

Introduction to Digital Libraries

UCT CSC400/403 – Final Exam – November 2004

This question is based on an article entitled “Saving the Timbuktu Manuscripts” which appeared in *Science in Africa*, September 2003. A copy of the article is attached.

The article describes a high profile project that aims to preserve ancient and rare academic and religious manuscripts in Mali using a combination of techniques, alluding to digital preservation but not concentrating on it. Read the article carefully.

Assume that you have been hired as a consultant on the project to design a digital library, as an alternative to traditional approaches, to meet the needs of the project. Taking into account the principles and best practices of building digital libraries, write a technical proposal for a system (or systems) to meet the needs of the client(s), the curator(s) of the collection.

While most of the bounds of the problem can be gleaned from the article, the requirements and specifications are not fixed. Clearly state your assumptions in this regard and include reasons for design decisions wherever applicable.

Your proposal should approximately follow the following structure:

- Specifications
- Overview of Design
- Detailed System Architecture
- Interoperability and Standards
- Preservation
- ...
- References

(include sections on major issues that you deem important to this project)

You may consult any reference materials (paper or online), but you **MAY NOT** discuss the problem with any individuals (that includes your classmates and especially persons associated with the project).

Format your proposal as 12pt Times Roman, 2.54cm margins, single-spacing. Your proposal must not exceed 2500 words and must not number more than 10 pages, including figures, tables and references. Include only references to documents you read on topics not covered in the DL course, and directly related to the project itself.

Submit a printed copy to the lecturer by 12 noon on 12 November 2004. No late handins or handwritten proposals will be accepted.



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Saving the Timbuktu Manuscripts

African countries have thrown their weight behind efforts to preserve the priceless Timbuktu Manuscripts, ancient documents that hold the key to some of the secrets of the continent's history and cultural heritage - and shatter the conventional historical view of Africa as a purely "oral continent".



The Timbuktu Manuscripts - or Mali Manuscripts - reams of written manuscripts dating as far back as the 13th century, are ancient Arabic texts that hark back to the Malian city of Timbuktu's glorious past, when it existed 500 years ago as a gold trading port and centre for academics and scholars of religion, literature and science.

The manuscripts provide a written testimony to the skill of African scientists, in astronomy, mathematics, chemistry, medicine and climatology in the Middle Ages.

Timbuktu, long-since a symbol for remote and exotic destinations, was once an extremely wealthy city. Muslim merchants would trade gold from West Africa to Europe and the Middle East in return for salt and other goods.

The manuscripts point to the fact that Africa has a rich legacy of written history, contrary to popular opinion that oral tradition alone has preserved its heritage. This is important, given that written records are believed to be such crucial markers of civilisation.

As many as 18 000 manuscripts, many from ancient libraries, are now housed in the Ahmed Baba Centre, named after the famous 15th century Timbuktu scholar, Ahmed Baba. Many of the ancient texts are also still housed in the libraries of private families in Mali.

Some of the texts, written on delicate paper, are beginning to disintegrate, and preservation measures have become an imperative.

Restoration

Over the centuries, these 13th century manuscripts have been subjected to much physical damage. The climate of the region is one of the culprits. Heat and dryness cause the paper to become brittle. The improper storage of the manuscripts have exposed them to dust,



vibration and sudden changes in temperature and relative humidity. Dust and grit has abraded some of the text in certain manuscripts. Worse still, the publicity generated around the manuscripts has invited another source of potential damage : human handling. Researchers, historians, tourist and collectors have all flocked to Timbuktu to see these rare valuables.

Preservation strategies

Preserving the Timbuktu manuscripts is a huge challenge. What may work in other parts of the world, may not work in Timbuktu. The ever present dust presents one of the greatest challenges in a desert town where it is a part of life. Attempts to microfilm the manuscripts were aborted for this reason. A small scratch on microfilm can result in the loss of a large amount of data.

It is very difficult to control dust in an area where the buildings themselves are made out of mud and wood. To allow ventilation, buildings often do not have closing windows allowing a free flow of sand and dust inside.

But assuming microfilming is an answer, there would still be the issue of proper storage. Climate controlled rooms with constant temperature and humidity to house these valuables is vital for their preservation, but in a town where the electricity supply is an unreliable generator system, power failures would lay to waste any of these efforts.

Cost is another factor as machinery and material has to be imported and at unfavourable exchange rates. And then again, simply maintaining equipment becomes a battle of wills with high temperatures and of course, the dust.

Digitising the collection may work on the less fragile manuscripts but it may be disastrous for the extremely fragile ones which represent the larger part of the collection.

Clearly a fresh multi-pronged approach is needed to save these valuable manuscripts. In collaboration with other governments and international experts, their approach will now be towards preventive conservation, preventing further deterioration as well as curative conservation, restoring the damaged works.

South African involvement

South Africa came onto the scene when President Thabo Mbeki offered help to the Malian government to preserve the ancient scripts during a state visit in 2001. The two countries have now launched a trust fund to elicit funds from the public to preserve the continent's heritage.

An estimated R36-million is needed over a five-year period, both to upgrade the Ahmed Baba Centre and to finance the building of a new library equipped with the necessary technology to preserve the manuscripts.

The Timbuktu Manuscripts have been earmarked as the first official cultural project of the New Partnership for Africa's Development (Nepad), the socio-economic revival plan of the African Union. They have also become a South African Presidential Project, co-ordinated by the Presidency and the Department of Arts and Culture, through the National Archives in Pretoria.

South Africa is now sharing with Mali its own technical expertise on preserving ancient documents. According to project leader Dr Graham Dominy of the National archives, four Malians have just finished part of

the training process.

Rare book boxes

Alexio Motsi of the National Archives who has been in charge of the training aspect explains that the first step is to protect the manuscripts from any further damage before restoration work can begin. The manuscripts will be encased in "rare book boxes", specially designed containers made using certified archival materials. Each container is tailored to the needs of the manuscript depending on how it was made and bound. The containers will protect the manuscripts from temperature fluctuations, humidity and vibrations.

Motsi says that the next stage will see the introduction of restoration work which will require much scientific and technical skill. So as to match the original craftsmanship, their approach will again be manuscript specific, dependent on the type of paper, ink, thread and leather used. Science aside, Motsi points out that the restoration work will also be mindful of the religious aspects to handling ancient texts such as the Koran.

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