

# SIMPATICO 3D: Sistema Informativo Medico PATologle COmplesse

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## ABSTRACT

Correct interpretation of images may be crucial for early disease detection. This work presents SIMPATICO 3D (Sistema Informativo Medico PATologle COmplesse) a system supporting scientists and physicians by providing facilities for case studies analysis and diagnostic imaging in a shared virtual environment. SIMPATICO 3D is a joint ongoing project involving e way Enterprise Business Solutions, a Calabrian software house, the DIMES Department of the University of Calabria and the DMSC Department of the University Magna Graecia of Catanzaro and it has been selected for funding under the recently launched FESR 2014/2020.

## 1. SIMPATICO 3D: A SOFTWARE TOOL FOR MEDICAL IMAGING

SIMPATICO 3D, stems from the experience obtained by the e way Enterprise Business Solutions in the development of IMES 3D (Evolution Imaging System 3D) [2, 3]. IMES 3D is a software supporting medical teams in collaborative diagnostic imaging. The system has been designed and implemented following the requirements of the Complex Operative Unit of Medical Oncology of the Annunziata Hospital in Cosenza (Calabria). IMES 3D, that is owned by e way Enterprise Business Solutions, is currently used in two Italian Hospitals. SIMPATICO 3D extends the basic features of IMES 3D into a complete system suitable for medical and technical specialists, devoted to the management of medical data with a specific focus on the visualization of imaging data, which are processed and manipulated in 3D stereoscopic graphic environments. SIMPATICO 3D [1, 4] uses an advanced programming para-digm, called MVVM (Model-View-View-Model), that allow the direct binding of medical information with three-dimensional graphics objects. The structure of the SIMPATICO 3D system is based on different information layers implemented with the latest generation of design patterns and directly interconnected through web services. Its main components are: (i) the *DICOM Data Entry*, which populates the system with the 3D Imaging. The system allows the import and export of 3D Imaging content. Data are in the standard DICOM format so that they can be easily exchanged within the Network in a non-destructive mode and displayed on different devices. SIMPATICO 3D manages different types of images: Monochrome (eg: CR, CT, MR) and color (eg US, 3D reconstruction); Static images (eg: CR, MG, CT) and

dynamic sequences (eg XA, US); Tablets and uncompressed (RLE, JPEG Lossy, Lossless JPEG, JPEG 2000); (ii) the *3D Navision Stereoscopic*, a 3D display system in a virtual environment that provides the possibility of applying stereoscopic effects in order to create the depth effect on the available data and to provide more information from a diagnostic point of view. SIMPATICO 3D realizes a 3D virtual laboratory in which different information from different diagnostic tests are combined to order to provide to the clinicians a powerful and comprehensive tool for diagnostic and case study analysis. It allows the remote transfer of imaging dataset in non-destructive mode, that is without applying compression of images or other changes that would alter the nature of the image. Moreover, by using the innovative framework, called “Universal App Platform” (UAP), it allows to visualize data and image on different devices and on heterogeneous platforms (web, desktop, iOS, Android, WindowsPhone, blackberry and the mobile device legacy). In SIMPATICO 3D, data and images can also be shared in videoconference sessions. To this aim the system contains a software module, Cisco System WebEx, that provides different and innovative functionalities for file sharing and team connectivity while guaranteeing high levels of security.

## 2. REFERENCES

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