Final report for the Museum Project

1998 – 2006

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Christian-Emil Ore
Oddrun Rangsæter

with contributions from Øyvind Eide and Jon Holmen

1 Introduction

1.1 Aims

The purpose of the Museum Project was to improve access to the scientific collections and to upgrade internal information management in Norwegian university museums by creating joint national databases. Ideally, the database systems would manage all reference information pertaining to the museums' internal and external collections. In this way, the museums' internal requirements for collection management, research, field work, education and communication would be covered. It was also requested that the systems should comply with the external demands of the authorities and society regarding open access to information about our common cultural and natural heritage. The majority of the reference information in the museums existed on paper. The most important intermediate aim was therefore to convert the paper-based collections into an electronic format.

The University of Bergen, the University of Oslo, the Norwegian University of Science and Technology (NTNU) and the University of Tromsø commissioned the project.

1.2 History

The Museum Project was planned during the spring of 1997 as a five-year follow-up to the natural-historical UNADOK project and the humanities Documentation Project. The initiative was started by the then Deans Ingolf Kanestrøm at the Faculty of Mathematics and Natural Science and Bjarne Hodne at the Faculty of Humanities in Oslo. The initiative was fully supported at the national dean meetings in sciences and the humanities. The University of Oslo took on the role of project host, and the operational organisation from the completed Documentation Project was chosen as the host unit.

On behalf of the four universities, the University of Oslo sent an application for financing to the Ministry of Education and Research (UFD/KD) in the summer of 1997. It turned out to be difficult to obtain full financing from the Ministry. Nevertheless, the Project started during the summer of 1998 as a 3-year project, with annual financing of approximately a third of what was planned.

However, the museums were very keen to continue work beyond the 3-year period in order to establish operative databases. The Project Board therefore decided to find financing for phase II of the Museum Project. The need for a national overview of biological diversity was in focus within political bodies at the time, and it therefore became natural for the Project to emphasise its work on natural history collections. This also helped support the planned national species database. Through extensive meetings, the then Ministry of Education, Research and Church Affairs and the university managing bodies realised that it was necessary to implement phase II of the Project. At the same time, extra funding was secured for the natural history part of the Project from the Ministry of the Environment.

In 2001, a new cooperation agreement on a 5-year phase II was drafted and signed by the university principals and museum directors. The agreement would initially expire in 2005, but during the autumn of 2005, this was extended to 31 December 2006. The Project would continue to be organised as in phase I. The agreement also contained a condition that the databases had to be secured after the project period by creating a permanent, joint operational organisation for the five museums. The operational organisation was established in January 2007, as a group at the University Centre for Information Technology (USIT) at the University of Oslo. Several system developers with extensive experience from their work in the Museum Project were hired by this new group, which was given the name MUSIT.

1.3 Result summary

1.3.1 System development/Operation:

IT activities followed two main directions based on the Project's goal structure:

a) Support for the registration work.

The ongoing registration work was demanding and multifaceted. During the Project many one-off special solutions for registration were therefore developed and adapted.

b) Developing a unified interface for researchers and the general public.

Early on, the Project designed a unified framework for all the database applications and for automatic web publishing in cooperation with the Unit for Digital Documentation (EDD). At the end of the project there will be operative joint systems for sites and photographs (media). For cultural history, operative solutions have been created for archaeological, ethnographical and recent cultural historical items as well as for the topographic archives. There are operational systems for natural history for vascular plants, fungi, moss and lichen (botany) and for zoological dry collections, and there is also a joint register of species names. In addition, the operative systems are all in operation.

1.3.2 Subprojects – Data entry

19 subprojects were carried out, comprising a total of 108 Project Assistant person-labour years, all financed through the Project. Some professional environments also provided their own employees for technical consultancy tasks. The duration of the subprojects varied from 6 months to 7 years. In total, the Museum Project registered approximately 75% of the entered material. This corresponds well with the fact that the Project only had 75% of the resources that were estimated to be required for the work. In certain professional environments there is therefore a lot of conversion work still to do, which has to be carried out by the museum in question.

Important parts of the cultural history collections were already digitised at the start of the project. For many of the cultural history subprojects, the work therefore consisted of adapting and systematising the digital material. It is difficult to show the extent and time spent on this in figures. The natural history collections can nevertheless be quantified in order to show the amount of material:

	Number of museum objects	
NATURAL HISTORY	Entered	Registered as at 31.12.06
Botany	1,960,883	1,361,583
Zoology	2,812,303	1,871,399
Geology	98,383	92,671

1.3.3 Making the material accessible

At the end of the Project, there are still large amounts of converted material that has not been made accessible to the general public. Everything is in place for web publishing of the converted material, but at the end of the Project many museums have not yet clarified whether the material can/should be published, and if so, to what extent.

1.3.4 Employment measures

During the project period, the Museum Project involved 387 Data Entry Clerk person-labour years, carried out by a total of 920 people. Most of the Data Entry Clerk person-labour years were carried out by unskilled labour through aetat (now known as NAV), and the majority of these were hired through close cooperation with UniReg (now known as Digforsk). The UniReg placements were located at various sites in Nordland, Finnmark and Hedmark where Government regeneration schemes have

taken place. Most of those involved in the system digitised material for the Project working part-time whilst receiving education in the remaining half of their working hours. This provided the participants with good work experience using modern computer tools and most of them transferred to ordinary jobs or education when their period with UniReg came to an end. The length of the project participation varied from 4 months to 2 years. The Museum Project has given the universities a good reputation in the remote districts and contributed to the fact that people who normally would not consider a university education have now obtained one. The project has therefore been a good way of marketing the universities in places and among groups who normally have little contact with the university environment.

2 Organisation and management

The Museum Project was a complex cooperation project between four universities, with many subprojects at five museums. At the beginning in 1998, the decision was taken to follow an adapted version of the organisational structure that was used for the Documentation Project (1991 – 1998).

In connection with the planning of phase II in 2000, the Project's organisation was evaluated in cooperation with the museum managing bodies. A few organisational issues were commented on. It was particularly made clear that the Project's commissioners were the universities, through their principals, and that a permanent organisation had to be established to secure the operation of the databases after the end of the project period. Mainly, the organisation of the project continued as before. Cf. the Cooperation Agreement (Appendix 1).

The Museum Project was governed by a Board with five members as well as a Technical and Administrative Manager of the Project. The four universities each appointed one Board member and one personal deputy from their institution to the Board. The universities' principals jointly appointed a Chair of the Board.

The daily running of the Museum Project was carried out by the central project group which was based together with the Unit for Digital Documentation (EDD) at the Faculty of the Humanities (HF), University of Oslo. The Museum Project was financed externally for EDD and HF, with a separate Board. The cooperation between EDD and the Museum Project was impeccable and to great mutual benefit.

In the individual museums, the Museum Project established subprojects for the various subject areas. Each subproject had a permanent scientific employee as Head of the Subproject and at least one Project Assistant. As a rule, the Project Assistants had Master’s Degrees in the field in question. They were in charge of the continuous activities of the subproject, instructed the registrars and proofread the converted material. The Head of Subproject had the final responsibility for the quality of the registered material. The central Project ensured that the Project Assistants received the registration capacity that was financially available for the subproject.

2.1 The Board

During the first 2.5 years of the Project, the activities and mandate of the Board were regulated by the wording in the original project application. As mentioned, a new cooperation agreement was entered into in 2001. It mainly meant that the Board's mandate and the contact between the Board and the museums' managing bodies were formalised. The new agreement contained a Project Directive as an appendix, in which the tasks of the Board and the Project were clearly defined. When reviewing the activities of the Board below, we are not distinguishing between the two phases of the Project.

Section *3.2 Board and Management* states the following:
The Board is in charge of implementing the Museum Project within the framework of the agreement and the available resources. The Board is responsible for the Project in its entirety towards the Project commissioners, and is in charge of organising and implementing the Project. An annual, joint dialogue with the management of the university museums is incorporated into the management structure. This dialogue is normative for the work of the Project […].

2.1.1 Activities of the Board

Professor Bjarne Hodne was the Chair of the Board for 7 of the Project's 8 years. On the request of the four university managing bodies, Hodne accepted the task during the spring of 1998. Bjarne Hodne had considerable experience from being the Chair of the Board of the Documentation Project, which was an equally complex cooperation project between the universities.

The Museum Project had a realistic, but extensive goal. Unfortunately, it never received the financial means that were necessary in order to fully reach its goal, and the financing was uncertain year by year throughout the project. A lot of the Board's work was therefore dedicated to promoting understanding of the project in the Ministry and among the university managing bodies in order to find funding. For practical reasons, the Board delegated the work of obtaining financing from the Ministry and university managing bodies to the Chair of the Board and the Project's management.

The original application from the University Directors in 1997 was based on annual financing of NOK 15 million (as of 1997) over a 5-year period. The result was financing that varied from NOK 5 million to 10.2 million per year, where the Project was subject to political changes, the donations of the university boards and the various museum directors' attitudes to the Project. Nevertheless, two thirds of the original project plan has been completed. It would probably not have been possible to get this far without a driven and inspired Chair of the Board, a dedicated Board and an enthusiastic and enduring project staff.

The Board adopted the annual Project budgets and within this framework, it decided which areas and subprojects should be approved and granted Project Assistants and registration capacity. The subprojects were approved following written applications from the professionals involved, and their willingness to invest their own efforts in the Project was an important factor.

The dedication of the various board members was decisive for the progress and participation of each museum. In order to ensure good coordination at the individual universities and maintain good contact between the university museums and the Board, the Project Directive recommends that *"Each of the university representatives on the Board should create a local work group. These work groups will include the university representative, and their tasks include: required coordination in relation to distributing resources locally at each university, requesting reports from projects that have not yet been initiated and keeping in touch with the local university management"*. Over the course of the Project, the practice of creating such work groups has varied. The work was significantly easier, both in relation to the museum's management and the professional environments, at the museums where such work groups were created. Experience therefore suggests that the creation of such work groups should have been a prerequisite and not a recommendation.

Over the last few years, the Board has been very involved with the work of drawing up suggestions as to how the project work could best be continued in a permanent operational unit. As a result of this work, the universities jointly decided to establish such a unit. Named MUSIT, it has been in operation since 01.01.2007 and is located at the University Centre for Information Technology (USIT), University of Oslo. The results from the Museum Project therefore seem to have been secured in accordance with the stipulations in the Cooperation Agreement.

2.1.2 Composition of the Board:

Chairs:

Bjarne Hodne, professor, the University of Oslo (from the project start in June 1998 to October 2005)
Annik M. Myhre, professor, the University of Oslo (October 2005 to the project end in December 2006)

Members:

The University of Bergen:
Bjarne Meidell (vice-chair), Associate Professor, Bergen Museum (1998 – 2006)

Deputies:
Svein Indrelid, Professor, Bergen Museum (1998 – 2000)
Frode Storås, Associate Professor, Bergen Museum (2001 – 2003)
Else Kleppe, Associate Professor, Bergen Museum (2004 – 2006)

The University of Oslo:

Arne Røkkum, Professor, Etnografisk museum (1998 – 2000)
Geir E. Søli, Associate Professor, NHM (2001 – 2003)
Susan Matland, Head of Section, KHM (2003 – 2006)

Deputies:
Hans Arne Nakrem, Associate Professor, NHM (1998 – 2000)
Susan Matland, Head of Section, KHM (2001 – 2003)
Espen Uleberg, Database Administrator, KHM (2003 – 2006)

The University of Tromsø:
Geir Mathiassen, Associate Professor, Tromsø Museum (1998 – 2002)
Karl Frafjord, Curator, Tromsø Museum (2002)
Arne C. Nilssen, Associate Professor, Tromsø Museum (2003)
Knut Helskog, Associate Professor, Tromsø Museum (2004)
Dikka Storm, Curator/Museum Director, Tromsø Museum (2004 – 2005)
Marit Hauan, Associate Professor/Museum Director, Tromsø Museum (2005 – 2006)

Deputies:
Dikka Storm, Curator/Museum Director, Tromsø Museum (1998 – 2003)
Karl Frafjord, Curator, Tromsø Museum (2004 – 2006)
Arne C. Nilssen, Associate Professor, Tromsø Museum (2004)

The Norwegian University of Science and Technology:
Thor Bjørn Arlov, Head of Section, NTNU (1998 – 2000)
Solveig Bakken, Office Manager, the Museum of Natural History and Archaeology (2001 – 2006)

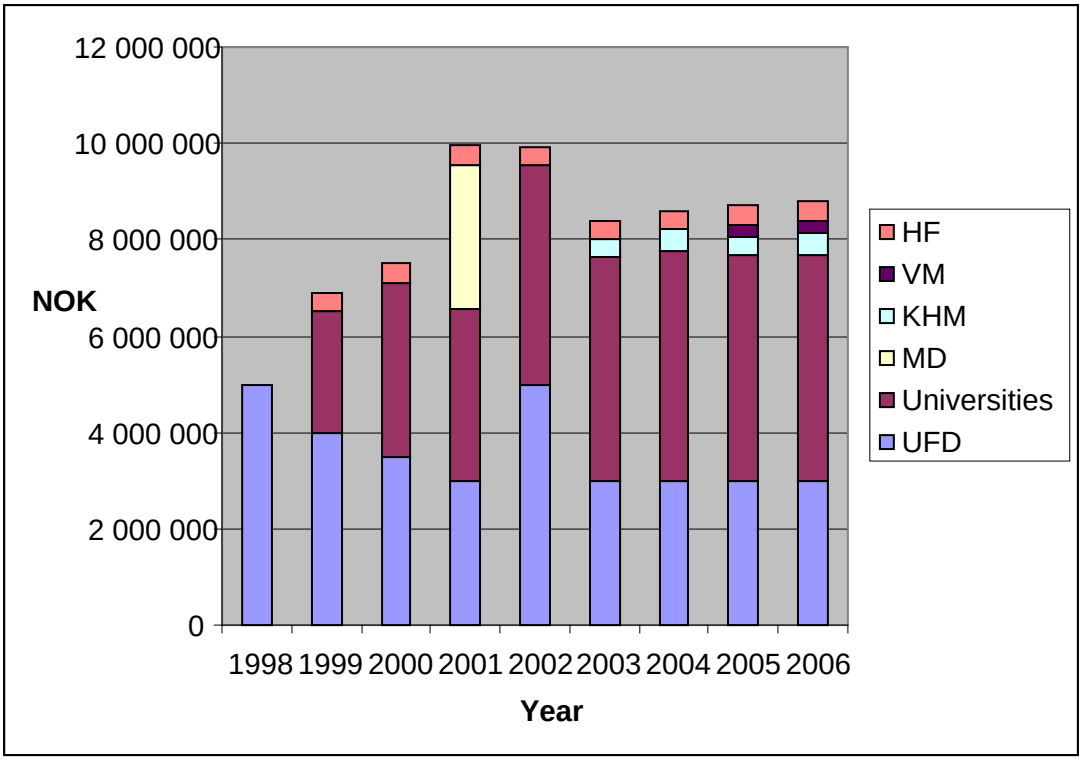
Deputies:
Morten Smelror, Assistant Director, the Museum of Natural History and Archaeology (1998 – 1999)
Kurt Alterskjær, Assistant Director, the Museum of Natural History and Archaeology (2000 – 2006)

2.2 Management and administration

The central administration was manned by an Administrative Manager (full-time position), a Scientific Director (working 50% of standard working hours) and a Secretary (working 50% of standard working hours). In addition to staffing and economy, the administration was in charge of the follow-up of financing, the project's progress, the coordination of database development, strategic planning and organising and managing placements.

The Project was a separate item in the Government's budget, but the size of it was not secure from year to year. Similarly, parts of the financing from the universities and museums were dependant on their annual budgets. It was therefore difficult to plan ahead for more than one year at a time. This was an additional challenge in the planning of large tasks and with regard to the staffing of the project. Due to the uncertain financing, the Project's employees, from the management to the Project Assistants, had to accept 1-year contracts at a time. Still, the Project succeeded in having a relatively stable staff.

Overview of annual financing:



From 2004 onwards, the focus was on defining a joint operational unit which would ensure that the databases were secured and further developed after the end of the Project. Such a unit has now been set up at the University Centre for Information Technology (USIT), University of Oslo.

It required a lot of time and considerable travelling to follow up on the subprojects and organise the registration activities. Ordinary, continuous administrative tasks such as human resources, budgeting, accountancy and running the office were carried out in parallel with the more extraordinary tasks mentioned above.

2.2.1 Employees of the Central Administration

Christian-Emil Ore, Scientific Director (1998 – 2006)
Oddrun Rangsæter, Administrative Manager (1999 – 2006)
Øyvind Eide, Intermittent Administrative Manager (2001 – 2002)
Sylvia Foss, Project Secretary (1998 – 2001)
Anne Mette Austmyr, Intermittent Project Secretary (2001)
Jørild Haugen, Project Secretary (2001 – 2002)
Javid Samadi, Project Secretary (2002 – 2006)

3. Activities of the IT Group

IT activities followed two main directions based on the Project's goal structure:
a) Support for the registration work.
b) Developing a unified interface for researchers and the general public.
In addition, there was the functioning of the operative systems. In total, 33.4 person-labour years were spent on IT during the project period. Of these, KHM and the Museum of Natural History and Archaeology financed 3.9 and 1 person-labour years respectively from their own budgets in order to secure the development of particularly prioritised database solutions in connection with their REVITA projects.

The continuous registration work was demanding and many special solutions were developed and adapted in order to carry out the continuous registration tasks. Early on, the Project designed a unified framework for all the database applications and for automatic web publishing in cooperation with the Unit for Digital Documentation (EDD). At the end of the project there are operative joint systems for sites and photographs (media). For cultural history, operative solutions have been created for archaeological, ethnographical and recent cultural historical items. There is also a well-established solution (in accordance with the NOARK standard) for the topographical archives at the cultural history museums. There are operational systems for natural history for vascular plants, fungi, moss and lichen (botany) and for zoological dry collections, and there is also a joint register of species names. Everything is in place for web publishing of the converted material, but at the end of the Project many museums have not yet clarified whether the material can/should be published. The final publishing has therefore largely been postponed for the time being.

3.1 Strategy for IT work in the Museum Project

The Museum Project had two main goals:

- Establishing electronic resources
- Creating a unified interface for these resources for researchers and the general public

When organising the IT work in the Museum Project, we focused on solving these tasks. In order to do this, we chose a strategy based on the following points:

a) Digitising the basic material in the various museums is a priority.
b) Developing databases in which these sources are linked to a common information system.
c) Developing differentiated interfaces adapted for various user groups for the common information system.

The material that was digitised was very heterogenous. Among other things, it consisted of:

- Old catalogues
- Publications
- Document collections
- Herbarium sheets
- Natural history objects (e.g. preserved in alcohol or pinned)
- Card archives
- Image archives

Modern local databases were also converted and entered into the common information system. Along with the actual objects in the collections, this constituted the basic material for the information system. In order to ensure that the system could also be examined scientifically, this material had to be digitised so that it could be made accessible in its original form, whereas it was also used as the basis

for the content of the new information systems.

Accuracy is the most important factor in such a conversion process. Unless painstaking accuracy is observed, you run the risk of presenting digital copies that differ from the originals and altering the interpretation of them. Much emphasis was placed on developing and using methods for digitisation that avoid such errors and comply with the scientific requirements for supplementary examination. For many professional environments, this is a new problem and deciding how to handle it is time-consuming.

The planning of the Museum Project in 1997 included a high number of IT staff. The experience from the Documentation Project with its scarce IT resources made it apparent that sufficient manpower in IT was essential. When the Project ended up with a much smaller budget than planned, we chose to direct as many resources as possible towards registering and digitising. This resulted in less IT staff than planned. IT support for the conversion work then took up a considerable part of the IT staff's capacity, meaning that it became difficult to find sufficient time for the development of the common information system. This led to difficulties in establishing a development project of the desired length and extent.

Digitising and converting a text is a continuous production activity which requires constant monitoring. It was also very important to choose methods for digitising and conversion that provided materials that could be used over time and which would satisfy the scientific requirements for critical assessment of the sources. When new registration units or centres were established, this required an extra effort both in terms of infrastructure and training the registration staff. Most collections and types of material have their own quirks and starting up with new material or new collections requires some degree of adjustment and special solutions. Technological development does not stand still and also contributes to new wishes and demands cropping up.

The development of the databases in which the digitised information has been stored and developed further has run parallel with and been closely related to the digitisation. This was necessary because the analysis of what information exists and how it is connected is based on these sources along with an understanding of the procedures in the museums. The IT staff, Project Assistants and others alike were involved in the work of describing the museum processes and this has formed the basis of the databases we have developed.

As the framework for IT development was so restrictive, we prioritised creating an interface for the databases for the primary users in the museums and universities above developing a service for the general public. In several museums, these interfaces and databases have become a daily tool for several employees. Unfortunately, the severely limited financial framework the Museum Project was given did not allow us to develop a unified interface for the general public.

The reference information in the museums is not normally meant to be made available to a wider public. One exception is the printed access catalogues for the archaeological museums that the Project published, but even these only generated limited interest among the general public. This does not mean that no one outside the museums can use the data that are published. The access that has been granted to some of the collections is definitely useful to the public. However, the general public comprises many different user groups. Some external users have a high competence level and with access to the raw data they are able to interpret the material themselves. The differences between the collections are also important. For instance, material that can be related to local societies is of interest to schools, even though it has not been adapted to young users.

In order for the general public to have more use of and enjoyment from the information in the databases, a major effort is required to link the information with explanatory texts and more adaptation of, for instance, images and fact sheets for the various cultural history and natural history objects. The rapid development of map-based services over the past few years clearly demonstrates that geographical portals that allow searches across subject areas for a local region will be very popular with the public. This also applies to showing search results on a map.

Nevertheless, the Project has developed some one-off public services, such as the image collection from the Department for Recent Cultural History and the Department for Sami Ethnography, in cooperation with the museums. This has been a great success. Together with some of the museums we have procured external national financing through projects such as Arkeoland and Gamle Naboer for targeted communication. We also participated in the EU project Arena which granted us the means to create communication services for the public integrated in a multinational system.

In hindsight, one might say that it would have been sensible to focus more on public services in the Museum Project. However, this would have affected the registration work and would hardly have been possible as a political cooperation project. The Board and the management made a deliberate decision to postpone the work with adapted public service to invest most of the resources in digitising, converting and creating user applications for the technical staff. This is a good basis for developing public services in the next instance.

3.2 IT solutions

One of the important intermediate goals of the Museum Project was to create a unified interface for the databases. The main strategy was based on the following principles:

- Data must be stored in accordance with good source critical assessment practices
- As far as possible, data must be cross-linked, across both institutions and subject areas
- A common visual and functional framework must be created for all the applications
- This framework must make web publishing easy

IT development was carried out in close cooperation with EDD. Oracle was chosen as the database system. The interface applications were programmed in Borland Delphi, and the web system is PERL.

The Project used ICOM/CIDOC's event-orientated conceptual reference model for museum documentation (CRM, ISO21127) as a guide for the development of the databases. This model is based on an event-orientated database developed by the National Museum in Copenhagen in the late 1980s. Since 2001, employees from EDD have participated in the international work group hosted by CIDOC that developed CRM. CIDOC-CRM has proven itself to be very useful for the modelling of all museum material, from archaeological Stone Age material to the recent national natural history database of species names. The model was created specifically for data exchange and integration, and facilitates the cross-linking of different databases.

The pièce de résistance of the Museum Project's database solutions is the 'Meta database' and the 'Joint Application' (Fellesapplikasjonen). The Meta database is what could be called an extended "data dictionary", and it contains viewing and structure information for some of the part databases. This applies to the individual museums' technical databases as well as joint resources such as, for instance, the media database. The Joint Application is what the visitors will see when they start up the museum database. The Joint Application uses the Meta database to give users access to the correct databases, carry out searches and present the data correctly. This system is vital in order to keep track of the large number of part databases and larger applications, more than 50 in total. Cf. table in section 3.3.

The database systems can be divided into common systems and technical systems. Examples of common systems include the bibliography database, image database and map database. Technical systems have been produced for the various user groups at the museums. The common systems are then linked to the various technical systems. An example of this is the cultural history database systems for ethnographic and archaeological items. These databases are linked to a joint media database in which both traditional photographs and facsimiles of old cards and protocols are stored. A common database system for taxonomy names (species names) has been developed for the natural history page. Furthermore, there are herbarium databases for vascular plants, fungi, moss and lichen. For zoology, there is a database solution for dry preparations (pinned specimens) and observations

(field notes). All the natural history technical databases are ready to be linked to a map interface. In a grey area between common systems and technical systems there is the archive database which has been developed for the 'topographical archives' at the archaeological museums. The database is tailored for archaeological archives, but also adheres to the NOARK standard and can be used for other types of collections.

In 2005 and 2006, we shaped and implemented a framework which will allow maps to be used in various ways. Basic maps have been made accessible based on Statkart's map series. At the moment, this has been done by inputting the maps into our map database from the SOSI files, but this probably ought to be changed to a direct link to Statkart's server at Hønefoss once this has been cleared with Statkart through enrolment in Norge Digitalt. We have downloaded three vector map series into the database – N1000, N250 and N50. The map system with basic maps is being tested at KHM.

In addition to the basic maps, we have produced maps based on the geographical information in our technical databases. This framework will enable the use of geographical information in our applications, in the web system and through other systems, such as the ESRI products via ArsSDE and integrated applications via WMS/WFS, which are standard systems for publishing maps as Web Services. Publishing to Norge Digitalt will be important in the future, and can be carried out once the enrolment is completed. A few test data sets have been published in WMS, and another data set is being tested as an ArcSDE database. In addition to the testing carried out by employees of the Museum Project and EDD, the system has been tested by employees and students at Geofag, and the WMS systems are about to be linked into the common map system that is being tested by Norwegian Species Register (Artsdatabanken).

3.3 Overview of the project's databases

In addition to the common databases, subject-specific databases have been developed by the Museum Project. Some of them have not been taken into use by the technical departments.

FIELD	MUSEUM	CONTENTS
Archaeology	All	Joint item catalogue for public access
Archaeology	BM	Item database
Archaeology	BM	Topographic archive
Archaeology	KHM	Item database
Archaeology	KHM	Item database, the Kaupang excavation
Archaeology	KHM	Conservation database
Archaeology	KHM	Site database based on land registries and GAB
Archaeology	TM	Item database, the Melkøya excavation
Archaeology	TM	Item database
Archaeology	VM	Item database
Archaeology	VM	Registration database for the card archive of the town excavations
Archaeology	VM	Topographic archive
Botany	All	Vascular plants, Svalbard, public access database
Botany	All	Taxonomy register, fungi
Botany	BM	Vascular plants
Botany	TM	General herbarium
Botany	TM	Vascular plants
Botany	TM	Lichen
Botany	TM	Moss
Botany	TM	Moss, registration database

Botany	TM	Fungi
Botany	TM	Statistics module
Botany	TM	Taxonomy register
Botany	VM	Lichen
Botany	VM	Moss
Botany	VM	Registration database, lichen
Ethnography	KHM	Item database
Ethnography	KHM	Registration database for ethnography cards
Photography	All	Media database
Photography	BM	Archaeological image database
Photography	BM	General image database
Photography	KHM	Ethnographical image database, Arne Røkkum's collection
Photography	KHM	Image database for the Relics Department
Photography	KHM	General image database
Photography	TM	Archaeological photography base
Photography	TM	Cultural history footbase
Photography	TM	Zoological image base
Photography	VM	General image base
Cultural history	BM	The Village Collection
Cultural history	BM	The Town Collection
Cultural history	BM	The Church Collection
Cultural history	BM	The Textile Collection
Natural history	All	Species database for public access
Natural history	All	Species database, taxonomy register for public access
Numismatics	BM	Medal collection
Numismatics	BM	Coin collection
Numismatics	KHM	Coin collection
Numismatics	VM	Object collection
Recent cultural history	TM	Items
Zoology	BM	Insects
Zoology	NHM	Insects
Zoology	VM	

3.4 Employees of the IT Group

Øyvind Eide (2001 – 2006)
Svein Glenndal (2004 – 2006)
Geir Egil Hauge (1999 – 2000)
Jon Holmen, Coordinator/Senior Engineer (1998 – 2006)
Ellen Jordal (1999 – 2006)
Sofia Ohlson (2003 - 2006)
Stein Olsen (1998 – 2006)
Jarle Stabell (1998 - 2006

4. Registration

The Project hired Project Assistants who were in charge of the adaptation and quality control of the material for digitisation, but a large part of the registration work was carried out through an extensive cooperation with aetat (now part of NAV). Unemployed people on various unemployment schemes were hired through aetat. The Project provided training in data entry and use of modern computer tools, and the participants were given good work experience through digitising the museums' material for the Project. A total of 387 person-labour years from unemployment schemes were spent on the Project.

The Museum of Natural History and Archaeology had a separate registration unit that was managed locally, with 12 people from unemployment schemes working full-time or part-time, while the Project managed placements from unemployment schemes for the other museums as well as a registration group in Holmestrand. Still, it was the cooperation with UniReg that accounted for most of the digitisation on behalf of the Museum Project.

The unemployment scheme placements at UniReg were financed by the Ministry of Local Government and Regional Development, the county councils and aetat, and were organised in cooperation with the Group for Continuing and Distance Education (UNIVETT), University of Oslo. The people who were hired via UniReg were offered education during half of their standard working hours, then they obtained work experience by registering for the Museum Project in the other half.

The Museum Project had access to registration at the following UniReg offices:

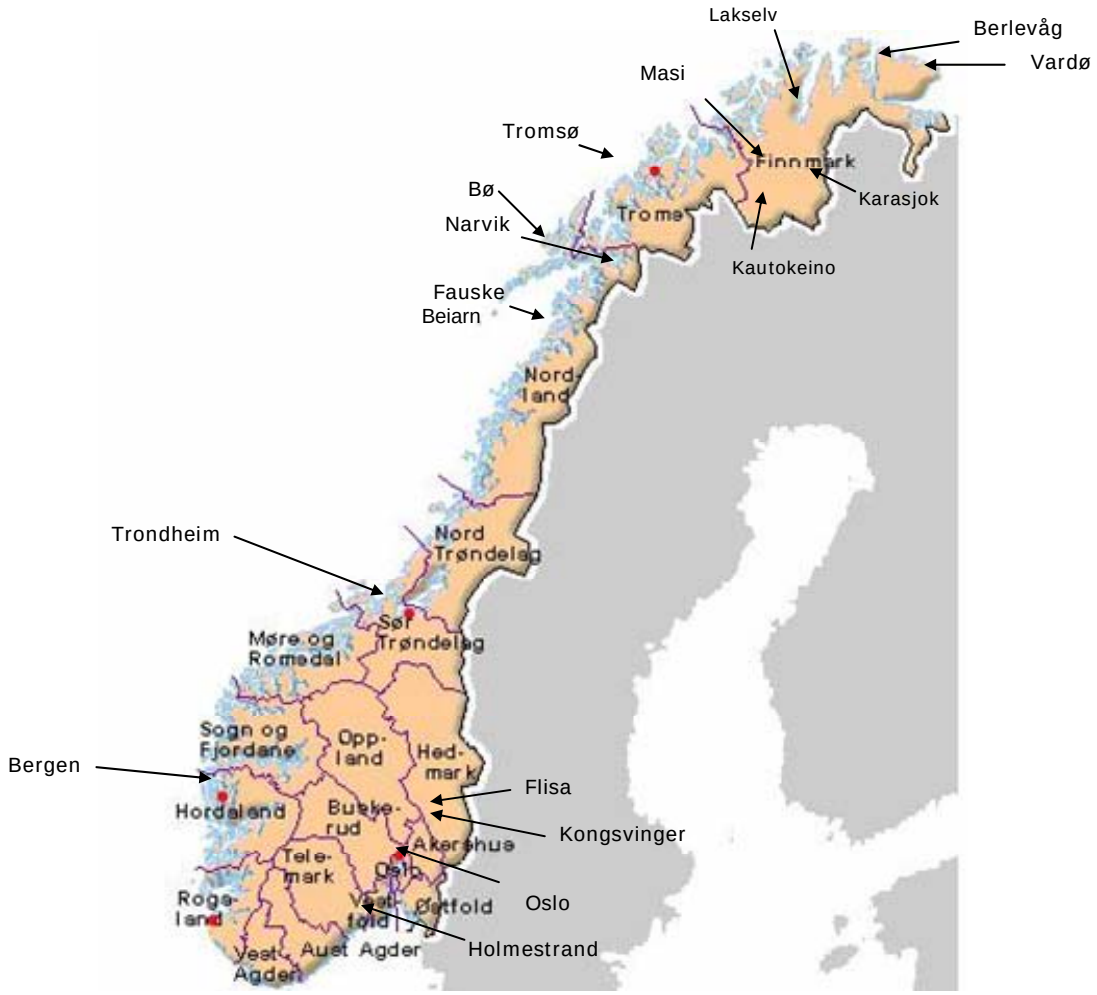
UniReg	**Department**	**Number of reg. sites**
UniReg Berlevåg (established in Sept 05)	-	8 sites
UniReg Indre Finnmark	Karasjok Department	9 sites
	Kautkeino Department	12 sites
	Lakselv Department	10 sites
	Masi Department	5 sites
UniReg Kongsvinger (2002 – 2005)	-	20 sites
UniReg Kringsjå	-	8 sites
UniReg Indre Salten (1999 – 2001)	Fauske Department	20 sites
	Beiarn Department	8 sites
UniReg Narvik (1999 – 2001)		40 sites
UniReg Solør (2003 – 2005)		16 sites
UniReg Vardø		16 sites

The registration units were located in areas with high unemployment, and were positive additions to districts in which people were offered adult education and further education without having to move. Through registration work for the Museum Project, they acquired valuable work experience with modern tools and a high level of computer literacy, and gained an insight into the various subject areas they worked with. This has made them so attractive to the labour market that many have been able to take on regular work or continue their education following the end of the project.

The line capacity to the UniReg offices also changed considerably during the project period. In the beginning there were major problems with the line capacity and most of the material had to be digitised on disks that were sent back and forth. By the end of the project, all offices had such good data lines that they could handle Oracle directly from the bases in Oslo, so the data entry clerks worked directly into the databases. All offices now use the Museum Project's data entry applications. At the start of the project, a lot of original material was physically sent back and forth between the offices and the archives. Now most of the material is digitally photographed or scanned locally, the

images are added to the database and then opened up for registration at the offices, independent of the physical archive. Originals of other types of materials are sent to the offices to be scanned there.

4.1 Overview of the registration units



5. Subprojects

Each subproject had its own Head of Subproject. This was a person employed in a permanent scientific position at each museum. The Head of Subproject had topic-specific technical responsibility for the subproject and the daily follow-up/guidance of the subproject and the Project Assistants. The Project Assistants were in charge of the actual registration work and of implementing the technical priorities set by the professionals.

The professionals' participation in the subproject work varied from subproject to subproject, depending on the Head of Subproject's motivation and efforts. In cases where the Head of Subproject participated actively, understanding of the project's possibilities and limitations was good. This led to the fact that the Project Assistants had varying levels of status within the different Technical Departments.

The Project Assistant role also proved to be a demanding position, including in connection with the development of applications. The Project Assistants were the link between the professionals and the system developers, and had to communicate the technical wishes and requirements to the system developers as well as test new tools and provide constructive feedback. They trained unskilled registrars in how to handle scientific material and use the registration tool in the databases. Finally, the Project Assistants were in charge of the quality control of the scientific material and ensuring that the professionals were trained in how to use the resulting tool. For the most part, these roles were carried out even better than expected.

The project comprised 19 subprojects, of varying durations and extents. Some lasted only one term, whereas others ran throughout the entire project period. All subprojects had enthusiastic Project Assistants who did their best to ensure that their collection was digitised and prioritised during the allocation of registration resources.

5.1 Subprojects at Bergen Museum:

5.1.1 Archaeology/cultural history subproject

Project period: 1 August 1998 – 31 December 2006
Person-labour years: 9.3 Project Assistant person-labour years
36 Data Entry Clerk person-labour years
Head of subproject: Bergljot Solberg, Henrik von Achen
Project Assistant(s): Asbjørn Engevik jr, Sonja Innselset
Registration units: Local registration unit, UniReg Indre Salten, UniReg Narvik, UniReg Karasjok, UniReg Lakselv

Type of material	Entered	Completed
Topographic archive, prehistoric collection, lag	approx. 10,000 pages	Completed
Topographic archive, prehistoric collection, quality control of 105,000 pages scanned and registered in the Documentation Project	Quality control of 105,000 pages	105,000 pages were checked, the last proofreading consisted of approx. 50,000 pages
Urda, a Norwegian antiquarian historical journal	950 pages	Completed
Various archaeological reference literature related to Arkeoland.	Approx. 3,000 pages	Completed
Bergen Museum's first negotiation protocol (1825-27).	32 pages	Completed
The archaeological item base	Converting the web-based access to an Oracle base	Completed
Photography at Bergen Museum (glass plates, films, slides):	approx. 220,000 images (incl. the Leica collection of approx. 85,000 negatives)	6,000 images from the Leica collection
Item cards for the Village Collection.	9,111 cards	Spot checks. Will be quality controlled in the museum's magazine revision.
Item cards for the Church Collection.	1,512 cards	Will be quality controlled in the museum's magazine revision.
Item cards for the Town Collection.	6,199 cards	Spot checks. Will be quality controlled in the museum's magazine revision.
Item cards for the Textile Collection.	6,962 cards	Spot checks. Will be quality controlled in the museum's magazine revision.

The subproject ran throughout the entire project period. A large part of the Project Assistant resources were invested in proofreading the topographic archive and cooperating with the system developers in

connection with converting the web-based access to an item database in Oracle.

5.1.2 Botany subproject

Project period: 1 October 1999 – 31 December 2006
Person-labour years: 6 Project Assistant person-labour years of which 2.1 person-labour years were financed by BM.*
34.2 Data Entry Clerk person-labour years
Head of subproject: Dagfinn Moe, Tor Tønsberg
Project Assistant(s): Louise Lindblom, Birgit Kanz, Solfrid Hjelmtveit
Registration units: UniReg Flisa, UniReg Karasjok, UniReg Kautokeino, UniReg Lakselv

*Since June 2003, the subproject has not received Project Assistant support from the Project. However, since 2003, a Technician from the Technical Department has been dedicating large parts of their working hours to technical consultancy tasks.

Type of material	Entered	Completed
Fungi:	Approx. 12,850 objects	Completed
Moss:	Approx. 74,000 objects	Not commenced
Lichen:	Approx. 33,000 objects	Completed
Vascular plants:	Approx. 350,000 herbarium sheets	210,000 herbarium sheets, of which 5,000(?) were already digitised

5.1.3 Geology subproject

Project period: 1 November 1998 – 31 May 2001
Person-labour years: 1.8 Project Assistant person-labour years
3.3 Data Entry Clerk person-labour years
Head of subproject: Haakon Fossen
Project Assistant(s): Christian Meidell
Registration units: Local registration group

Type of material	Entered	Completed
Rock samples	30,683 samples	Completed

5.1.4 Zoology subproject

Project period: 1 November 1998 – 31 December 2006
Person-labour years: 10.2 Project Assistant person-labour years
39.9 Data Entry Clerk person-labour years
Head of subproject: Lita Greve Jensen, Endre Willassen and Anne Karin Hufthammer
Project Assistant(s): Per Djursvoll, Jon Anders Kongsrud, Kjell Arne Johansson
Registration units: Local registration group, UniReg Kautokeino, UniReg Karasjok

Type of material	Entered	Completed

Osteology:	30 soil findings with approx. 20,670 units and 3,279 units of milk teeth	Completed
Entomology:	Approx. 430,000 dry preparations 56,059 alcohol-preserved units 8,724 specimens	147,341 units Completed Completed
Invertebrates:	163,600 units + new additions	157,685 units
International systematics:	Approx. 11,000	Completed
Project material:	392,705 units	Completed (122,705 units digitised during the project, 270,000 digitised ahead of the project).
Field course notes:	7,253 units	Completed
Literature registration:	Approx. 5,000 units	Completed

5.2 Subprojects at the Museum of Cultural History, Oslo

5.2.1 Archaeology subproject

Project period: 1 March 1999 – 31 December 2000
Person-labour years: 3 Project Assistant person-labour years
6.5 Data Entry Clerk person-labour years
Head of subproject: Einar Østmo
Project Assistant(s): Håkon Glørstad, Anne Dahl-Olsen, Ingunn Marie Røstad, Anette Lislerud, Ingvild S. Andreassen
Registration units: UniReg Karasjok, UniReg Kautokeino

Type of material	**Entered**	**Completed**
Stone Age material Telemark	843 index cards	All material completed
Stone Age material Østfold	1,306 registrations	All material completed
The Antiquity Collection's access protocol	5,263 posts	All material completed
The Conservations Department's item protocol	155 pages	All material completed
Middle Ages archive	23,000 index cards	All material completed

5.2.2 Ethnography subproject

Project period: 1 November 1998 – 31 March 2001
1 February 2004 – 31 December 2006
Person-labour years: 6.8 Project Assistant person-labour years
Head of subproject: Elisabeth W. Steen
Project Assistant(s): Alfhild Birkeland, Kristin Iveland

Type of material	**Entered**	**Completed**
Ethnographic main catalogue, 19 handwritten volumes	Already converted material to be tagged and systemised	All material completed
Ethnographic note archive, 46,000 notes	Already converted material to be tagged and systemised	All material completed
Etnobase 99 (Accessbase)	Conversion and entry	All material completed

5.2.3 Photography subproject

Project period 1 January 2004 – 31 December 2006
Person-labour years: 3 Project Assistant person-labour years
29 Data Entry Clerk person-labour years
Head of subproject: Susan Matland, Espen Uleberg, Mårten Teigen
Project Assistant(s): Mårten Teigen, Kirsten Helgeland
Registration units: UniReg Kongsvinger, UniReg Kringsjå

Type of material	**Entered**	**Completed**
Photography	300,000 photographs for scanning	250,000 photographs
Photography cards	25,000 cards for registration	19,657 cards
Link photographs – item cards	Clarified during the project	21,091 photographs are linked to the item cards

5.3 Subprojects at the Natural History Museum, Oslo

The cooperation between the Natural History Museum and the Museum Project came to an end in 2003. All figures are therefore as of 2003. The project and the Museum shared the financing of the Museum's Project Assistant person-labour years in 2003.

5.3.1 Botany, Nordic and Arctic vascular plants subproject

Project period: 1 June 1999 – 31 December 2003
Person-labour years: 6 Project Assistant person-labour years
42.5 Data Entry Clerk person-labour years
Head of subproject: Reidar Elven
Project Assistant(s): Oddvar Pedersen, Heidi Solstad, Charlotte Sletten Bjorå, Nina Sletvoll
Registration units: Local registration group, the registration group in Holmestrand, UniReg Indre Salten, UniReg Solør

Type of material	**Entered**	**Completed**
Vascular plants	650,000 objects/sheets with pressed plants (of a total of 850,000) remained to be converted at the start of the project	190,334 herbarium sheets, and a further 200,000 herbarium sheets were already digitised
Field notes I	90 "note books" containing approx. 2,600 plant lists (of a total of approx. 2,900 plant lists). The material originates from approx. 15 different people, but over half of it originates from Johannes Lid.	Registration completed in 2001. Final proofreading by the Technical Department.
Field notes II	3,400 field notes	800 lists were completed.

5.3.2 Botany, fungi and lichen subproject

Project period: 1 November 1998 – 31 December 2003
Person-labour years: 6.7 Project Assistant person-labour years
26.6 Data Entry Clerk person-labour years
Head of subproject: Gro Gulden (fungi), Einar Timdal (lichen)
Project Assistant(s): Maria Nuñez, Hussain Hassan Gulaid, Åge Scott Olsen, Bjørn-Petter Løfall
Registration units: Local registration unit, UniReg Kringsjå

Type of material	**Entered**	**Completed**
Fungi	Approx. 225,000 objects + unknown number of fungi findings from written sources	approx. 87,000 objects
Lichen	Approx. 237,000 objects + unknown number of lichen findings from written sources	77,000 objects, i.e. all Norwegian material is completed

5.3.3 Paleontology subproject, "Fossils of the Oslo field"

Project period: 8 April 1999 – 31 May 2000
Person-labour years: 1.3 Project Assistant person-labour years
1.5 Data Entry Clerk person-labour years
Head of subproject: Hans Arne Nakrem, David Bruton
Project Assistant(s): Ole A. Hoel
Registration units: Local registration group

Type of material	Entered	Completed
Fossils	11,500 individual fossils	All material completed

5.3.4 Zoology subproject

Project period: 1 May 2000 – 31 December 2003
Person-labour years: 5.7 Project Assistant person-labour years
7.6 Data Entry Clerk person-labour years
Head of subproject: Geir E. Søli
Project Assistant(s): Lars Ove Hansen, Leif Aarvik, Lene Martinsen
Registration units: Local registration unit, UniReg Karasjok, UniReg Kringsjå

Type of material	Entered	Completed
Pinned insect specimens: Grasshoppers (Orthoptera o.a.), Wasps (Hymenoptera), Butterflies (Lepidoptera), True bugs (Hemiptera), Net-wings etc. (Neuroptera etc.), Beetles (Coleoptera), Two-wings (Diptera)	Approx. 550,000 objects	160,000 objects

5.4 Subprojects at Tromsø Museum

5.4.1 Botany subproject

Project period: 1 July 1999 – 31 December 2006
Person-labour years: 7.4 Project Assistant person-labour years
36.9 Data Entry Clerk person-labour years
Head of subproject: Brynhild Mørkved, Geir Mathiassen
Project Assistant(s): Geir Arnesen, Vibekke Vange
Registration units: Local registration unit, UniReg Kautokeino, UniReg Karasjok

Type of material	Entered	Completed
Vascular plants	150,685 objects (approx. 80,000 were already completed)	156,042 objects
Garden herbarium, vascular plants	Approx. 2,500 objects	2,925 objects
Moss	18,547 objects	19,148 objects
Lichen	14,795 objects	15,563 objects
Algae	Approx. 3,000 objects	
Fungi	Approx. 25,500 objects	26,126 objects
Field diaries with data matrices	124 books (approx. 190,000 vascular plant findings)	124 books
Other field diaries with usual plant lists	Approx. 50 books	
Field notes from the museum's archives, but significant collections are housed by private individuals. The number of field notes that can be registered is unknown, but probably in the region of 3,000-5,000	Approx. 800 field notes with a total of approx. 40,000 plant findings	Approx. 16,000 plant findings from field notes
Offprints	Approx. 7,100 offprints	7,000 offprints

5.4.2 Cultural history and archaeology subproject

Project period: 1 July 2000 – 31 December 2006
Person-labour years: 5.1 Project Assistant person-labour years
10.8 Data Entry Clerk person-labour years
Head of subproject: Knut Helskog
Project Assistant(s): Åse Sørgård
Registration units: UniReg Bø i Vesterålen, UniReg Masi, UniReg Kautokeino

Type of material	Entered	Completed
Archaeology	Approx. 7,000 access numbers for data entry and approx. 12,000 access numbers for tagging.	Approx. 11,800 access numbers have been completed

The Project Assistant has spent a lot of time finding and organising the material, as Tromsø Museum has not had a systematised main catalogue since 1954.

5.4.3 Cultural history and photography subproject

Project period: 15 March 1999 – 31 December 2000
Person-labour years: 1.8 Project Assistant person-labour years
24.3 Data Entry Clerk person-labour years
Head of subproject: Sveinulf Hegstad
Project Assistant(s): Ketil Zackariassen

Registration units: UniReg Kautokeino

Type of material	Entered	Completed
Photography	31,000 slides from the recent cultural history collection must be scanned and the content must be registered	All the material was digitised

5.4.4 Recent cultural history subproject

Project period: 1 February – 30 April 2006
Person-labour years: 0.5 Project Assistant person-labour years (carried out by TMU)
2.5 Data Entry Clerk person-labour years
Head of subproject: Anita Maurstad
Registration units: UniReg Lakselv

A scientific employee at the Technical Department carries out all the technical consultancy tasks.

Type of material	Entered	Completed
Item catalogue for recent cultural history	5,694 access numbers	The entire item catalogue has been digitised and proofread, tagging remains

5.4.5 Zoology and geology subproject

Project period: 1 September 1998 – 31 December 2006
Person-labour years: 8.3 Project Assistant person-labour years
16.2 Data Entry Clerk person-labour years
Head of subproject: Arne C. Nilssen
Project Assistant(s): Robert Bergersen
Registration units: Local registration unit, UniReg Narvik

Type of material	Entered	Completed
Zoology, Coleoptera TSZC	24,000 objects	22,899 objects
Zoology, Lepidoptera TSZL	23,680 objects	23,680 objects
Zoology, Diptera TSZD	26,385 objects	26,385 objects
Zoology, Varia TSZX	22,000 objects	21,938 objects
Zoology, Crustacea TSZCr	13,000 objects	11,383 objects
Zoology, Chelicerata TSZCh	1,000 objects	569 objects
Zoology, Mammalia TSZM	2,000 objects	1,924 objects
Zoology, Pisces TSZP	3,000 objects	1,982 objects
Zoology, Echinodermata	4,655 objects	4,655 objects
Zoology, Various zoology	34,249 objects	11,119 objects digitised by the Technical Department
Zoology, Offprints TSZS	30,000 objects	20,545 offprints, technical literature
Geology, Rocks etc.	30,000 objects	24,351 objects
Geology, Offprints TSGS	26,200 objects	26,137 offprints, technical literature

5.5 Subprojects at the Museum of Natural History and Archaeology, Trondheim

5.5.1 Archaeology subproject

Project period: 1 January 1998 – 31 December 2006.
Person-labour years: 15.5 Project Assistant person-labour years of which 4.5 person-labour years were financed by VM
54.4 Data Entry Clerk person-labour years
Head of subproject: Kurt Alterskjær, Geir Grønnesby
Project Assistant(s): Gitte Høy-Petersen, Merete Henriksen, Brit Astrid Gystad.
Registration units: Registrations groups at Folkeuniversitetet in Tønsberg and Drammen, Bjørg Andersen, local registration unit, UniReg Vardø, UniReg Berlevåg.

Type of material	Entered	Completed
Access catalogue	4,704 printed and handwritten pages	Completed (4,704 printed and handwritten pages)
Specific collections	725 handwritten pages	725 handwritten pages 123 tagged pages
Topographic archive	142,849 pages	81,840 adapted pages 81,805 scanned pages 67,300 registered pages 59,011 completed pages
Letter archive	ca. 16,527 pages (annual volumes 1815 – 1948)	ca. 12,397 scanned pages (annual volumes 1815 – 1939) 0 completed pages
City excavations (N number)	127,890 registration forms	52,956 scanned reg. forms 44,468 registered reg. forms text 186 completed reg. forms
Photography archive	approx. 10,780 index cards, 766 registration forms, 3 handwritten catalogues (approx. 200 pages), 29 metres of negatives/positives/slides	10,780 index cards scanned 10,780 registered index cards text 6,838 completed index cards
Older literary texts	3,546 text pages (3,477 printed and 69 handwritten pages)	3,546 handwritten and tagged pages 661 completed pages
Entry protocol 1982 – 2001	2,265 access numbers	2,265 completed posts

5.5.2 Botany subproject

Project period: 1 January 1999 – 31 December 2006
Person-labour years: 6.9 Project Assistant person-labour years, of which 1 person-labour year was financed by VM
20.1 Data Entry Clerk person-labour years
Head of subproject: Kjell Ivar Flatberg, Sigurd Mjøen Såstad,
Project Assistant(s): Tommy Prestø, Heidi Myklebost
Registration units: Local registration unit, UniReg Maže

Type of material	Entered	Completed
Vascular plants (Norwegian and Nordic herbarium)	224,750, later amended to 187,732	187,732 (completed)
Vascular plants, Svalbard and Jan Mayen	3,392	3,392 (completed)

Moss (Norwegian material)	84,448	84,448 (completed)
Lichen (Norwegian material)	15,000	10,426
Fungi (Norwegian material)	13,700	13,522 (completed)
Calcareous algae	3,880	3,880 (completed)
Field notes	2,300	2,545 lists (completed)

5.5.3 Zoology subproject

Project period: 1 January 1997 – 31 December 2006
Person-labour years: 15.5 Project Assistant person-labour years, of which 4.7 person-labour years were financed by VM
14 Data Entry Clerk person-labour years
Head of subproject: Jan Ivar Koksvik
Project Assistant(s): Marc Daverdin, Karstein Hårsaker
Registration units: Local registration unit

Type of material	**Entered**	**Completed**
Fresh water invertebrates, bottom-dwelling fauna	250,000	194,845 objects
Fresh water invertebrates, zooplankton	100,000 objects	83,187 objects
Fish scales and otoliths	2,395 piles	2,395 piles (completed)
Fish, research data	110,000 observations	91,472
Fish, numerical object collection	7,000 objects	5,338 objects
Fish, stomach content	120,000 observations	101,873 observations
Fish, growth (research data)	90,000 observations	32,467 observations
Marine invertebrates	140,000 objects	91,217 objects
Terrestrial/limnic invertebrates (systematic collection)	145,000 objects	138,313 objects
Birds	6,512 objects	6,512 objects (completed)
Bird eggs	2,248 objects	2,248 objects (completed)
Mammals	3,000 objects	2,049 objects
Amphibians and reptiles	3,300 objects	3,039 objects
Typological collection	593 objects	593 objects (completed)

5.6 Overview of project assistants

Geir Arnesen, Botany subproject, Tromsø Museum (1999 – 2004)
Ingvild S. Andreassen, Archaeology subproject, KHM (2000)
Robert Bergersen, Zoology and geology subproject, Tromsø Museum (1998 – 2006)
Alfhild Birkeland, Ethnography subproject, KHM (1998 – 2000)
Charlotte Sletten Bjorå, Botany, Nordic and Arctic vascular plants subproject, NHM (2001)
Anne Dahl-Olsen, Archaeology subproject, KHM (2000)
Marc Daverdin, Zoology subproject, the Museum of Natural History and Archaeology (1998 - 2006)
Per Djursvoll, Zoology subproject, Bergen Museum (2000 – 2006)
Asbjørn Engevik jr., Archaeology subproject, Bergen Museum (1998 – 2001)
Hussain Hassan Gulaid, Botany, fungi and lichen subproject, NHM (1999 – 2003)
Håkon Glørstad, Archaeology subproject, KHM (1999 – 2000)
Brit Astrid Gystad, Archaeology subproject, the Museum of Natural History and Archaeology (2006)
Lars Ove Hansen, Zoology subproject, NHM (2000 – 2003)
Kirsten Helgeland, Photography subproject, KHM (2004 – 2006)
Merete Moe Henriksen, Archaeology subproject, the Museum of Natural History and Archaeology (1999 - 2006)
Solfrid Hjelmtveit, Botany subproject, Bergen Museum (financed by BM) (2004 – 2006)
Ole A. Hoel, Palaeontology subproject, NHM (1999 – 2000)
Anne Birgitte Høy-Petersen, Archaeology subproject, the Museum of Natural History and Archaeology (1998 – 2006)
Karstein Hårsaker, Zoology subproject, the Museum of Natural History and Archaeology (2001 - 2006)
Sonja Innselset, Archaeology subproject, Bergen Museum (1998 – 2006)
Kristin Iveland, Ethnography subproject, KHM (1999 – 2001, 2004 - 2006)
Kjell Arne Johanson, Zoology subproject, Bergen Museum (1998 – 1999)
Birgit Kanz, Botany subproject, Bergen Museum (2001 - 2003)
Tor Knudsen, Zoology subproject, the Museum of Natural History and Archaeology (2001)
Jon Anders Kongsrud, Zoology subproject, Bergen Museum (1999 – 2004)
Louise Lindblom, Botany subproject, Bergen Museum (1999 - 2001)
Anette Lislerud, Archaeology subproject, KHM (2000)
Anders Lyngstad, Botany subproject, the Museum of Natural History and Archaeology (2001)
Bjørn-Petter Løfall, Botany, fungi and lichen subproject, NHM (2000 – 2003)
Lene Martinsen, Zoology subproject, NHM (2000 -2001)
Christian Meidell, Geology subproject, Bergen Museum (1999-2001)
Anita Maurstad, Recent cultural history subproject, Tromsø Museum (financed locally) (2005)
Heidi Myklebost, Botany subproject, the Museum of Natural History and Archaeology (2001 - 2006)
Maria Nuñez, Botany, fungi and lichen subproject, NHM (1998 – 2000)
Åge Scott Olsen, Botany, fungi and lichen subproject, NHM (2002 – 2003)
Oddvar Pedersen, Botany, Nordic and Arctic vascular plants subproject, NHM (1999 – 2003)
Tommy Prestø, Botany subproject, the Museum of Natural History and Archaeology (2000 - 2006)
Ingunn Marie Røstad, Archaeology subproject, KHM (2000)
Nina Sletvold, Botany, Nordic and Arctic vascular plants subproject, NHM (2002 – 2003)
Heidi Solstad, Botany, Nordic and Arctic vascular plants subproject, NHM (2000 – 2002)
Åse Sørgård, Cultural history subproject, Tromsø Museum (2002 – 2006)
Vibekke Vange, Botany subproject, Tromsø Museum (2005 – 2006)
Ketil Zachariassen, Cultural history subproject, Tromsø Museum (1999 – 2000)
Leif Aarvik, Zoology subproject, NHM (2001 – 2003)

All the employees listed have been working for the Museum Project in a certain percentage of standard working hours. For some, the percentage has varied over time, and many of the Project Assistants have received their salaries in part from the Museum Project and in part from the museums. In total, 108 person-labour years have been financed by the Museum Project.

6 Publications

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Holmen, Jon; Ore, Christian-Emil Smith; Eide, Øyvind. Arhivele muzeului - documentele istorice departe de a fi doar surse de informatie. *Revísta muzeelor* 2003;XXXIX(3-4):69-75

Engevik, Asbjørn; Holmen, Jon; Innselset, Sonja; Stabell, Jarle. Digital Archaeological Resources at the University of Bergen: An Efficient Tool in Research and Heritage Management? i: *Proceedings of the 27th Conference, Dublin, April 1999. Making the connection to the past. CAA 99*. Red. Fennema, Kelly, Kamermans, Hans. Leiden University 2004. ISBN 90-73368-20-0

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Holmen, Jon; Ore, Christian-Emil Smith. Gjør vi ting riktig? Kvalitetssikring av bilder i digital form. *Norsk Arkivforum* 2004;18:30-40

Holmen, Jon; Ore, Christian-Emil Smith; Eide, Øyvind. Documenting two histories at once: Digging into archaeology. *BAR International Series*, Oxford 2004;1227:221-224

Thunes, KH; Skartveit, J; Gjerde, I; Stary, J; Solhoy, T; Fjellberg, A; Kobro, S; Nakahara, S; zur Strassen, R; Vierbergen, G; Szadziewski, R; Hagan, DV; Grogan, WL; Jonassen, T; Aakra, K; Anonby, J; Greve, L; Aukema, B; Heller, K; Michelsen, V; Haenni, JP; Emeljanov, AF; Douwes, P; Berggren, K; Franzen, J; Disney, RHL; Prescher, S; Johanson, KA; Mamaev, B; Podenas, S; Andersen, S; Gaimari, SD; Nartshuk, E; Soli, GEE; Papp, L; Midtgaard, F; Andersen, A; von Tschirnhaus, M; Bachli, G; Olsen, KM; Olsvik, H; Foldvari, M; Raastad, Jan Emil; Hansen, Lars Ove; Djursvoll, Per. The arthropod community of Scots pine (Pinus sylvestris L.) canopies in Norway. *Entomologica Fennica* 2004;15:65-90

Eide, Øyvind; Holmen, Jon; Høy-Petersen, Anne Birgitte. Making the Resources Fit Together. Interconnection of Diverse Archaeological Document Collections. *Internet Archaeology* 2005;18

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Eide, Øyvind. Museum Collections Catalogues and Archives Online: A Reference Resource for Professionals and a Learning tool for the Public. *Museums and the Internet: Presenting Cultural Heritage Resources on-line*. Bucuresti under utgivelse.

Eide, Øyvind; Holmen, Jon; Høy-Petersen, Anne Birgitte. Between the book and the exhibition. Creating archaeological presentations based on database information. Proceedings from CAA 2004, Computer Applications and Quantitative Methods in Archaeology. *BAR International Series*, Oxford under utgivelse

Jordal, Ellen K Aasprang; Holmen, Jon; Olsen, Stein Alexander; Ore, Christian-Emil Smith. From XML-tagged Acquisition Catalogues to an Event-based Relational Database". *Proceedings from CAA 2004, Computer Applications and Quantitative Methods in Archaeology. BAR International Series*, Oxford under utgivelse.

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7 Project accounts

7.1 Financing (in NOK)

Year	UFD/KD	Univers.	MD	KHM	VM	HF	Sale of services	Total per year
1998	5 000 000							5 000 000
1999	4 000 000	2 500 000				300 000		6 800 000
2000	3 500 000	3 610 000				400 000		7 510 000
2001	3 000 000	3 550 000	3 000 000			400 000	250 000	10 200 000
2002	5 000 000	4 540 000				400 000		9 940 000
2003	3 000 000	4 650 000		350 000		400 000		8 400 000
2004	3 000 000	4 770 000		440 000		400 000		8 610 000
2005	3 000 000	4 670 000		405 000	240 000	400 000		8 715 000
2006	3 000 000	4 670 000		480 000	250 000	400 000		8 800 000
Total	**32 500 000**	**32 960 000**	**3 000 000**	**1 675 000**	**490 000**	**3 100 000**	**250 000**	**73 975 000**

7.2 Expenditure

		Total for the period
Project management	salary	8 020 493
	operation	2 238 658
	Sum	**10 259 151**
System development	salary	14 082 528
	operation	3 769 007
	Sum	**17 851 535**
Quality control	salary	36 627 481
	operation	2 304 370
	Sum	**38 931 851**
Registration	**Sum**	**3 477 486**
Running the HF office	**Sum**	**3 100 000**
Total sum		**73 620 023**

At the end of the museum project, there is a profit of approx. NOK 350 000. This has been allocated for secondments by Scientific Director Christian-Emil Ore for the publication of the results from the project.

Expenditure per year

		1998	1999	2000	2001	2002	2003	2004	2005	2006	Total for the period
Project Management	salary	103 860	674 565	941 536	1 179 586	1 359 166	1 021 933	901 262	939 239	899 346	8 020 493
	operation	60 833	350 385	207 347	250 777	323 851	218 296	356 976	255 340	214 853	2 238 658
	Sum	**164 693**	**1 024 950**	**1 148 883**	**1 430 363**	**1 683 017**	**1 240 229**	**1 258 238**	**1 194 579**	**1 114 199**	**10 259 151**
System development	salary	53 816	1 054 925	1 338 143	1 392 212	1 333 335	1 922 631	2 083 708	2 363 318	2 540 440	14 082 528
	operation	123 687	934 211	487 250	432 678	287 509	601 823	329 517	315 226	257 106	3 769 007
	Sum	**177 503**	**1 989 136**	**1 825 393**	**1 824 890**	**1 620 844**	**2 524 454**	**2 413 225**	**2 678 544**	**2 797 546**	**17 851 535**
Quality control	salary	296 174	4 036 345	5 405 206	5 394 152	5 387 783	4 297 981	3 986 853	3 926 962	3 896 025	36 627 481
	operation	85 275	365 435	433 492	298 338	260 039	225 875	325 676	179 256	130 984	2 304 370
	Sum	**381 449**	**4 401 780**	**5 838 698**	**5 692 490**	**5 647 822**	**4 523 856**	**4 312 529**	**4 106 218**	**4 027 009**	**38 931 851**
Registration	**Sum**	**6 000**	**428 219**	**916 873**	**686 020**	**262 332**	**318 294**	**292 732**	**289 287**	**277 729**	**3 477 486**
Running the HF office	**Sum**		**300 000**	**400 000**	**400 000**	**400 000**	**400 000**	**400 000**	**400 000**	**400 000**	**3 100 000**
Total sum		**729 645**	**8 144 085**	**10 129 847**	**10 033 763**	**9 614 015**	**9 006 833**	**8 676 724**	**8 668 628**	**8 616 483**	**73 620 023**

Appendix A:

Co-operation agreement – The Museum Project

Co-operation agreement between the University of Oslo, University of Bergen, the Norwegian University of Science and Technology and the University of Tromsø, in force for the period 1 July 2001 to 31 December 2005.

§ 1 Objectives

The primary objective of the Museum Project is to ensure co-ordinated electronic access to the University Museums' cultural and natural history collections for the purposes of research, education and communication. This takes place through co-ordinated and systematic conversion of information to electronic databases. As far as possible data shall also be made available to the public administration and the general public.

At the end of the project in 2005, substantial parts of the University Museums' collections shall be registered in national searchable databases. The biological database shall have a scope and quality which ensures that it can form the basis for a national species databank and better environmental management. The University Museums shall have implemented rational routines for data registration and updating of information. An operational organisation ensuring maintenance and further development of the data systems shall be established before the project is ended.

The Museum Project's more specific scientific objectives are set out in the Project Directive (Enclosure 1), which is an integrated part of this agreement.

§ 2 the Board

The Museum Project is managed by a Board composed of 5 members. Each of the four universities shall appoint one Board member and one personal deputy from its own institution to the Board. The Rectors of the Universities appoint a Chairman of the Board in consultation with one another. The Board is appointed for 2 ½ years. Re-appointment of the Chairman, Board members and deputies for the remainder of the project period is possible.

On the basis of this Co-operation Agreement, the Board manages the Museum Project, and reports directly to the management of each museum and the Rectors of the Universities. The Board may use the National Committee for University Museums as an advisory organ in cases affecting all the institutions.

§ 3 Organisation of daily management

The Board is responsible for ensuring that the Museum Project is carried out according to the intentions and within the financial resources that are available.

The central project group, which has its workplace at the University of Oslo is responsible for the daily management of the Museum Project. The project group shall have a professional leader with scientific competence, at least on the level of competence for an associate professorship, and an administrative leader. Both the professional and administrative leader report to the Board and participate in Board meetings, but without voting rights.

A joint management dialogue between the Board, project management and representatives of each museum management shall be held once per year to discuss the project's progress and further plans.

§ 4 Funding

The Museum Project is financed through external grants and annual grants by the universities. The Board approves the annual budget on the basis of external grants and the universities' own contributions.

The annual accounts shall be approved by the Board.

§ 5 Reporting

The Board will present an annual report on the project's progress and finances. The annual report shall contain the accounts for the previous year, as well as a budget and plans for the present year.
In the case of substantial deviation from approved plans or budget during the year, the Board shall immediately report on this.
Reporting shall take place to the universities, university museums and to external co-operation partners.

§ 6 Use of data

The data material which is recorded through the Museum Project shall be available for scientific use for all of the participating institutions on en equal footing.
Recorded data shall be made available to external users and the general public to the greatest extent possible, but in some cases will have to be protected based on special evaluations. The Museum that manages the primary data will make a decision on a case-by-case basis on the grounds of common criteria decided by the Board.

§ 7 Duration and termination

The second stage of the Museum Project starts in July 2001 and will continue until the end of 2005. During this stage, the Principal of the Project will be the Rectors representing the four universities.
The co-operation agreement comes into force at the date it is entered into and will remain in force up to 31st December 2005. At the latest one year before the termination of the agreement, the Board shall put forward a proposal regarding organisation of a permanent solution for operation and maintenance of the databases which are established through the Project. The parties are obligated to enter into a separate agreement regarding a permanent operational organisation.
If any of the universities wish to withdraw from the co-operation agreement before the discharge of it, written notification of this must be given to the other parties at least one year in advance.

Appendix B:

Project Directive

This document is an enclosure to the Universities' co-operation agreement regarding the University Museum National Database Project. The document describes the project's organisation and regulates the work with establishing co-ordinated electronic access to the University Museums' collections for research, education and communication. Any changes to the Project Directive shall be approved by the Principal and the museum management. The document is divided into the following sections:

1. background
2. objectives
3. organisation and guidelines for the project work
4. finance
5. reporting
6. use of data

1 Background

The universities in the country are the custodians of large bodies of knowledge and information regarding society, culture, nature and environment through the ages. Not least have the university museums played an important role in the compilation and dissemination of this knowledge. It is no accident that the museums have formed the nucleus for the founding of higher educational institutions and universities in Norway.

The magnitude and organisation of the museums' collections, however, mean that they have not been readily accessible for research and education, public administration and the general public. In order to maintain their position as the country's foremost object-based research environments and information banks, the museums must revitalise their collections. As a link in this process it is necessary to introduce IT-based methods at all levels in the museums. However, this requires a very costly re-assessment and conversion of existing archives to digital format, where there is a necessity for both in-house efforts and additional resources. In some instances, the establishment of the databases will require a complete revision of the collections.

The museum project was established in the spring of 1998 as a national collaborative project between the universities in Norway. The fundamental idea of the project is to utilise the experience and competence which has been gained through previous database projects, namely, the documentation project and UNADOK.

2 Objectives

The principal objective of the museum project is to ensure co-ordinated electronic access to the university museums' cultural and natural history collections for purposes of research, education and communication. This will take place through a co-ordinated and systematic conversion of information to electronic databases. The data shall be made available to the public administration and the general public to the greatest degree possible.

At the finalisation of the project in 2005, substantial parts of the university museums' collections were recorded in nationally searchable databases. The biological database shall have an extent and quality which entails that it can provide the foundation for a national species databank. The university museums shall have taken rational routines into use for data recording and updating of information. An operational organisation which ensures maintenance and further development of the data systems shall be established before the end of the project.

2.1. Sub-objectives

2.1.1. Completed data recording of archives and collections

The project will co-ordinate such recording and see that the professional environments are provided with co-ordinated systems. Measured in workload, this is the largest and most extensive part of the project. In total, the university museums manage collections of approximately 15 million artefacts which shall be reviewed and recorded in the databases. The work is well under way, but at the beginning of the year 2001, approximately 80% of the collections remain to be recorded. Priorities regarding the remaining work are decided by the Board on the basis of reports from the scientific environments. In this process, one would especially emphasise that there is willingness on the part of the environments to contribute, expressed by priorities within existing limits and preparatory work carried out with own resources and that it is feasible to include the material in the project.

2.1.2. Draw up rational routines – development of methods for handling of new information

The project shall construct databases with information regarding collections and tools so that all future collections shall be recorded in the same databases. In order to avoid re-establishment of manual archives it is very important to develop methods regarding data acquisition and management of new material. The project, in co-operation with the museums, shall develop ICT-based methods and systems for handling of new information. The museums are responsible for seeing that the methods and systems are taken into use in accordance with current law and rules governing employment.

2.1.3. Create optimum availability for researchers, public administration and the general public

The project must ensure that information in the bases is made available to future users in the easiest possible manner. The form of presentation, guidance and accounting must be adapted to different user groups. Access to data must be regulated so that ethical circumstances, security in the museums, financial and research-related interests, copyright and personal information are protected.

2.1.4. Construct co-ordinated data representation and interface

Effective access to information assumes co-ordinated data presentation and interface. The project shall define standards on the background of scientific considerations, existing practice and established registers. Further, the project will ensure linking between different registers, both external and internal.

3 Organisation and guidelines for project work

3.1. Principal

The second stage of the Museum Project starts in July 2001 and continues through 2005. During this stage the Principal for the Project will be the universities represented by the Rectors.

3.2. Board and Management

3.2.1. The Board

The Board is responsible for seeing that the Museum Project is carried out within the ramifications of the contracts entered into and resources available at all times.

The Board is responsible to the Principal for the project as a whole and is responsible for the organisation and performance of the project. A part of the management structure is an annual common management dialogue with the leaders of the University Museums. This dialogue is normative for the work on the project.

Both the scientific and administrative leaders report to the Board and participate in Board meetings, but without voting rights. The administrative leader is the Secretary for the Board.

3.2.2. Local working groups

Each of the Universities' representatives on the Board should belong to a local working group. These working groups shall assist the Universities' representative with assigned duties, which include *inter alia:*

- necessary co-ordination of resource distribution locally to the individual university

- urge detailed statements for projects which have not yet been started
- keep contact with the local university management.

3.2.3. Project management

The daily operation of the Museum Project is performed by the central project group, which has its workplace at the University of Oslo. The project group shall have a professional leader with scientific competence, at least on the level of competence for an associate professorship. The professional leader shall be responsible for the data-technical part of the project. Finance and personnel administration, as well as the organisation of the recording activity in the project shall be carried out by an administrative leader. The administrative leader is the Secretary for the Board. Both the professional and administrative leaders report to the Board and participate in Board meetings, but without voting rights. In the project management there shall also be a co-ordinator for the system developing group which co-ordinates the ICT –related work within the various professional areas.

3.2.3.1 The project management's authority

The Museum Project is a very extensive one. At present it is not possible to see all the problems and obstacles which will arise during the project period. The project management has the authority to undertake minor changes which are necessary for the daily operation. Changes entailing consequences for the project's extent and length shall be put before the Board. In particular, definition and inclusion of new sub-objectives must have the prior approval of the Board.

3.3 Sub-projects

3.3.1. Sub-projects and those responsible for them

The Museum Project is divided into a number of sub-projects according to institutions and subject limits. The University Museums appoint a sub-project manager to be responsible for their respective projects in consultation with the project manager. The sub-project manager should be a permanently employed professional at the entity concerned. The sub-project manager will have the theme-specific professional responsibility for the sub-project and shall carry out the local daily follow-up/guidance of the sub-project and project assistant. A Project Directive shall be drawn up for the individual sub-project which sets up guidelines for performance. This shall be done in consultation with the Museum Project's management. Such Project Directive should contain the following points: Objectives, description of tasks, scope and time schedules, financial circumstances and conditions, responsibility, reporting, quality assurance and processing of changes. The Project Directive shall be approved by the Board.

The sub-project manager shall have the following tasks:

- Responsibility for scientific solutions and choice in the conversion process.
- Professional guidance responsibility for project assistants in the sub-project.
- Contact person for the project's employees in the scientific discipline, arrangement of working conditions for project assistants in the relevant disciplines.
- In co-operation with the project management, distribute assigned project assistants' man-labour hours each year.
- Participate in the recruiting process of project assistants.
- Responsibility for generating the semi-annual and annual report for the sub-project.
- Prepare any statement for further conversion projects.

The sub-project manager is responsible for reporting to the project management and to the Director of his or her own unit.

3.3.2. Project assistants

The project assistants have the daily responsibility for the work with converting the collections to electronic format. Arrangement of material, as well as follow-up and quality assurance of the work done with recording are the main tasks of this work. A permanent staff of project assistants shall be in place, which will be in proportion to the number of those recording data. The proportion of project assistants and unskilled staff recording data will vary strongly from scientific discipline to scientific discipline. For each individual sub-project, the aim should be that a minimum of *one* project assistant is employed for the longest possible period. They will represent the continuity in the sub-project. This core of long-term engagements should be supplemented by short-term and part-time engagements of proofreaders.

The project assistants shall be connected to the scientific divisions and the sub-projects through the discipline-specific responsibility they have in the project. The project assistants shall to the greatest extent possible be integrated in the scientific environments both through professional guidance and through room placing. It is assumed that the individual division/institution will make the necessary working space available.

The project assistants shall be employed either by the respective university museums or directly by the Museum Project, with the museum as the workplace. Employment of project assistants takes place in consultation between the museum and the project administration, and will be based on the employing unit's regulations. The project assistants who are financed by the Museum Project shall be regarded as project employees regardless of where they are formally employed. That means that the Museum Project management will have instruction authority over the project assistants. If the project management and scientific environment are in disagreement, the Project Management shall clarify the question before the scientific consultants become involved. The project assistants' work tasks are otherwise regulated by separate working instructions which are approved by the Board.

3.4 Strategy for recording of data

The large scope of the Project necessitates use of unskilled staff for the recording work itself. Preparation of the material, instruction of the employees who shall record the information and other follow-up as well as proofreading and checking of the material is assumed done by consultants with discipline-specific competence (project assistants). By unskilled staff is meant use of employment measures and labour financed by the Employment Agency in whole or in part.

3.5 Strategy for ICT solutions

The Museum Project's requirement for system development is in four parts.

- Develop/obtain software for recording of the data
- Develop tools so that the individual division can use the recorded data in its work
- Develop common methods for handling of new information
- Increase the availability by constructing a common, assembled information system for all the participating divisions.

At the end of the first stage in the Museum Project there will be a completed first edition of database systems for botany, geology, zoology, archaeology, ethnography and recent cultural history. The database systems are based on one or more common web-based databases with access via the Internet either by specially designed applications or a general WWW-based interface.

When these systems are taken into use the administration of object and artefact collections at the University Museums will to a great extent be based on data which is in the databases. The databases will form the foundation for an extensive research co-operation between the museums and co-operation regarding data collection with external entities. The information contained in the natural history databases will in time contribute to forming the backbone of environmental information in Norway. Collectively, the University Museums' databases will be of great importance for research,

education and (general) communication as well as for co-operation with public administration and other external partners.

Information in the natural history databases shall form the foundation for a species databank in Norway, and through this co-operation the Norwegian University Museums will be able to be active participants in the national promise the establishment of such national species databank is, and make their collections available for use by it.

An organisation must have come into existence by the end of the Project, which has sufficient competence to perform further maintenance and development of the databases. The physical placing of the databases and appurtenant computers must be clarified before the end of the Project.

4 Finance

The Museum Project is financed by external grants and annual grants by the Universities. The Universities' collective own contribution is organised so that the University of Oslo contributes with 3/9 and the other Universities with 2/9 each. The Universities shall finance the expenses for their Board members in addition.

If the activity is reduced at one or more of the Universities, a discussion may be held as to whether the own contributions should be reduced equivalently. If the Board wishes to increase the own contributions above the present level, this must be discussed and approved by the respective Universities.

The Board approves the Project's annual budget on the basis of external grants and the Universities' own contributions.

The Board can include external co-operation partners in the Project on the assumption that they provide their own financing and contribute to common costs in an equivalent manner to the University Museums.

The Annual Accounts shall be approved by the Board.

5 Reporting

A semi-annual report on progress, status and evaluation of remaining work shall be drawn up by each sub-project. On the basis of these, the project working group will prepare status reports and other informational material for the whole of the project. The Board shall present an Annual Report on the Project's progress and finance. The Annual Report shall contain the accounts for the previous year, as well as budget and plans for the present year.
In the case of substantial deviation from approved plans or budget during the year, the Board shall immediately report on this.
Reporting takes place to the Universities, the University Museums, and external co-operation partners. The University Museums will receive minutes of meetings consecutively.

6 Use of data

The data material which is recorded through the Museum Project shall be available for scientific use by all the participating institutions on an equal footing. The degree of access to data for external users and the general public will be decided by the University Museums in consultation with the Board. Users of the system shall be allowed access to the information they wish to have in the easiest possible manner. Presentational form, guidance and accounting must be adjusted to the individual user groups. Access to the data must be regulated so that ethical conditions, security in the Museums, financial interests, copyrights and personal information is protected.