this way. As soon as other collections such as those of the KIT and SVCN are accessible via this method, it will be possible to view all the cross-connections within the collections.¹⁶

To load the digital scout with data, all contextual information and intangible heritage items will be digitised and documented by means of themes. Three types of material can be distinguished here, namely tangible heritage, intangible heritage and contextual information. Intangible material is music, dance, theatre and oral traditions. Tangible heritage includes image collections and tangible cultural collections. The contextual information can be divided into textual material and image material. Exhibitions, literature, biographies and events will be documented with texts. The image material includes photo, film, sound material and documents (see fig. 17). The themes will be registered and documented in TMS and it will subsequently be possible to connect them to various items such as people, institutions, literature, media files and collections. Here, the theme is the reference point for knowledge access (see fig. 18).

The 'slavery' theme will be worked out as a pilot for knowledge access. In total, 500 objects from the tangible heritage collections and 25 objects from intangible heritage will be made accessible.

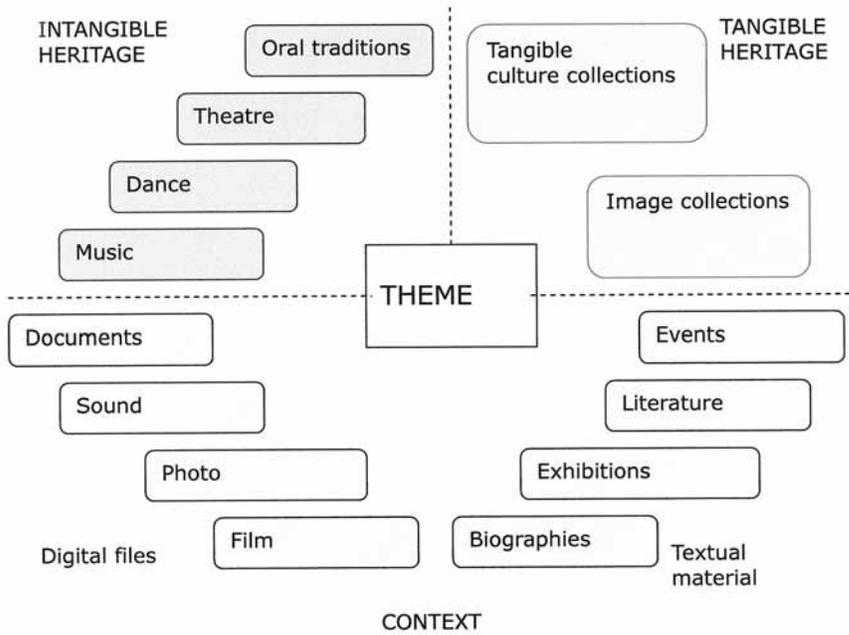


Fig. 17
Types of materials for knowledge access

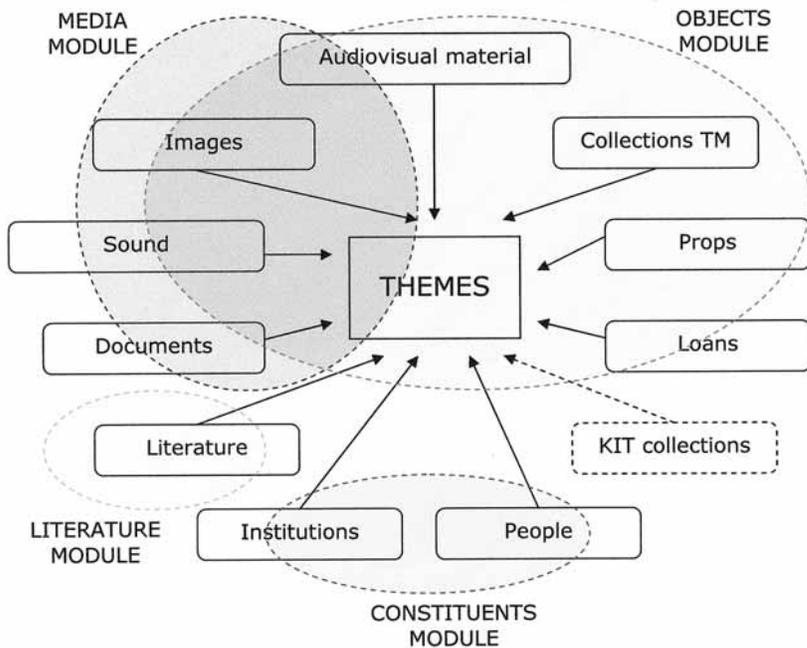


Fig. 18
Knowledge access through themes in TMS

6 An outsider's perspective

Trilce Navarrete

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), 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 Zamboni, 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.

Notes

Introduction

- 1 See glossary

Chapter 1

- 1 Haan, J. de, et al. *Bezoek onze site, over de digitalisering van het culturele aanbod*, Sociaal Planbureau, 2006, The Hague, pages 117-118.
- 2 <http://nl.wikipedia.org/wiki/Automatisering> dated 27-May-2008.
- 3 <http://nl.wikipedia.org/wiki/Digitalisering> dated 27-May-2008.
- 4 <http://nl.wikipedia.org/wiki/Ict> 27-May-2008.
- 5 Reekx Advies, ICT-gebruik in musea, 2008, p. 6.
- 6 Reekx Advies, ICT-gebruik in musea, 2008, p. A.
- 7 See <http://www.den.nl/>
- 8 See <http://www.den.nl/kennis/thema/informatieplan/>
- 9 See <http://www.senternovem.nl/digitaliserenmetbeleid/>
- 10 Wubs, H. and F. Huysmans, *Klik naar het verleden, een onderzoek naar gebruikers van digitaal erfgoed: hun profielen en zoekstrategieën*, Sociaal Planbureau, 2006, The Hague. pp. 82-84.
- 11 For selection criteria, see *'Deltaplan voor cultuurbehoud'*; section 'Plan van aanpak achterstanden musea', appendix 5. Ministerie van Welzijn, Volksgezondheid en Cultuur, Rijswijk, July 1990.

- 12 See <http://www.object-id.com>

- 13 See <http://www.mda.org.uk/spectrum.htm>

Chapter 2

- 1 Draft text for the *Collectienota 2008-2012* (Collection Memorandum 2008-2012), paragraph 1.1 "Brief history of the Tropenmuseum collections".
- 2 See <http://www.kit.nl/smartsite.shtml?ch=FAB&id=6115>
- 3 See <http://www.tropenmuseum.nl/smartsite.shtml?ch=FAB&id=5749>
- 4 For an explanation of the concepts, see Appendix 1, "Glossary".
- 5 The Tropenmuseum collections are divided according to the existing museological guidelines into categories A, B and C. Category A concerns the core collections, which are essential, indispensable and irreplaceable. See chapter 4, "Selection".
- 6 See <http://www.svcn.nl/nieuws.asp?identifier=272>
- 7 See <http://www.svcn.nl/nieuws.asp?identifier=160>
- 8 See <http://www.svcn.nl/nieuws.asp?identifier=519>
- 9 Brakel, J.H. van (1991) *Aanzet tot een geautomatiseerde ontsluiting van de collecties van het Tropenmuseum* [First step towards opening up the Tropenmuseum collections using computerisation]. Amsterdam: Tropenmuseum (unpublished), p. 4.
- 10 SVCN (1999) *Alles uit de kast* [Pulling out all the stops]. Request by the Foundation for

the Ethnological Collection of the Netherlands for support for an IT project in 1999 for the benefit of the cultural heritage, pp. 1-4.

Chapter 3

- 1 Brakel, J.H. van (1991) *Aanzet tot een geautomatiseerde ontsluiting van de collecties van het Tropenmuseum* [First step towards opening up the Tropenmuseum collections using computerisation]. Amsterdam: Tropenmuseum (unpublished), p. 4
- 2 Beerden, L. (1990) *Collectieautomatisering: de middelen* [Automation of collections: the resources]. Unpublished article.
- 3 Brakel, J.H. van (1991) *Aanzet tot een geautomatiseerde ontsluiting van de collecties van het Tropenmuseum* [First step towards opening up the Tropenmuseum collections using computerisation]. Amsterdam: Tropenmuseum (unpublished), p.4.
- 4 *Automatiseren in het Tropenmuseum* [Computerisation in the Tropenmuseum], KIT Personnel and Organisation, 15-Feb-1993, pp. 33-4, 9-11.
- 5 *Automatiseren in het Tropenmuseum* [Computerisation in the Tropenmuseum], KIT Personnel and Organisation, 15-Feb-1993, p. 7
- 6 Textinfo originated from the Benelux office of BRS Search Software Products and, since the beginning in 1994, has developed from a distributor of software to a supplier of solutions in the area of accessibility.
- 7 *'Alles uit de kast, verzoek van de Stichting Volkenkundig Collectie Nederland om ondersteuning voor een ICT project ten behoeve van het culturele erfgoed'* (Pulling out all the stops; a request by the SCVN for support for an IT project for the benefit of the cultural heritage) SVCN , 1999 (unpublished).
- 8 Implemented by CIT (<http://www.go2cit.nl>). Cit (Collections Information Technology) has been supporting cultural and non-cultural organizations for 10 years with the digital management and presentation of their collections.
- 9 See section on 'Target Groups'.

- 10 More on this subject in chapter 4.
- 11 See <http://www.mda.org.uk/>
- 12 See http://en.wikipedia.org/wiki/Universal_Decimal_Classification
- 13 *Invalinstructies fotoformat* [Instructions for filling in the photo format]. Tropenmuseum Amsterdam, version 2 B, 07-08-1992
- 14 Brakel, J.H. van (1991) *Aanzet tot een geautomatiseerde ontsluiting van de collecties van het Tropenmuseum* [First step towards opening up the Tropenmuseum collections using computerisation]. Amsterdam: Tropenmuseum (unpublished), p. 3.
- 15 Idem p. 11.
- 16 KIT (1993) *Personeel en organisatie, Automatisering in het Tropenmuseum* [Personnel and organisation; computerisation in the Tropenmuseum]. Unpublished, p. 4.
- 17 Brakel, J.H. van (1999) *Implementatie en planning automatisering collectiegegevens TROPENMUSEUM* [Implementing and planning the computerisation of the Tropenmuseum collection data]. Unpublished, p. 4.
- 18 Beumer, M. (2006) *Informatieplan Tropenmuseum* [Tropenmuseum information plan]. Unpublished, p. 10.
- 19 Beumer, M. (2006) *Digitaliseringsplan Tropenmuseum* [Tropenmuseum digital archiving plan]. Unpublished.
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- 21 ODA countries are countries designated for Official Development Aid.
- 22 See chapter 3.1.

Chapter 4

- 1 The Tropenmuseum follows the selection criteria stated in *'Deltaplan voor cultuurbehoud: Plan van aanpak achterstanden musea'* (Megaplan for cultural preservation – Action plan for the backlog at museums), appendix 5. Ministry of Welfare, Health and Cultural Affairs, Rijswijk, July 1990.
- 2 Dots per inch, which is the same as the number of pixels per inch.
- 3 Using a laser printer or an inkjet printer.
- 4 See <http://www.disc-nederland.nl>

- 5 File Transfer Protocol (FTP) is a protocol that makes the exchange of files between computers easier. It standardises a number of actions that often differ between control systems. http://en.wikipedia.org/wiki/File_Transfer_Protocol
- 6 *Collectienota 2008-2012* (Collection memorandum), section 2.5 'International Collaboration'.
- 7 See also <http://www.kit.nl/smartsite.shtml?ch=FAB&id=17876&ProjectID=15&RecordTitle=Object%20Identification>

Chapter 5

- 1 <http://www.tropenmuseum.nl>
- 2 <http://www.svcn.nl>
- 3 An index is a file, often in txt or html format, in which selected data from the database is copied. The web application draws information from the index.
- 4 <http://www.svcn.nl/index.asp>
- 5 <http://www.asemus.org/> and <http://masterpieces.asemus.museum/>
- 6 <http://www.museumarabesk.nl>
- 7 <http://www.atlasofmutualheritage.nl>
- 8 <http://www.geheugenvannederland.nl>
- 9 UNESCO Convention for protection of intangible cultural heritage, Paris, 19-Oct-2003. <http://www.unesco.org/culture/ich/doc/src/00009-NL-PDF.pdf>
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- 13 The NINSEE is concerned with the history of Dutch slavery and its legacy. See <http://www.ninsee.nl>
- 14 <http://www.surinaamsmuseum.net/>
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Appendix 1

Glossary

Asia-Europe Museum Network (ASEMUS)

ASEMUS is a cross-cultural network of collaboration of museums in the ASEM countries for the purposes of promoting wider mutual understanding between the peoples of Asia and Europe by means of collaborative programmes of museum-based cultural activity and by stimulating and facilitating the sharing and use of museum collections of mutual interest and knowledge about them.

<http://www.asemus.org/>

Atlas of Mutual Heritage (AMH)

The Atlas of Mutual Heritage (AMH) is an expanding digital academic catalogue of illustrations and data about settlements of the Dutch East & West Indian Company (VOC and WIC). The Atlas of Mutual Heritage is the result of intensive cooperation between the *Nationaal Archief*, RACM (*Rijksdienst voor de Monumentenzorg*) and the Rijksmuseum Amsterdam. Just recently, in the second phase of the project, the *Koninklijke Bibliotheek* also became a partner. The project was initiated by Martine Gosselink. She is also responsible for the academic research and project organisation.

<http://www.atlasofmutualheritage.nl/>

Automation (Use: computerisation) (Dutch: automatisering)

Automation (ancient Greek: = self dictated), roboticisation[1] or industrial automation or numerical control is the use of control systems such as computers to control industrial machinery and processes, replacing human operators.[2] In the scope of industrialisation, it is a step beyond mechanisation. Whereas mechanisation provided human operators with machinery to assist them with the physical requirements of work, automation greatly reduces the need for human sensory and mental requirements as well. Processes and systems can also be automated. In this document, the term *computerisation* has been preferred, as the process is not mechanical in nature.

<http://en.wikipedia.org/wiki/Automation>

Basic registration

The minimum standard for registering the collection. This is understood to include: collection number, acquisition data, measurements, origin, object location and image registration.

Cit

Cit is a young, growing company that wants to contribute to the digital archiving of cultural heritage and make this accessible to as large a public as possible. Cit strives towards a long-term relationship with its customers in which mutual respect and openness are the primary principles. Cit supplies an overall

package of advice, services and products geared to management and presentation of (museological) collections.

<http://www.go2cit.nl>

Collection memorandum (Dutch: *collectienota*)

Four-year plan for collection policy.

Computerisation (Dutch: *automatisering*)

See: Automation

Digitaal Erfgoed Nederland (DEN) (Digital Heritage Netherlands)

Digitaal Erfgoed Nederland (DEN) – or Digital Heritage Netherlands – is the Dutch national knowledge institute for IT and cultural heritage. Commissioned by the Dutch Ministry of Education, Cultural Affairs and Science, DEN collects and distributes knowledge about IT standards and practices in order to improve the quality of digital archiving and digital services. This allows DEN to support the cultural heritage sector in building a national Digital Heritage Collection in a professional, future-proof way that is oriented to the public. DEN maintains an IT register and project database, monitors how heritage institutions are actually using existing IT knowledge and organises events and meetings to share knowledge and stimulate innovation.

<http://www.den.nl/english/>

Digital archiving (Dutch: *Digitalisering*)

See: Digitisation

Digital archiving plan (Dutch: *digitaliseringsplan*)

The digital archiving plan goes back to the information plan and converts IT policy to an operational level: in which way, at which speed and according to which quality criteria is the collection of the institution digitally registered, documented, perhaps provided with digital imagery and made electronically available? The digital archiving plan sets down the preconditions and operational rules for IT management within an institution. It should therefore be formulated prior to the execution of IT projects and subprojects and should be kept meticulously up to date. The digital archiving plan defines the stages in which the material that is to be digitised and the accompanying documentation are selected and processed. It has, moreover, digital archiving guidelines and instructions for developing the stages into subprojects. The priorities in the digital archiving plan will often be determined on the basis of other policy documents, e.g. an exhibition plan, education plan, registration plan or collection plan.

<http://www.den.nl/kennis/thema/informatieplan/>

Digitisation (USE: Digital archiving (Dutch: *Digitalisering*))

Digital archiving or more generally digitisation is representing an object, image, document or signal (usually an analogue signal) by a discrete set of its points or samples. The result is called “digital representation” or, more specifically, a “digital image” for the object or “digital form” for the signal.

<http://en.wikipedia.org/wiki/Digitisation>

DNG

In digital photography, the Digital Negative (DNG) file format is a royalty-free RAW image format designed by Adobe Systems. Its specification was announced on 27 September, 2004. The same day, Adobe introduced Digital Negative to the market with its free Adobe DNG Converter program. According to Adobe, Digital Negative was a response to demand for a unifying camera raw file format. Digital Negative is based on the TIFF/EP format, and mandates use of metadata. All Adobe photo

manipulation software (such as Adobe Photoshop and Adobe Lightroom) released since the announcement supports DNG.

http://en.wikipedia.org/wiki/Digital_Negative (file format)

Documentation

Allocating background information to the collection, e.g. acquisition history, acknowledgements and associative information.

DPI

Dots per inch (DPI) is a measure of printing or display resolution, in particular the number of individual dots or pixels that can be produced within a linear one-inch (2.54 cm) space.

http://en.wikipedia.org/wiki/Dots_per_inch

*Durability plan (Dutch: *duurzaamheidsplan*)*

The durability plan is an indispensable part of the digital archiving plan. In the durability plan, the institution registers the strategy or strategies for achieving durable digital accessibility and knowledge about the collection. All institutions that are tackling the process of digitisation should be aware of the problematic nature of digital durability. How can durable accessibility to digital data be realised? To what extent can digital archiving contribute to the preservation of the physical collection? As part of determining a durability strategy, the institution should think about whether or not to set up a 'repository' where material can be stored in a durable way. Institutions not capable of durable information management must seek a solution with or in collaboration with a third party for the management and maintenance of the digitised material. At national level, these heritage issues are being studied by the *National Archief* (National Archives), the *Nederlands Instituut voor Beeld en Geluid* (Netherlands Institute for Sound and Vision), the *Koninklijke Bibliotheek* (National Library of the Netherlands) and Data Archiving and Networked Sciences (DANS).

<http://www.den.nl/kennis/thema/informatieplan/>

FTP

In computing, the File Transfer Protocol (FTP) is a network protocol used to transfer data from one computer to another through a network, such as over the Internet.

FTP is a file transfer protocol for exchanging files over any TCP/IP based network to manipulate files on another computer on that network, regardless of which operating systems are involved (if the computers permit FTP access). There are many existing FTP client and server programs. FTP servers can be set up anywhere between game servers, voice servers, Internet hosts, and other physical servers.

<http://en.wikipedia.org/wiki/Ftp>

Image registration

Analogue or digital registration of the physical appearance of an object. Recognisability is especially important here.

Information and Library Services (ILS)

KIT Information and Library services manage a very extensive collection of scientific and popular books, magazines and maps of developing countries. We also work together with partners in the South with regard to capacity development in the area of information technology, and information management. With regard to the subjects Gender, Women, Sexual and Reproductive Health and HIV/AIDS, we put information products together such as a series of books and the magazine *Exchange* about HIV/AIDS, sexuality and gender.

<http://www.kit.nl/smartsite.shtml?ch=FAB&id=1749>

Information policy plan (Dutch: informatieplan)

An institution lays down the IT policy with regard to its heritage collection(s) in the information policy plan. To make as much use as possible of the potential of information and communication technology, there must be a connection between the general institutional policy and the IT policy. The information policy plan makes this connection possible. The information policy plan shows how the specified IT goals are to be reached. The information policy plan also gives an insight into the extent to which the institution contributes to making cultural heritage accessible in collaborative arrangements at a cross-sector, local, regional, provincial, national or international level.

The information policy plan is adjusted on the basis of evaluations of completed projects and existing information services. The information policy plan is the point of reference for the digital archiving plan, the durability plan and projects yet to begin.

<http://www.den.nl/kennis/thema/informatieplan/>

IT (Dutch: ICT)

Information Technology – or information and communications technology (ICT) – is an umbrella term that includes all technologies for the communication of information. It encompasses: any medium to record information (whether paper, pen, magnetic disk / tape, optical disks – CD/DVD, flash memory etc. etc.) and also technology for broadcasting information – radio, television, any technology for communicating through voice and sound or images – microphone, camera, loudspeaker, telephone to cellular phones. At present, it is apparently culminating as information communication with the help of Personal Computers (PCs) networked through the Internet through information technology that can transfer information using satellite systems or intercontinental cables. Indeed, information technology (IT) has become a kind of a hub for communicating information, most often using computers. But, with an expanding fraction of human population getting empowered to share information, it may not continue to be so.

http://en.wikipedia.org/wiki/Information_Communication_technology

IWI

The main focus of the collections and other activities of the *Stichting Indisch Wetenschappelijk Instituut* [IWI] (Scientific Institute of the former Dutch East Indies) is the history of the population of the former Dutch East Indies.

<http://come.to/iwi>

JPG/JPEG

In computing, JPEG is a commonly used method of compression for photographic images. The degree of compression can be adjusted, allowing a selectable trade-off between storage size and image quality. JPEG typically achieves 10 to 1 compression with little perceivable loss in image quality. JPEG is the most common image format used by digital cameras and other photographic image capture devices, and is the most common format for storing and transmitting photographic images on the World Wide Web.

<http://en.wikipedia.org/wiki/Jpeg>

Memory of the Netherlands (Dutch: Het Geheugen van Nederland)

Memory of the Netherlands is a gigantic digital treasury, full of information about the Dutch past. Visitors to the Memory website have access to hundreds of thousands of superb images, recordings, film footage and texts that have been classified under some fifty digital collections. Together, they offer a unique and varied picture of the history and culture of the Netherlands.

http://www.geheugenvannederland.nl/?en/paginas/over_het_geheugen

Museum Documentation Association (MDA)

MDA's history stretches back to 1977, when it was formed as a limited company called the Museum Documentation Association. The organisation began life as the Information Retrieval Group of the Museums Association. Since then, we have developed into the United Kingdom's lead organisation for documentation and the management of information about museum collections. MDA is the United Kingdom's focus for standards and best practice in Collections Management. MDA provides advice, support and guidance to professionals and the general public to help them achieve the highest standards in the management of their collections. MDA's work in standards goes back over 30 years, and for the past 10 years we have been responsible for maintaining SPECTRUM, the UK and international Collections Management standard. MDA is also a registered charity, funded by a grant from the Museums, Libraries and Archives Council (MLA).

<http://www.mda.org.uk/>

National Archaeological Anthropological Museum (NAAM)

The National Archaeological Anthropological Museum Foundation was established in March 1998. The National Museum, as it is popularly known, evolved directly from a Netherlands Antilles governmental department for scientific research called the Archaeological Anthropological Institute of the Netherlands Antilles (AAINA). AAINA was established in 1966 to conduct archaeological and anthropological research on the islands of the Netherlands Antilles.

The National Museum benefits greatly from the results of more than 30 years of research on all the islands of the Netherlands Antilles. Collections under the management of the National Museum include numerous (pre-Columbian) archaeological artefacts as well as ethnographic objects from the late 19th century to the present.

A major part of our collection was brought together by professional researchers and scholars. Many an aficionado of our cultural heritage has also entrusted the National Museum with fine pieces that relate to our history.

<http://www.naam.an/>

The Netherlands Museums Association (NMV)

The Netherlands Museums Association (*Museumvereniging*) looks after the interest of the museum sector and acts as the representative organ for Dutch museums. The Museums Association is also active in encouraging museum visits and developing knowledge and skills for museum professionals. In addition, the Museums Association offers marketing support to museums and carries out a limited number of public programmes. The Museums Association also publishes the national museum card.

<http://www.museumvereniging.nl/>

NINSEE

The *Nationaal Instituut Nederlands Slavenij Verleden en Erfenis* is concerned with the history of Dutch slavery and its inheritance. The NINSEE is a centre of expertise. NINSEE'S mission is to develop and position itself as the national symbol of the history of Dutch slavery and the shared future of all Dutch men and women by bringing the history of Dutch slavery and the consequences for Dutch society into the open, nationally and internationally. This is done structurally and using various lines of approach. The goal of the institute is to strive towards the realisation of a thoughtful and realistic picture of the history of Dutch slavery and its legacy using various angles of approach so that the past and the legacy are faced, remembered, commemorated and accepted, with an eye on future generations as well.

<http://www.ninsee.nl/>

Object location registration

Registration, keeping track of and verifying locations where objects are.

RAW

A raw image file (sometimes written RAW image file [1]) contains minimally processed data from the image sensor of a digital camera or image scanner. Raw files are so named because they are not yet processed and ready to be used with a bitmap graphics editor or printed. Normally, the image will be processed by a raw converter in a wide-gamut internal colour space where precise adjustments can be made before conversion to an RGB file format such as TIFF or JPEG for storage, printing, or further manipulation. Raw image files are sometimes called digital negatives, as they fulfil the same role as film negatives in traditional chemical photography: that is, the negative is not directly usable as an image, but has all of the information needed to create an image. In addition to raw files from cameras, raw data from film scanners can also be referred to as digital negatives. Likewise, the process of converting a raw image file into a viewable format is sometimes called developing a raw image, by analogy with the film development. Like a photographic negative, a digital negative may have a wider dynamic range or colour gamut than the eventual final image format. The selection of the final choice of image rendering is part of the process of white balancing and colour grading.

http://en.wikipedia.org/wiki/Raw_image_format

Registration

Standard for recording collection information. As an addition to the *basic registration*, the following details are recorded: titles, indigenous names, object name, collection or subcollection, geographic and cultural origin, material, technique, function, use and depiction.

Royal Tropical Institute/Koninklijk Instituut voor de Tropen (KIT)

The Royal Tropical Institute (KIT) in Amsterdam is an independent centre of knowledge and expertise in the areas of international and intercultural cooperation, operating at the areas of intersection between theory and practice and between policy and implementation. The Institute contributes to sustainable development, poverty alleviation and cultural preservation and exchange. KIT operates internationally through development projects, scientific research and training, and also provides consultancy and information services. These activities, along with those of the Tropenmuseum, Tropentheater and publishing house that belong to it, are the Institute's means of bringing together people and organisations within the Netherlands and all around the world. The Institute is a non-profit organisation that works for both the public and the private sector in collaboration with partners in the Netherlands and abroad.

<http://kit.nl/>

SenterNovem – Digitaliseren met beleid (supporting skilful digitisation)

Through the subsidy scheme *Digitaliseren met beleid* (DMB), the Dutch Ministry of Education, Cultural Affairs and Science (OC&W) is aiming for durable embedding of the digital archiving process into organisation, policy and working processes of cultural heritage institutions. The scheme started in 2006 and is being implemented by SenterNovem. The goal of the scheme is to make the cultural heritage of the Netherlands more accessible, traceable and usable for everyone, now and in the future.

SenterNovem's subsidy scheme '*Digitaliseren met beleid*' will carry on in 2008. The Dutch Ministry of Education, Cultural Affairs and Science (OC&W) has made approx. 4 million euros available.

Stichting Surinaams Museum (SSM)

The Suriname Museum offers various permanent and temporary exhibitions of a cultural/historical nature. You will not only be able to gain an idea of Suriname's past, but also get a closer look at the

history of the fort itself. There is a 19th century pharmacy and an old-fashioned cobbler's workshop. Furthermore, various period rooms are arranged in the former officers' residences in the grounds, and a coin collection is to be set up shortly. The subjects of the temporary exhibitions vary from visual arts to cultures of the different ethnic communities of Suriname.

<http://www.surinaamsmuseum.net/>

SVCN

The *Stichting Volkenkundig Collectie Nederland* (SVCN) (Foundation for the Ethnological Collection of the Netherlands) is aiming to awaken the cultural heritage managed by the eight associated museums from its deep slumber by investing in IT as a medium for digital accessibility, presentation, documentation and education. This will greatly improve the information provision both internally and externally. With regard to the internal operational management of museums, it has as an added benefit the fact that activities such as collection administration, documentation and study are better supported. Because the documentation is presented on a common platform, the museums will also be able to make use of each others' collections and documentation in their presentation policy. Moreover, the common database will offer an insight into the compilation of the collections and will therefore contribute to the mutual acquisition policy of the ethnological museums. With this information policy, in addition to the mutual development of an ethnological thesaurus and a mutual acquisition fund, the SVCN is fleshing out the idea of a single ethnological collection in the Netherlands. The SVCN aims to present itself together with the digital catalogue of the *Volkenkundig Collectie Nederland* (Ethnological Catalogue of the Netherlands) and with digital productions about interesting sub-collections and/or subjects; the 'specials'.

The Museum System (TMS)

A collection management and presentation system. This is a specialised product aimed at a clearly defined market: museums (from large to small) with variable collections. It is possible to add images and sound in addition to text. Every object, article and additional detail can be entered in various sizes and from every angle with an unlimited number of images, video pictures and sounds. In addition, the system is multilingual and there are many handy search and help functions that are standard accessories of the system. Through CollectionConnection, collections or parts thereof can be made accessible worldwide via the Internet.

<http://www.go2cit.nl/>

Thesauri

A thesaurus is similar to a dictionary, but instead of definitions and pronunciations, it contains synonyms and antonyms. The first example of this genre, Roget's Thesaurus, was compiled in 1805 by Peter Roget, and published in 1852. Entries in Roget's Thesaurus are listed conceptually rather than alphabetically. Although including synonyms and antonyms, entries in a thesaurus should not be taken as a complete list of them. The entries are also designed for making distinctions between similar words and assisting in choosing exactly the right word. Unlike a dictionary, a thesaurus entry does not define words. In information technology, a thesaurus represents a database or list of semantically orthogonal topical search keys. In the field of Artificial Intelligence, a thesaurus may sometimes be referred to as an ontology. Thesaurus databases, created by international standards, are generally arranged hierarchically by themes and topics. Such a thesaurus places each term in context, allowing a user to distinguish between "bureau" (the office) and "bureau" (the piece of furniture). A thesaurus of this type is often used as the basis of an index for online material. The Art and Architecture Thesaurus, for example, is used to index the national databases of museums, Artefacts Canada, held by the Canadian Heritage Information Network (CHIN).

<http://en.wikipedia.org/wiki/Thesauri>

TIFF

Tagged Image File Format (abbreviated TIFF) is a file format for storing images, including photographs and line art. It is now under the control of Adobe Systems. Originally created by the company Aldus[1] for use with what was then called “desktop publishing”, the TIFF format is widely supported by image manipulation applications, by publishing and page layout applications, by scanning, faxing, word processing, optical character recognition and other applications.[2] Adobe Systems, which acquired Aldus, now holds the copyright to the TIFF specification. TIFF has not had a major update since 1992, though several Aldus/Adobe technical notes have been published with minor extensions to the format, and several specifications, including TIFF/EP, have been based on the TIFF 6.0 specification.
http://en.wikipedia.org/wiki/Tagged_Image_File_Format

Universele Decimale Classificatie (UDC)

The Universal Decimal Classification is a system of library classification developed by the Belgian bibliographers Paul Otlet and Henri la Fontaine at the end of the 19th century. It is based on the Dewey Decimal Classification, but uses auxiliary signs to indicate various special aspects of a subject and relationships between subjects. It thus contains a significant faceted or analytico-synthetic element, and is used especially in specialist libraries. UDC has been modified and extended over many years to cope with the increasing output in all disciplines of human knowledge, and is still under continuous review to take account of new developments.

The documents classified by UDC may be in any form. They will often be literature, i.e. written documents, but may also be in other media such as films, video and sound recordings, illustrations, maps, and realia such as museum pieces.

UDC classifications use Hindu-Arabic numerals and are based on the decimal system. Every number is thought of as a decimal fraction with the initial decimal point omitted, which determines filing order. For ease of reading, a UDC identifier is usually punctuated after every third digit. Thus, after 61 “Medical sciences” come the subdivisions 611 to 619; under 611 “Anatomy” come its subdivisions 611.1 to 611.9; under 611.1 come all of its subdivisions before 611.2 occurs, and so on; after 619 comes 620. An advantage of this system is that it is infinitely extensible, and when new subdivisions are introduced, they need not disturb the existing allocation of numbers.

http://en.wikipedia.org/wiki/Universal_Decimal_Classification

Validation

Approval of the registration by an expert.

The Virtual Collection of Masterpieces (VCM)

The Virtual Collection of Masterpieces is a project of ASEMUS – the Asia Europe Museum Network. The project uses the Internet and masterpieces in the collections of contributing museums to promote mutual understanding and appreciation between the peoples of Asia and Europe.

<http://masterpieces.asemus.museum/>

Virtueel Museum Arabesk

The *Virtueel Museum Ar@besk* is an initiative of *Stichting Ar@besk* (Foundation Ar@besk). Its objective is to highlight the culture of art in the Middle East in a positive way. The *Virtueel Museum* offers an overview of various historical masterpieces. The collection is carefully put together by connoisseurs of art.

<http://www.museumarabesk.nl/>

Appendix 2

Examples of input fields used by the Tropenmuseum

Basic registration

Material culture collections

Department
Description
Quote title
Correspondence number
Sub-collection
Inventory number
Object name
Object status
Old attribution
Reference number
SISN
Temporary number
Acquisition: bought by
Acquisition: donated by
Acquisition: given on loan by
Acquisition date
Former loan number
Method of acquisition

Photos, negatives and slides

Department
Dimensions: measurement label
Quote title
Sub-collection
Photography number
Inventory number
Object name
Object status
Parts: Repro-negative
Old collection number
Old negative number

Reference number
Object Type (collection category)
UDC
Acquisition: bought by
Acquisition: donated by
Acquisition: given on loan by
Acquisition date
Image form
Depiction
Method of acquisition

Registration

Material culture collections

Dimensions
Cultural origin
Date
Display Title
Geographical origin
Indigenous name
Material
Object name
Object keyword
OVM category (function and use)
Presentation title
Publication about the object
Technique
Exhibition history

Photos, negatives and slides

Dimensions of support
Dimensions of negative / photo / slide
Association

Date
Photography number
Registered by
Material
Object name
Parts: Repro-negative
Remarks
Old collection number
Old negative number
Presentation title
Reference number
Registration date
Signature
Technique
Allotted title
UDC
Depiction: Activity/OVM
Depiction: Culture
Depiction: Geography
Depiction: Material
Depiction: Object
Depiction: Religion
Depiction: iconography

Documentation

Association
Cultural origin
Date
Geographical origin
Indigenous name
Literature
Material
Media
Technique description
Unpublished documentation
Remarks
Remarks by the curator
OVM category (=function and use)
Persons and institutions: related to former collection (pedigree)
Persons and institutions: related to the object
Publication about the object
Information for the public
Connection objects
Technique
Text fields
Exhibition history
Related objects
Acquisition history
Depiction
Earlier attributions

Appendix 3

Overview of step-by-step digital archiving plan

Staffing

Project coordinator
Application manager
Network manager
Photographer
Data typist
Registrar
Collection researcher/curator
Depot employee

Activities

Quality handbook
Selection
Basic registration
Registration
Validation
Documentation
Location registration
Collection photography: image registration
Collection photography: digitising analogue image material
Collection photography: publications
Thesaurus development
Media management

Resources

Software

The Museum System (museum documentation software)
Crystal Reports (create/customise reports for TMS)
Photoshop (photo editing)
Access (for accessing main tables of TMS)
BarrApp (barcode application)

Hardware

Server
File server
Workstations
Backup system
Photo studio
Camera
Objectives
Studio lights
Photography table
Multimedia computer
Document scanner
Negative scanner
Barcode equipment
Handheld scanners
Cradle (read out and recharge)
Barcode printer

Appendix 4

Project examples

Selection from the IWI collection

Selection for digital archiving of images from the IWI album collection.

Anouk Mansfeld, collection researcher of the Tropenmuseum photo collection.

The *Indisch Wetenschappelijk Instituut* (IWI) in The Hague is where historic tangible and intangible cultural heritage of the Dutch East Indies is collected, kept and made more accessible. Here, a consistent combination of scientific and hands-on knowledge of people (of the former Dutch East Indies) who 'have been there', is used.

In 2005, the IWI management decided to transfer the photo collection to the Tropenmuseum because of a future merger with *Het Indisch Huis*. There were more than 550 photo albums from private donations and tens of thousands of postcards and individual photographs.

The IWI worked hard in the period April 2005/July 2006, in the first instance make the album collection accessible in TMS. The albums are mostly family albums and tell the story of the former Dutch East Indies; these stories give the photographs extra meaning. For this reason, all albums have been digitised and described as objects, the complete contents have been digitised and a selection of the contents has been registered. The selection criteria are simply founded on the importance that we attribute in this day and age to photos and photo collections; appreciation of history is a phenomenon that is difficult to fathom. Once every photograph has been digitised, a new selection can always be made.

In close consultation with the Tropenmuseum – the new owner and manager of the collection – the photo collection can be deemed to be part of the ethnological collection for the purpose of further registration. For this reason, the material is primarily valued for its documentary and informative properties and to a lesser extent for its artistic/historical and aesthetic value. The following selection criteria were used:

- Is the photo or collection regularly consulted by researchers and is it of (crucial) importance to a certain scientific area (practical value)?
- Is the photo or collection regularly reproduced, published or exhibited (practical value)?
- Is a photograph the only specimen from a series or does it form an essential link for the reconstruction of a series (chain value)?
- Does the photo or collection supply unique information about events, people, regions, objects, developments, institutes, industry sectors of exceptional national or international (cultural) historical importance, (symbolic value, documentation value)?
- Is the photo or photo collection part of a larger collection with different but likewise unique information about the same events (symbolic value, documentation value)?

- Has an (scientific) article been published about the photo or collection (practical value, documentation value)?
- Does the photo provide important or unique information about the history of photography and/or photographic technique (baseline value, linking value)?
- Does the photo or collection supply important or unique information about the identity, working method and/or the oeuvre of a photographer or other person (baseline value, chain value)?
- Does the photo or photo collection represent an important artistic movement and is it in this sense rare (baseline value, chain value)?
- Is the photo or collection part of a larger collection with different but likewise unique information about the same photographer, location, subject, event, technique, artistic movement etc. (baseline value, chain value)?
- Does the photo or photo collection originate from a period or region from which relatively few photo materials have been kept (baseline value, chain value)?
- Does the photo or the collection represent the work of a photographer, a technique or material of which few examples have been kept (baseline value, chain value)?

The standards have been used when determining the above-mentioned criteria were as described in a report by the Nederlands Foto Genootschap (Dutch Photo Association), *"FOTIOS criteria: selectiecriteria voor de waardering van fotocollecties"* (FOTIOS criteria: selection criteria for the evaluation of photo collections), Rotterdam 1996.

Barcodes

The use of barcodes is a prerequisite for good collection management

Frans Bridié, director of Cit

The employees of Cit are firmly convinced that the use of barcodes helps the traceability of collection items. What is more, they believe that "the use of barcodes is necessary for managing collections well".

During the registration project of the IWI photo collection, all photos were given a unique barcode. The object location also received a barcode. When the code is read in, the object can always be retraced. This is better than an 'object ID system' where the object is labelled but not its location. Cit tried this system for the first time in the *Rijksmuseum voor Volkenkunde* [RMV] (The National Museum for Ethnology). Subsequently, the Museon in The Hague, Musée Quai Branly in Paris and the Tropenmuseum (TM) followed. In the case of the RMV and the TM, the collection management system is pretty watertight, not only because the collection has been completely entered in TMS and has been barcoded, but also because the procedures for moving objects have been laid down properly and are meticulously followed. This can serve as an example for other museums.

How is the registration of objects and the introduction of barcodes carried out?

The basic principle is that an object belongs to the collection of a museum once it has been registered in the digital registration system of TMS. An object is photographed, given a title, described (with measurements and materials) and given a unique number. In the basic registration, the legal status and the origin are stated and the location determined. The object then subsequently receives a cardboard label with a barcode. A barcode is also attached to the location or nearby. The system is reliable as long as all objects and their locations have been scanned by a barcode reader.

This work is both boring and demanding at the same time. The person who is doing the scanning must be very precise and he or she must like this monotonous work. The work can be done by various types of people with a high or low education, young or old. A condition for people participating in such projects is that they like to handle objects and enjoy repetitive work. Moreover, taking part in the ICN course 'Handling museological objects' is a compulsory part of the preparation. Work that entails sorting objects in the depot is work for registrars.

The project management of Cit ensured that there was a division between the job of 'collection labeller' and that of 'collection tracer'. This made it possible to work efficiently. The following example from the Tropenmuseum illustrates this: when (in the case of an object location check) the object was not lying or standing in the right spot in the depot, it received a 'green card'. A 'yellow card' was used for objects that were found on another shelf. An object that could absolutely not be traced to the place where it should be (according to the information in TMS) received a 'red card'. The labellers placed the cards and the tracers searched for lost objects in other locations. This allowed most of the problems with red cards to be solved. Tropenmuseum employees were only involved when an object could not be traced.

It is important to note that this system depends on the registration of mutations. The collection managers must regularly check if the barcodes have been scanned again when the objects were moved. This can be done with regular spot checks. This is a type of self-assessment that guarantees the quality of the system and collection management.

The question that springs to mind is the following: could a museum carry out a large-scale digital archiving process with labelling of objects without calling in Cit? Our answer is: not really. The advantage of an external project leader with specialist knowledge is that it is possible to work very efficiently and therefore in a cost-effective way.

The management of Cit know the processes, equipment and computer programs thoroughly. It is, moreover, possible for them to distance themselves from being emotionally involved with the collection, something an average collection manager cannot do. For this reason, Cit can work quickly and make use of a thematic, systematic approach.

Object location check

Barcode project – Inventory of the museum display
George van Hammeren, project assistant Cit

The permanent presentations in the museum compilations are put together for a period of about ten years. However, it is less static than it seems. There are regular changes as objects are loaned or restored. A thorough adjustment of a certain part can be advisable for various reasons. It is, of course, important, that all those adjustments are correctly registered. However, in actual practice it sometimes does go wrong and an object is then (administratively or actually) missing.

The large-scale physical check or inventory of the museum display on which the TM is now working reveals a small but not insignificant percentage of omissions, especially in the case of older presentations where TMS was scarcely used if at all. The objective of the project is to have an accurate overview of which objects are really present in the museum presentation. This is not only for internal purposes but also for external ones, for example to have a correct overview of the missing objects quickly available for the police and for insurance after a calamity or theft.

With the help of TMS, both an object list (report) and a photo list are made for each department; these are always classified by location. Using these lists, a visual check of the exhibited objects is carried out for each location (display case, wall, etc.). This is done to check the barcode labels (the replacements for the inventory cards) that are kept elsewhere. Every object is checked to ensure if it is still in the display and if its location information is (still) correctly stated. It is possible for example that it may have been moved to an adjacent display case. Any established discrepancies are, of course, processed in the meantime in TMS with the help of the barcode scanners. If this is not possible, for example in cases where sorting is needed, this is reported.

Objects are added to or removed from locations in this way. If there are discrepancies, an extra check will almost always take place on the basis of past locations (for example, the depot). After all, it must be possible to confirm with complete certainty that we can link the right inventory number to the new object found at the location or to where the object is now. There should be at least two checks, namely

to see if the lists correspond with the objects in the museum display and subsequently to see if these match the object labels that have been kept.

In the context of this project, a few extra steps have been added, namely, a photo is directly made of an object if it is not in TMS and in addition a confirmation of each checked item takes place within the system, the so-called physical check.

The result will be that in the future the institution (the Tropenmuseum) and its users can consult accurate information about the museum display. The correct and most up-to-date information will be available quickly. In the future, alterations will, of course, also have to be processed properly by everyone in order to be able to guarantee the reliability of the data.

Digitising photo collections

Digitising historic photos

Irene de Groot, object photographer of the Tropenmuseum.

Digitisation of historic photos takes place after a selection has been made. A barcode is generated and then photographed together with the photo. The albums or photos are placed on a photography table above which a copy stand with lights is placed. The lighting is important. We make use of studio lights with open caps to which polarising foil is attached. We use a Nikon D2X camera that is suitable for registering the finest details. The camera also has a polarising filter. This is to prevent irritating reflections and to heighten the contrast. We check if the photo has the same amount of light on all sides using a flash meter. Digitisation of glass negatives is done in the same way, but with the difference that a (standard) light box is used and that the working space is darkened. Polarising foil is not necessary in this case.

Glass negatives are laid, with the emulsion side downwards, on a (standard) light box and also photographed from above using a copy stand with lights. The working room is darkened so there is no false light. The camera is connected to the computer and (using a Nikon software program) it is possible to operate the camera directly from the computer and also to give the photo the right collection number straight away. The measurements of the glass negatives vary from 9x12cm to as much as 24x30cm.

After the photos have been recorded, they are given a barcode number/collection number in the computer. Subsequently, the files are 'converted' from RAW to the chosen format. TMS uses JPEG, 1500x115 pixels, 300 dpi, compression 5. This produces 'workable' files that are good enough to enlarge on a monitor to see the details. The computer program that we use is Adobe Photoshop, version CS2.

Publication photography

Taking photographs for publication

Irene de Groot, object photographer of the Tropenmuseum.

Taking photographs of the collection must be done carefully. The way in which the lighting is done depends on the object. The studio has a Perspex photography table with sufficient room around it. Delicate objects are placed on the photography table. A light can be shone through the table from below in order to photograph the object without shadows. A soft box can be used as lighting, with some side lighting if needed. Reflection screens are also used for lighting objects uniformly. These are placed on the photography table on both sides of the soft box. With shiny silver objects, a tent of white sheets is built around the object and the photograph is taken through a hole in the sheet at the front.

With extremely shiny (wooden) objects, a polarisation filter is sometimes used to eliminate the shininess somewhat. This does mean however, that the diaphragm has to be increased by a factor of 2. For example, if the value measured is f16, the shot must then be taken at f11 or f9.

Paintings are placed upright on a table or on an easel in a horizontal position (long sides at the top and bottom in order for it to be illuminated properly). To guarantee the correct colour, a standard Kodak colour card is also photographed with it; this is a recognisable standard for a printer. Lighting paintings is done with polarising foil and a polarisation filter; this is the same principle as for historic photos. This lighting has to be done carefully. We measure the light at the four corners and the centre of the painting. If all five of these points show the same diaphragm setting, the lamps are positioned properly. This can be done accurately to within a millimetre. The polarisation filter is now adjusted so there is no shininess to be seen. If paintings are excessively varnished, the lamps have to be positioned so they do not reflect on the canvas and are at an angle of 45 degrees.

Textiles are pinned down on a fire-resistant black or white background canvas; large pieces, such as furniture, a kris, shields and sculptures are photographed on the floor. These objects are lit using photography umbrellas, so that the lighting is uniform and it is possible to photograph with a small diaphragm setting in order to obtain as much sharpness as possible. This means a diaphragm of f16 to f22. The exposure time in the case of studio photography is adjusted to 1/60 second, which is sufficient in combination with the lighting.

The RAW files are converted to TIFF and give images of 4288x2848 pixels at 300dpi. This is 36x24cm and is therefore more than A4 size. This is adequate for printed matter in a catalogue.

If a larger file is necessary, for example for a poster or banner, we revert to old-fashioned analogue photography. We use a Hasselblad 6x6 camera for this and photograph onto transparency film. The transparency is scanned afterwards at the desired size so an enlargement of 1:1 is possible.

Object photography

Digital photography in the Tropenmuseum

Richard van Alphen, Application manager/registrar TM

Of the three photographers at the Collections department, one has mainly dedicated himself to digitally photographing new acquisitions, as well as the backlog of other work. The latter has to do with records that have already been registered in TMS but have no digital media linked to them.

The photographer receives the objects from depot staff, from the loan circuit, and from the new acquisitions staff. Objects that find their way into the photographer's storage rack should have a barcode label.

Objects should be photographed on a neutral white background. The photographer makes use of a photography table with a white background, two standing photo lamps and a horizontal lamp that lights the table from underneath. A white board is set against the wall for larger objects. The camera is placed on a tripod or, when smaller and flatter objects are photographed, on a table stand.

The camera is directly connected to the computer by means of a FireWire. The camera is operated from the computer using the Nikon software that comes with the camera. The photographer chooses the best shots. Editing is done in Photoshop and the file is recorded with the inventory number as its name. To avoid mistakes, the photographer scans the barcode label with a hand scanner so that the inventory number appears in the field for the filename. Extra photos receive one or more # symbols before the name ensuring a unique name for each photo.

Once a week, the work is collected by the application manager and the inventory number checked again by matching it to TMS. If multiple (detailed) photos have been made for each object, these receive serial numbers with _D instead of the hash sign. If there is already a photo of an object, then this is moved on (also with _D added) and the new photo is shown as the primary.

Digital archiving of the IWI collection

A cross-fertilisation of expertise during the digital archiving of the collection of the *Indisch Wetenschappelijk Instituut*

Frans Bridié, Cit

In 2005, the collection of the *Indisch Wetenschappelijk Instituut* (IWI) was transferred to the Tropenmuseum in Amsterdam. As part of the transfer, it was stipulated that the Tropenmuseum would register the collection of more than 500 historic photo albums and 10,000 separate photographs and make them digitally accessible. Cit was asked to carry this out.

Such a major project can only be executed in a short time if the organisation is efficient. The set-up was as follows: during six months, under the supervision of the project coordinator (Frans Bridié of Cit), two teams photographed and registered. The first team was made up of two (amateur) photographers and the second team of four registrars. The temporary employees were specially trained for the job.

The photographers learned to use professional digital Nikon D2X cameras. The advantage of using professional equipment such as this is that you are always working from the same position when taking photographs (enlarging, reducing, cutting out details). This saves time.

The photography was done very efficiently and systematically. For a photo album, for example, a photograph was taken of the cover first. After that, all the pages were separately registered. Subsequently, all photos were digitally 'cut out' (or trimmed) and given a filename. The photos were also given a unique barcode ensuring their traceability at all times. That data was then entered in TMS. Finally, barcode lists were placed in the boxes in which the albums were kept. These lists contain barcodes of all the separate photos. This is a watertight system.

The registrars, who all had a good basic knowledge of the history and/or the culture of Indonesia, followed a registration course for The Museum System (TMS). The collection was subsequently described digitally in the same registration system that is used in the Tropenmuseum. This meant that the collection of the IWI could simply be transferred to the collection of the Tropenmuseum.

The advantage of working in a team is that it is possible to discuss the content-related descriptions of the photos. Producing a good product together is also an enjoyable process. Each person brought the necessary expertise from his or her background. One person had an Indonesian background, the other had been at the Reinwardt Academy of Museology (a faculty of the Amsterdam School of the Arts) and a third was photographer. This created a beneficial cross-fertilisation that was good for the result of the project. The team that started with the project stayed together until its completion. The presence of IWI employees in the building where the collection was being digitised brought a great deal of substantive input. The project coordinator, however, has one practical tip: make sure that a proper administration is kept of the transportation of the collection items. It was sometimes not clear whether a particular photo album was still at the IWI or in the digitisation area. This was a slight nuisance to a project that was otherwise going well and was finished in 2006 to the complete satisfaction of project leader and, last but not least, the Tropenmuseum itself.

About the authors

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Marjolein Beumer, who trained as a cultural anthropologist, is an all-round museum professional in the field of collection registration and digitisation. Her practical and management experience in numerous museums in the Netherlands and abroad have allowed her to develop clear views and tools on the digitisation of museum collections. As a consultant, she assists museums in implementing collection registration systems. From 2000 to 2008 she joined the Collections Department of the Tropenmuseum in Amsterdam, first as a registrar and since 2002 as an IT consultant. She developed a quality handbook with procedures for collection digitisation, manages digitisation projects within the Tropenmuseum and is cooperating in the SenterNovem- *'Digitaliseren met Beleid'* project "Digital association" for developing methods for the digitisation and accessibility of intangible heritage and museum knowledge. Nowadays, she works for Erfgoed Delft e.o. (Museums Nusantara, Prinsenhof and Lambert van Meerten, Winkeltje Kouwenhoven, Archaeology and Archives Delft and vicinity, Heritage Library) as an IT consultant.

Trilce Navarrete

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Trilce Navarrete Hernández is currently a PhD researcher at the University of Amsterdam where she is investigating the evolution of systems to access cultural heritage in the Netherlands. She is also coordinating a national programme to collect and analyse digital heritage data on the costs of digital archiving. She holds an MA in Cultural Economics from Erasmus University Rotterdam and an MA in Museum Management from the University of Oregon. Areas of interest include the impact of new technologies on the economics of museums, national digital heritage accounts, online interactivity and digital content management.

Colophon

Bulletins of the Royal Tropical Institute (KIT)

The KIT Bulletin Series of the Royal Tropical Institute deals with current themes in international development. It is a multi-disciplinary forum for scientists, policy makers, managers and development advisors in agriculture, natural resource managements, health, culture, history and anthropology to present their work. These fields reflect the broad scope of the Royal Tropical Institute's activities.

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