M.K. PHAN TRAN, P. ROBERT, F. BREMOND. ***An assistive system to improve game usability for patients with cognitive disorders.*** *Gerontechnology 2016;15(suppl):157s*; doi:10.4017/gt.2016.15.s.758.00 **Purpose** With the ageing population, Alzheimer's disease and related pathologies are a major public health challenge. In parallel, new technologies of information and communication take an increasingly important role in our daily life and can be a support for both the evaluation and the direct support of users. Serious games[1] are computer applications, whose intention is to combine with consistency, both serious aspects (Serious) as teaching, learning, communication, rehabilitation, with playful aspects from the video game (game). Under the AZ@GAME project[2] winner AAP e-health #1 of Future Investments, games have been developed with the aim of stimulating cognitive and physical abilities of the patient. One of perceived problems concerns the engagement of patients to understand and to practice these games. Beside of lack of game culture and limited acceptance towards new technologies, memory and cognitive impairments provoke many difficulties of use and influence negatively on their game performance. Thus, engagement of patients decreases progressively and patients cannot benefit all the positives effects of games. **Method** We present an automated support system (*Figure 1*) containing a virtual avatar that can interact and provide help in different appropriate moments thanks to engaging strategies based on patients activities and game states. The system has been tested in three experiments with patients (n=94; average age 76 years; 51% men, 49% women) distributed in three cognitive states (Mnesic Complaints, Mild Cognitive Impairment and Alzheimer's disease) who participated in a training session using the game to boost concentration attention. The games were offered with or without the help of the system. **Results & Discussion** The first results[3] have remarked that most patients can interact with the avatar and accept its invitation to play games. The second results[4] have emphasized usability of the system. Patients have better performance when playing with support of the system than when playing alone, especially among Alzheimer's patients. The last results[5] have confirmed efficiency of the system compared with an therapist. Alzheimer's patient can have similar performance thanks to the system, as compared to playing with a therapist. All of three experiments have been realized in a hospital in a short time. A longitudinal study in other real contexts (e.g. living home) is necessary for analyzing the use of the system with patients in long-term.

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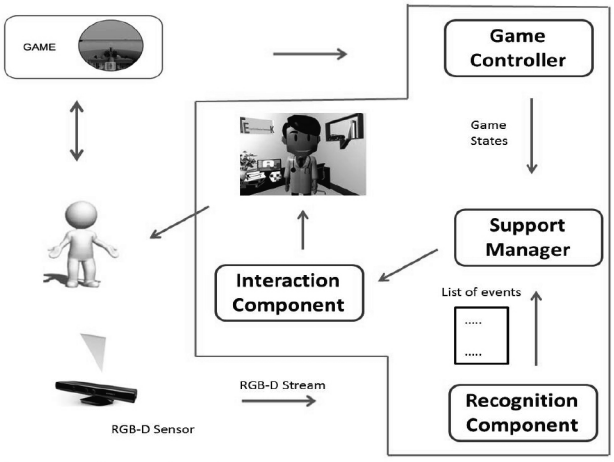

Figure 1 - Support system structure