MedVR Platform

Integrated Ecosystem for Clinical Skills Training in Virtual Reality

MedVR Platform is a revolutionary technological platform combining virtual reality with integrated artificial intelligence, designed for educators and medical faculty students for safe practice of diagnostic and therapeutic procedures.





www.wrdatacentrum.cz

Key Product Benefits

Multi-user team environment supports up to 20 concurrent students in one VR simulation, dramatically expanding team training possibilities comparable to an entire emergency department or operating room team. Unlike competitors, which are limited to 4-6 people.

AI-driven virtual patient generates fluent conversation in Czech, Slovak, and English, responds to student decisions and dynamically changes the development of clinical situations. The model adaptively adjusts patient physiology in real-time, unlike fixed scripted branches of competing systems.

No-code authoring tool allows educators to create realistic simulations and control them in real-time according to teaching needs without requiring technical interventions from the provider. Full scenario creation time ≤ 2 hours compared to 4 hours with competing no-code editors.

Technical Specifications

Platform

Unity 2022.3 LTS with XR Interaction Toolkit supporting Meta Quest 3 and PICO 4 Enterprise headsets (4K, 90 Hz)

AI System

Python 3.11 / FastAPI service utilizing LLM for dialogue, adaptive scenario control

Performance

Target frame rate 90+ fps and system supporting up to 200 concurrent users with latency < 50 ms in LAN

Product Components

VR Student Client - Fully equipped virtual hospital room with > 50 interactive 3D tools, where students can jointly practice diagnostics, administer medications and communicate with patients

Instructor Dashboard - Desktop application (Electron/React) allowing changes to patient vital functions, switching cameras between students and entering the patient role for testing reactions

Scenario Authoring Tool - Web visual editor for composing scenario phases, roles, 3D objects and vital parameters with subsequent storage in database

Analytics & Debriefing - Module synchronizing video recording of simulation with timeline of all student steps for precise performance evaluation

Competitive Advantages

- **Open architecture** - Scenarios in JSON format allow sharing between faculties and local customization without dependency on supplier
- **Scientific validation** - Collaboration with Faculty of Biomedical Engineering ČVUT and University of Finance and Administration ensures high-level methodology

Target Groups

- **Medical faculties** needing modern tools for safe practice of clinical skills in conditions of limited access to real patients
- **Healthcare schools** seeking standardized and repeatable educational environment supporting normative assessment
- **Postgraduate educational institutions** focused on continuous development of healthcare professionals

Technology Readiness

Pilot testing at two medical faculties with more than 50 students includes collection of UX and performance data through focus groups

Scalability - Cloud-agnostic solution with automatic horizontal scaling according to load

MedVR Platform represents a systemic innovation that enables access to top-tier simulation education across medical faculties, healthcare schools and professional sectors, **combining cutting-edge technologies** with **scientifically validated pedagogical methodology.**

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