EU Danube Region Strategy
PA 8 LIGHTHOUSE

DIGITALIZATION, ARTIFICIAL INTELLIGENCE, METAVERSE & VIRTUAL WORLDS

VIRADIA

GAMETHERAPY s.r.o., Slovakia

Basics

Acronym: VIRADIA

Name: Virtual Diagnostic Tool for Neurological Examinations

Country: Slovak Republic

Scoring: 45/50

Key Project Data:

2025-2026

262.449,94 €

Funded by: NGEU Recovery and Resilience Plan of the Slovak Republic

Project Coordinator:

GAMETHERAPY s.r.o.

https://gametherapy.eu/

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About the project

The **VIRADIA project**, led by GAMETHERAPY s.r.o., is an innovative digital solution integrating virtual reality (VR) and artificial intelligence (AI) to revolutionize **neurological diagnostics**. The project focuses on detecting early symptoms of diseases such as Parkinson's disease, Alzheimer's disease, and multiple sclerosis by allowing patients to perform standardized diagnostic tests from home.

Mission

The mission of VIRADIA is to increase accessibility, accuracy, and efficiency in neurological diagnostics by utilizing advanced sensor technology and AI algorithms. By enabling remote, early-stage detection, the project aims to improve patient outcomes and reduce the burden on healthcare systems.

INNOVATION

VIRADIA transforms **validated clinical tests into interactive VR simulations** and work with **VR and AI fusion** for diagnostics. The project also showcases **remote and home-based usability**, reducing pressure on healthcare systems and improving early detection.

SUSTAINABILITY

VIRADIA reduces need for travel and physical visits, **supports preventive and personalized healthcare** and encourages **early diagnosis**, reducing treatment costs. With its **data-driven learning** method, VIRADIA is built for **long-term reusability and modular upgrades**.

SCALABILITY AND REPLICABILITY

The modular system is **adaptable across countries and clinical sectors**, but also in different environments - in both clinical and non-clinical markets.

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Methodology

The VIRADIA project applies an **integrated, multidisciplinary methodology** that brings together clinical research, virtual reality (VR) system development, artificial intelligence (AI) modeling, and user-centered validation to create an innovative diagnostic tool for neurological disorders:

Clinical and scientific methodology

Comprehensive analysis of existing diagnostic procedures used in neurology:

- Identification of validated tests through collaboration with neurologists and clinical researchers
- Translation into virtual reality
- Determination of relevant and measurable indicators

User-centered system design methodology

Technical implementation supported by agile development cycles:

- Simulation of real clinical conditions with VR environments
- Development of VR test with attention to intuitive interaction
- Prototype testing with healthy users internally

Data-driven AI development methodology

AI implementation and development:

- Data collection and preprocessing during VR testing
- Training of machine learning models to identify patterns and anomalies
- Improvement using feedback from clinical validation and Benchmarking against traditional diagnostics

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Work packages

Three main work packages structure the project implementation:

WP1 – Needs Analysis and VR Platform Development

WP1 focuses on researching current diagnostic standards and neurological markers.

Objective: Define the functional and technical requirements of the system and then develop a prototype VR environment in which diagnostic tests are implemented. Initial testing will be conducted with healthy volunteers, focusing on motor precision, reaction time, and interaction patterns within the VR setting.

Methodology: Clinical and scientific methodology

WP2 – Development of AI Models and System Integration

WP2 involves training and optimizing AI algorithms capable of analyzing cognitive and motor data captured during the VR tests.

Objective: The technical integration of the VR platform with the AI system, resulting in a unified diagnostic tool.

Methodology: Data-driven AI development methodology

WP3 – Clinical Testing, Validation, and Commercialization Readiness

Finally, WP3 centers on validating the diagnostic tool in clinical environments with real patients.

Objective: Ensuring the system meets medical standards and delivers accurate, clinically relevant outputs. Preparations will also be made for certification, regulatory documentation, and the development of a business model and go-to-market strategy.

→ **VIRADIAs modular and scalable design allows for adaptation across different countries, languages, and healthcare systems, supporting the broader vision of personalized and preventive medicine in the digital era.**

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Impact

The VIRADIA project has significant impact in various sectors:

Sector	Impact
Medical Innovation	– Precise diagnostic insights through VR-based tests – AI-driven data analysis → **Non-invasive and user-friendly diagnostic tool**
Accessibility & Digitalization	– Removing geographical barriers – Access to specialized neurological care improved
Cost Reduction	– Reducing the workload of medical professionals – Optimizing healthcare resources
Early Detection & Prevention	– Detection of subtle cognitive and motor impairments → **Timely intervention and preventive care**
Scalability & Global Potential	– Technology is adaptable to different healthcare systems → **Support of wider adoption and international collaboration in digital healthcare**

The impact of the VIRADIA project lies in its potential to revolutionize neurological diagnostics by making them more accessible, objective, and scalable. VIRADIA adds significant value by promoting personalized medicine, supporting preventive care, and offering a cost-effective tool adaptable across healthcare systems and regions.

Barriers

Barrier 1

Translating traditional clinical neurological tests - originally designed for physical, in-person assessment - **into** an immersive and interactive **VR environment without losing medical accuracy**.

Barrier 3

Defining **AI model parameters** that are both sensitive enough to detect subtle deviations and robust enough to generalize across users with different profiles.

Barrier 2

Intensive iteration and hardware calibration were required to ensure precise tracking of motor and cognitive responses within VR.

Barrier 4

Coordination of input from different actors (clinicians, software developers, and data scientists). Difficult to align **medical requirements with technical capabilities.**

Tips for other projects

The methodology and structure of the VIRADIA project could be **replicated in other areas of digital health diagnostics**. Similar VR-AI systems could be developed for physical rehabilitation, mental health screening, or pediatric developmental assessments.

To replicate the concept, future projects should ensure:

- Early and active involvement of clinical experts
- Prioritize modular VR system architecture
- Maintain an iterative, test-driven development approach
- Partnerships with hospitals, research institutes, and patient organizations

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GAMETHERAPY s.r.o. – VIRADIA

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Competitiveness

VIRADIA – AI-POWERED DIAGNOSTICS IN VR

Early detection

Accessible diagnostics

Human-centered AI

Funded by the European Union
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RECOVERY AND RESILIENCE PLAN

ÚRAD PODPREDSEDU VLÁDY SLOVENSKEJ REPUBLIKY PRE PLÁN OBNOVY A ZNALOSTNÚ EKONOMIKU

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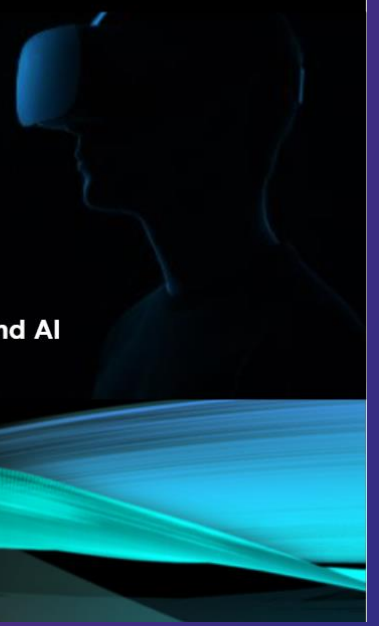
GAMES THAT HEAL

From Fear to Freedom through Virtual Reality and AI



Andrej GERO | 8.5.2025

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