

# Case Study: Assessing Gamification Impact in Dementia Care

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## Introduction

Neuranect, a project aimed at providing accessible and effective cognitive enhancement solutions for dementia patients, conducted a competitive analysis of Dividat, a prominent player in the field. This case study explores neuranect's observations of Dividat's use in Johann Heinrich Ernst Stiftung and draws comparisons to inform neuranect's approach.

## Background of Neuranect

Neuranect is dedicated to developing affordable, user-friendly solutions for dementia patients to improve memory and cognitive functions. The project aims to offer a better affordable alternative to existing products in the market, like Dividat, which costs around 17,000 CHF per unit.

## Analysis Methodology

The team observed the use of Dividat in a real-world setting with dementia patients. Insights were gathered on patient interaction, game design, physical requirements, and therapeutic effectiveness, under the guidance of Corina Salerno.

## Observations of Dividat

### Engagement and Interaction:

During our extensive observation at Johann Heinrich Ernst Stiftung, it was clear that Dividat's gaming approach resonated with many dementia patients. The engagement levels varied, with some patients displaying remarkable enthusiasm and concentration. This response highlighted the inherent potential of gamified therapy in maintaining and enhancing cognitive functions in older adults. However, it was also noted that the engagement was not uniform. Variations in cognitive and physical abilities among patients meant that the one-size-fits-all approach of Dividat did not cater to the individual needs and preferences of each patient.

### Game Design and Difficulty Adjustments:

A significant aspect that came to light was the rigidity in the game design. The difficulty levels were not adequately adaptable to the varying cognitive stages of dementia patients. In cases where the games were too challenging, patients often showed signs of frustration, which could potentially lead to decreased interest in future sessions. Conversely, games that were too easy did not seem to provide enough stimulation, leading to boredom. This lack of adaptability in game design is a critical factor that could limit the effectiveness of cognitive therapies using such platforms.

### Physical Interaction and Accessibility:

Another crucial observation was regarding the physical interaction required by Dividat. The reliance on foot-based controls posed a significant barrier to patients with limited mobility, particularly those who were more comfortable with upper body movements. This limitation not only restricted participation but also potentially excluded a segment of patients who could otherwise benefit from such cognitive exercises.

### Timing and Responsiveness:

The reaction time required by the games was another area of concern. Dementia can affect a person's processing speed, making it difficult for some patients to respond promptly to the game's

demands. This mismatch in the game's timing and the patients' response capabilities often led to a less than optimal experience, diminishing the therapeutic value of the games.

### **Neuranect's Perspective**

**Evaluating Dividat's Approach:** From neuranect's perspective, the observations at Johann Heinrich Ernst Stiftung provided a wealth of information on the practical application and limitations of gamified cognitive therapy tools like Dividat. It was evident that while the concept of using games to engage dementia patients is promising, the execution in terms of adaptability, physical interaction, and timing needs significant improvement. These insights are invaluable for neuranect as it strives to develop a more nuanced and patient-centric solution.

**Identifying Key Areas for Improvement:** neuranect acknowledges the necessity for a more flexible and adaptive approach to game design. This includes creating games that can adjust their difficulty in real-time, based on the user's performance and comfort level. Moreover, incorporating a variety of physical interactions, beyond just foot movements, could make the games more accessible and enjoyable for a broader range of patients. Lastly, accommodating the varied reaction times of dementia patients in the game design is crucial to ensure that all users can participate fully and benefit from the therapy.

### **Implications for Neuranect**

**Development of Adaptive Games:** Based on the observations, neuranect is poised to develop games that dynamically adjust their complexity and pacing according to each patient's unique needs. This personalized approach could significantly enhance engagement and therapeutic efficacy.

**Inclusive Physical Interaction Mechanisms:** Recognizing the limitations posed by Dividat's foot-based controls, neuranect plans to incorporate a range of interaction mechanisms in its games. This could include hand gestures, voice commands, or even eye movements, catering to patients with various physical abilities.

**Consideration for Reaction Times:** neuranect aims to design games that are sensitive to the slower reaction times typically observed in dementia patients. This consideration is crucial to ensure that the games remain challenging yet achievable, providing a sense of accomplishment rather than frustration.

**Cost-Effective Solutions:** Understanding the financial constraints in healthcare settings, particularly in elderly care, neuranect is committed to developing a cost-effective and better alternative to existing products like Dividat. This approach aligns with neuranect's mission to make cognitive enhancement tools accessible to a wider population.

### **Conclusion**

Neuranect's comprehensive analysis of Dividat at Johann Heinrich Ernst Stiftung has been instrumental in shaping its development strategy. The insights gathered highlight the need for a more adaptable, physically inclusive, and patient-responsive approach in cognitive gaming therapies. Neuranect, with its focus on these areas and commitment to affordability, is poised to make a significant impact in the field of dementia care. This endeavor not only aligns with neuranect's mission but also represents a significant step forward in enhancing the quality of life for dementia patients through innovative, accessible, and effective cognitive therapies.