Mobile computing for real time support in archaeological excavations

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The poster will present a joint undergoing project between archaeologists and computer scientists at the University of Genova. The goal of the cooperation is the development of a hardware/software integrated system to be applied to stratigraphic excavation; such a system is based on two new technologies: wireless mobile computing and pen-based man-machine interfaces.

The duration of an excavation campaign is limited, and transportation costs could be relevant. It is therefore important to be able to take the right decisions on the spot, with the availability of archaeological databases and possibly consulting specialists who are in some far away museum or university.

Several programs exist which support the archaeologist work off-line, during the data elaboration phase, and the development of Internet provides an easy way for remote database access. This is obviously possible in every university or museum laboratory. On the other hand, fewer tools have been made available to support the work on the field (a remarkable exception is the French system SYSLAT) and real-time cooperation between scientists on the field and those in Universities, museums etc. is still to be achieved. The project is aimed at reducing as far as possible this cooperation gap by making use of wireless mobile computing.

The proposed system consists on a workstation, and two or more mobile computers connected to the workstation by radio devices. The workstation is installed in some building close to the excavation site, it should be connected to Internet by telephone cables or satellite. Mobile systems provide pen-based input, and support local computation (data acquisition and preliminary analysis) as well as remote computations, which result as transactions on the workstation. The latter include data base queries, comparisons with previously entered data, contacts between mobile computers and scientists in the nearby or remote areas and anything else which could be done by means of Internet.

This experience also aims at exploiting the possibilities of pen-based man-machine interaction as an alternative to trackball/keyboard based software on notebook computers. Consider that a stratigraphic excavation takes place in an hostile environment for computation: dust, heat and difficulties in power supply are typical. Most of the data to be collected by the archaeologist are pictorial, like drawings or snapshot: a diary of each campaign collects such information. The mobile computer is thus a mean to extend such diary with real time communication possibilities and data base automatic updates.

The project shall consist on a three year effort (1997-1999) funded by the Italian national research council; a prototype demonstration is planned already for end 1997.