

The Virtual Environment for a Superior neuro-PsichiAtry: the VESPA project.

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The VESPA project aims to provide a Virtual Environment for qualitative and quantitative evaluation, and rehabilitation of motor and cognitive diseases such as mental or linguistic retard, and Alzheimer's Disease. The VESPA system is built on top of a fully immersive, Virtual Reality system, and is remotely supervised. The system is designed to be deployable not only in rehabilitation centers but also in hospitals, schools, and rest-homes. Health system will take advantage by VESPA specialists who are enabled by the integrated video-conferencing system to support, monitor and train patients and local support technicians to exploit the power of the VESPA system. The VESPA project will exploit the power, scalability, and flexibility of Clouds and Grids to feed a theoretically unlimited number of installations sites through a centralized repository of evaluation and rehabilitation scenarios. The automatic capabilities of continuous monitoring and daily updating of rehabilitation plans, as well as a Science-Gateway based portal available to doctors, VESPA specialists, patients and their families are a plus. VESPA acquires technologies deriving from diagnostic services developed by DEDICE FP7 project. The VESPA system will enable numbers of children and elderly to carry out their daily rehabilitation motor-cognitive tasks at schools, homes, and rest-houses assuring continuity into education and assistance, saving parents and relatives from daily trips to rehabilitation centers.

Wider impact and conclusions

With respect to other projects, VESPA introduces dynamic update of monitoring software models for telemedicine and the exploitation of Virtual Reality for cognitive rehabilitation and for neurophysiologic evaluation (e.g. EEG). The integration of VESPA into DECIDE infrastructure and the adoption of AAI are fundamental in order to access available data and software, to interoperate with other European infrastructures for Grid Computing dedicated to neuroimaging for AD, etc.

For VESPA project, investing into biomedical-related Grid Computing infrastructures is useful when new communities can contribute with new developments and, when technological upgrades and middle-term sustainability can be assured through collaborative relationships and partnerships. Collaboration must happen at European level at least, as foreseen by Horizon 2020 principles.

The project is aimed to reach technological innovation which be already integrated into an European network project.

URL(s) for further info

www.progettovespa.it

Description of work

The VESPA model provides ICT technologies evolution as a solution for monitoring and rehabilitating young and old people suffering for mental diseases which is much more than simply investing in local isolated technologies, located in the regional territory. In fact, VESPA will acquire DECIDE diagnostic services and further extend them by adding project-specific features and deploy them to Clinical Centers and Units.

The system comprises an application suite for 3D fully immersive rehabilitation and a portal to access multi-user archive, applications for technicians and doctors, results of dynamic update algorithms for rehabilitation paths.

By integrating DECIDE services the project aims to supply visualization, processing, analysis, integration, and evaluation of biomedical data related to patients in order to monitor the disease progression and the response to treatment and cognitive rehabilitation. VESPA, together with DECIDE infrastructure, will not simply be an acquisition platform aimed to data exchange for neurological diagnosis software models development. VESPA will instead build a very-high -speed and -bandwidth network infrastructure, and a Distributed Computation and Storage network following the Cloud and Grid Computing paradigms with Authentication and Autho-

rization Infrastructure based on Identity Federation. VESPA will follow the DECIDE path and join the Italian IDEM Federation (<https://www.idem.garr.it/it>) as a Service Provider, so that all joining institutions will act as Identity Provider for the Federation itself.

That way user identification will be homogeneous, in compliance with international standards, and roles and privileges definition (for doctors, patients, health system operators, etc) will be simplified as well as access to and usage of VESPA services.

Evaluation and rehabilitation tasks results will be safely transmitted to the Health Center in charge of automatic daily monitoring and updating of rehabilitation plans.

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