




vCare:
Enter the era
of the virtual
rehabilitation coach
at home

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vCARE

VIRTUAL COACHING ACTIVITIES
FOR REHABILITATION IN ELDERLY

Project Aim

One out of six people in the European Union has a disability, usually caused by an acute episode or a chronic disease. Suitable rehabilitation is essential for enabling these people to live independently and enhance their quality of life as they age. However, the continuity of care is often interrupted in the person's transition from the hospital to home.

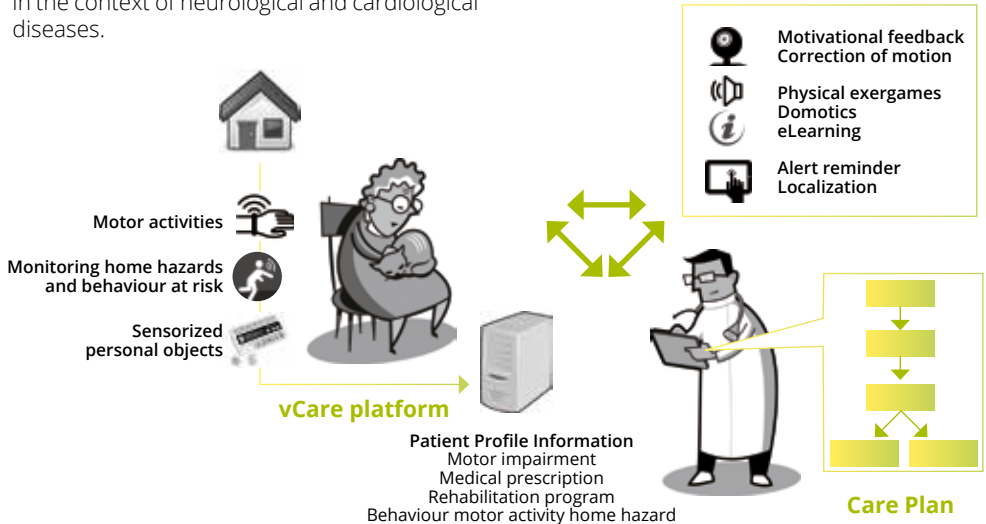
Coaching at home can help these people to proceed with a personalized form of rehabilitation which is associated with age-related conditions but can be difficult to put in place and when they often need to rely on relatives and informal carers. Virtual Coach (the outcome of the vCare project) can be a key technology to ensure this continuity of care, reinforce self-management, enhance adherence to the care plan and risk prevention and ultimately empower patients.

The Clinical Approach of

vCare

vCare will develop a virtual coach system for personalized rehabilitation programmes and care pathways at home. It will be demonstrated in the context of neurological and cardiological diseases.

These include cerebro-vascular diseases like stroke, neurodegenerative disorders like Parkinson's Disease, and cardio-vascular diseases such as ischemic heart disease and heart failure.



In this example, Maria has a right hemiparesis due to a previous left-sided cerebral stroke. This deficit causes functional motor impairment and Maria has serious problems in managing her life both in domestic environments and in open spaces. She is still able to walk, but everyday activities are compromised in some way by her right arm paresis. Thanks to the virtual coach, she will be supported in dealing with her daily activities, with specific rehabilitation programmes and with engaging and motivating interactions and feedback.

“There is scientific evidence that rehabilitation programmes for patients with recent disabilities should often continue with their rehabilitation at home after discharge.

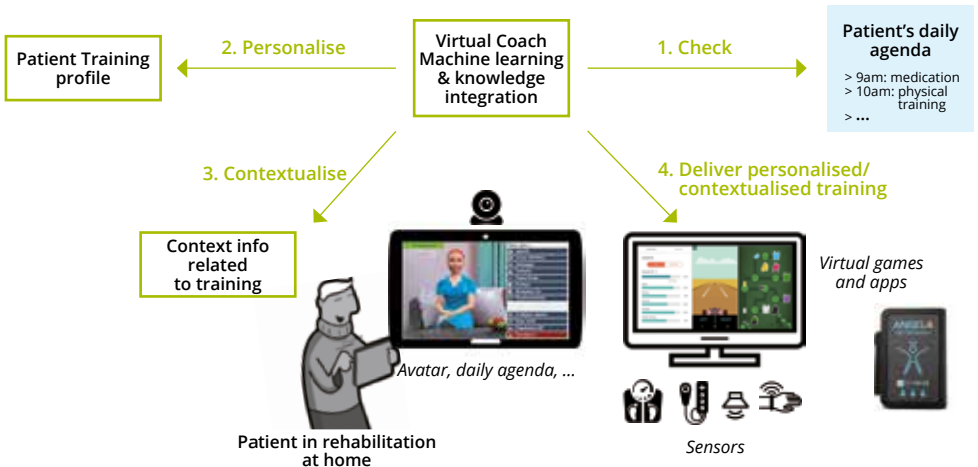
Further improvements in people’s physical and cognitive condition could be achieved by personalized home rehabilitation programmes which promote active participation in treatment rather than giving it up. Innovative and intelligent solutions are needed to support patients’ adherence to therapy. Virtual coaching is the answer of vCare”.

Dr Massimo Corbo
Scientific Director Neurologist
Casa di Cura del Policlinico,
Milan, Italy

The Technical Approach of vCare

vCare will integrate in a virtual coach system a set of solutions developed by four members:

- eWall and CLOUDCARE2U, from iSprint, a user interface and cloud-based platform based on advanced sensing and reasoning;
- Miraculous Life, from AIT, a virtual human-based avatar, that assists older adults in their activities at home;
- RehAbility, from Imaginary, a suite of serious games for physical and cognitive rehabilitation of neurological patients;
- LOCS, from MySPHERA (TSB), an Internet of Things-based location and workflow system tailored to the needs of acute care hospitals.



By integrating these technologies in a single platform, the virtual coach of vCare will provide the patient with a number of services clustered into:

- Coaching services such as physical training based on motion tracking or cognitive training;
- Supporting services such as reminders;
- Clinical pathways services allowing the seamless configuration of the virtual coach.

The major advance of vCare is an adaptive integration and use of services according to a personalized pathway. To achieve this, semantic technologies will be used to allow service (re-)configuration. The semantic shell will be developed based on an ontology that contains information about the patient’s needs and conditions, services, context information and pathways.

Facts about

vCare

This four-year project runs from September 2017 to August 2021. It has a total budget of 4 044 217.05€. The consortium is composed of 12 partners from seven European countries, including health care delivery organisations, research centres and innovation agencies, information technology companies (both large and small enterprises).

— AUSTRIA

- > **AIT** – Austrian Institute of Technology GmbH, Vienna;

— BELGIUM

- > **iSprint** – Innovation Sprint, Brussels;
- > **EHTEL** – European Health Telematics Association, Brussels;

— DENMARK

- > **AU** – Aarhus Universitet, Aarhus;

— GERMANY

- > **TUD** – Technische Universität Dresden, Chair of Wirtschaftsinformatik, especially Systems Development, Dresden (Coordinator);
- > **FZI** – Forschungszentrum Informatik am Karlsruher Institut für Technologie, Karlsruhe;

— ITALY

- > **CCP** – Casa di Cura Privata del Policlinico Spa, Milan;
- > **IMA** – Imaginary srl, Milan;

— ROMANIA

- > **SIV** – Siveco Romania SA, Bucarest;
- > **UMFCD** – Universitatea de Medicina si Farmacie “Carol Davila” din Bucuresti, Bucarest;

— SPAIN

- > **MYS** – Mysphera – TSB Real Time Location Systems SL, Valencia;
- > **OSA** – Servicio Vasco de Salud Osakidetza, Bilbao.

The vCare system will be tested and validated in four European Countries: Denmark, Italy, Romania and Spain.



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