



The Computerworld Honors Program

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Final Copy of Case Study

LOCATION:
Madrid, Spain

ORGANIZATION:
T-Systems

YEAR:
2011

ORGANIZATION URL:
<http://www.t-systems.es>

STATUS:
Laureate

PROJECT NAME:
Cranium Project

CATEGORY:
Innovation

PROJECT OVERVIEW

To carry out tasks of identifying people in the field of Legal Medicine, bones are generally used. When the bone is a skull, thanks to the use of various forensic techniques it's possible to determine some characteristics of the person to whom the skull belonged (sex, age and facial biotype). Currently, based on these characteristics, are made reconstructions based on clay structures, which superimposed on a replica of the skull, can recreate the look of a person. These recreations of clay are usually done by specialists of Fine Arts as a craft, which can not be automated and is subject to the subjectivity of the author, besides being expensive (both financially and in time required for execution), dirty (which involves the manipulation of clay) and irreversible (once it has made a recreation, you can not touch). This project sought to automate and objectify the methodology of the reconstruction of soft tissue thanks to innovative process based on 3D systems of Virtual Reality and Augmented Reality. Using a software allows a reconstruction of the facial appearance of a person, using those features of the soft tissues that can be inferred from the data are drawn from the skull and from the most common characteristics of the Spanish population. Based on the scan of a skull, the software can automatically generate an initial reconstruction of the face of the individual objectively. If necessary, the user (usually a medical examiner) may also make changes by editing this result, which may reflect more subjective aspects (not automated) based on their experience. If there are also photographs of the person to whom the skull belonged, the software will perform a study of the similarity of the results in 3D contrasting with them (regardless of the angle or conditions, age, lighting, etc.. - that were taken). Cranium Project has been developed with the cooperation of four entities involved including, in addition to T-Systems, CeDInt (Center for Integrated Home Automation) from the Polytechnic University of Madrid, EML (Legal Medical School) of the Universidad Complutense of Madrid and Perio Clinic. T-Systems is the project leader and brings its expertise in the development of Virtual Reality applications in the field of Medicine. It participates actively in every stage and, of course, especially those involving the development of the application that is under the



project, of which it is responsible. The Cranium Project has been awarded a grant from the Ministry of Science and Innovation within the subprogram of Experimental-Industrial Development with record ID DEX-560610-2008-39, which supports the innovative nature of the project.

SOCIETAL BENEFITS

This project enables the automation of the reconstruction methodology with innovative processes based on 3D Virtual Reality and Augmented Reality, and the reconstruction of faces based on skeletal remains, so that determines the characteristics of the person to whom the skull belonged. This allows the implementation in the field of Legal and Forensic Medicine.

PROJECT BENEFIT EXAMPLE

Although the project is pending further testing and validation, the professionals of EML and Perio Clinic have expressed their satisfaction with the partial results obtained and first impressions after using it. They believe that may be useful for the purpose for which it was devised, which will be a considerable improvement in the process of digitization, storage and classification, reconstruction, identification, etc. usual. While it is true that there are areas for improvement and optimization, some of the possibilities currently offered is facilitate, for example, the filtering of "candidates" that might belong to a particular skull, considering that in their development will discard all those who do not comply with it.

IS THIS PROJECT AN INNOVATION, BEST PRACTICE? Yes

ADDITIONAL PROJECT INFORMATION

This project has arisen from the creation in Spain of the first Virtual Reality Center of Europe with five sides, dedicated to business public use. The new Virtual Reality Centre allows the adaptation to customer needs as they relate to complex environments and information and the application of innovative devices according to these needs. T-Systems offers, thanks to its CRV, a list of services developed exclusively for the client, including "turnkey" projects, CAD data preparation, rental of infrastructure, consulting and training. The use of Virtual Reality technologies contributes to reducing costs and lead times, increase quality and productivity, improved training of professionals, reduce risks and increase business opportunities for any company. In areas such as Automotive, Medical, Architecture and Real Estate, Culture and Leisure, Finance, Marketing and Training, among others, the Virtual Reality offers new opportunities to improve their processes. The Skull Project has been awarded a grant from the Ministry of Science and Innovation within the subprogram of Experimental-Industrial Development with record ID DEX-560610-2008-39, which supports the innovative nature of the project.