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## Geo-Tagging in Archaeology: Practical Experiences with the TUGeoWiki

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*Introduction and Motivation:* Photographs along with geographical coordinates and annotations, taken during field excursions are an supportive part of Archaeological documentation. The wide spread availability of sophisticated and cheap mobile phones, providing internet access nearly everywhere, have led to advances in the application of new technologies to support field studies. Established tools include Wiki-based mobile geospatial information systems, so called GeoWikis.

*Background and Related Work:* The primary objective of a GeoWiki is to provide the integration of photographs into an external map via an Application Programming Interface (API) such as the Google maps API [1]. Such integration is made possible by using MashUps, which are considered to be both a concept and a technology for merging content, services and applications from multiple sites [2]. Experiences gained in civil engineering at Graz University of Technology made it apparent that the creation of a special GeoWiki for this discipline was necessary, which resulted in the development of the TUGeoWiki [3].

*Methods and Materials:* As a use case we will be evaluating the TUGeoWiki during an archaeological documentation of Roman stones in churches. Relevant issues include both the usability and the usefulness of this application when being utilized in the archaeology domain. During this study the usefulness will be continually evaluated using heuristic evaluation methods [4]. According to ISO 9241-11 [5] there are three key aspects of usability: efficiency, effectiveness and satisfaction; the latter implies the concept of “joy of use” [6]. In order to evaluate the TUGeoWiki against a standardized benchmark, we are applying the System Usability Scale (SUS), a ten-item attitude Likert scale [7], which is considered a valid method of evaluation for mobile devices [8].

*Results and Discussion:* In this presentation, we report on the practical experiences and lessons learned during the use and evaluation of the TUGeoWiki and discuss the advantages and disadvantages of this technology and also discuss any possible solutions to overcome its disadvantages. Advantages include the possibility of being able to make an annotated photograph, which would include all geographical information, even in a secluded area where the archaeologist has little equipment at hand; the possibility of on-the-fly documentation; the immediate exchange of information and the ability to cooperate with other archaeologists etc.; Disadvantages include the relatively low resolution dependent on the mobile device used; the relative inaccuracy of the GPS location data; and the deviation between the distance of the camera and the object. One other easily overlooked point to consider is data protection; archaeologists are extremely worried about tomb raiders gaining access to sensitive archaeological information. We also discuss possible solutions that would overcome these disadvantages.

*Keywords:* Geotagging, GeoWiki, Mobile Computing, Archaeology and Computers

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