

ARCHAVE: A virtual reality interface for archaeological 3D GIS

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Reading and Research report. Spring 2000.

This was the schedule I presented at the beginning of the semester:

- *Month 1 (February 2000):* Implementation of the web client. Adaptation of the Great Temple model to JOT and getting the topographical data of the site ready. Simple navigation (using already implemented techniques) through the model will be possible. The connection VR-GIS will be in place.
- *Month 2 (March 2000):* Implementation of the walking interface using the Wand. The terrain data should be in place and the first walk-through the site at real terrain level will be possible. User study setup ready and design of the first Pilot Study. Model demo: March 6-10.
- *Month 3 (April 2000):* Customization of Avenue scripts and creation of GIS interface in the cave/workbench. Requests made to the GIS from the VR end will be possible and the first UI's will be tested to decide the best solution. Pilot Study definition. CAA Conference: April 18-23.
- *Month 4 (May 2000):* Creation of the data visualization models. How the results are displayed in the 3D environment. Different possibilities will be tested. Run Pilot Study I.

In the first month and a half some results were achieved in JOT and a simple model of the Temple was up and running in the cave. We realized then that we would have an important problem with the performance of JOT and it's usefulness for dealing with "large" models at interactive rates. After several attempts (with several major improvements in the JOT main code) of improving the performance and an unsuccessful attempt to texture map the model, we decided to switch the application to WorldToolkit.

From March 18th until April 12th all the efforts were put onto getting the system into a comparable state as it would be in JOT (with knowledge of how WTK deals with all the input devices and making sure it was the right system to switch to, instead of work in developing JOT).

In April 12th we shot a video showing the application for the presentation we made at Computer Applications in Archaeology 2000, held in Ljubljana (Slovenia) 18-21 April. A lot of contacts were made at the conference and reactions to the project were very good and encouraging. Similar systems were presented there that use GIS in archaeology. One of the conclusions from the congress is that the use of a GIS system might not be adequate for this project, but creating a whole new environment not necessarily tied to that of a GIS commercial package. Further discussion on this matter is needed and a possible new test of the first pilot study would be compare a real GIS system with our new way to look into a database and extract conclusions.

To continue with the schedule, the connection with the GIS system is now ready and I'd be able to include it in the main visualization code at any point (if needed, as I said above).

The final goal of this part of the reading and research was to be able to run the first Pilot Study to analyze how we were doing in the design of the interface and how easy it was for the user to interact with the system through the creation of some simple queries and visualizing the results. Some advances on the design of the experiment were done but most of the time and effort was directed into getting the application we want to test up and running.

In conclusion, the change into WTK was successful and seems to be the adequate environment with which develop our system. It already supports many different environments which is very useful in order to perform the user study and really assess whether VR is a useful tool for archaeologists or, on the contrary, they prefer dealing with the thousands of records a site generates in a more traditional non-immersive way like accessing the database directly or trying to extract conclusions from written reports.

The system is now ready to be tried in the Head Mounted Display, the BARCO table and the desktop. With some changes in the model and some work in the pilot study design, I should be able to run this first study by early-mid June which is only 15 days later than when it was supposed to be run in the original proposal. I estimate that, with all the problems we had at the beginning of the semester, the system is ready now to really explore its possibilities and fulfill the original goals.

Final grade: A

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Providence, April 5, 2000.