PrePARE VR

Preparedness & Pandemic Response Engine

Immersive Outbreak Simulation & Readiness Intelligence Platform

1. Executive Summary

PrePARE VR is designed as a scalable immersive outbreak preparedness and readiness intelligence platform.

- Combines immersive triage simulation, measurable scoring, blockchain-secured data integrity, and dashboards.
- Current MVP demonstrates Nipah Virus simulation in India.
- Structured for Unity migration and Snapdragon-powered XR optimization.

2. Problem Statement

Global outbreak preparedness gaps persist across health systems:

- Limited immersive outbreak training.
- Lack of measurable frontline readiness metrics.
- Insufficient policy-level preparedness dashboards.
- Vulnerability of low-resource regions.
- Need for tamper-resistant performance data.

3. Why Now

Global health and XR ecosystem dynamics create urgency:

- Increasing emerging infectious disease frequency.
- Post-pandemic preparedness benchmarking focus.
- Growth of Snapdragon-powered XR hardware.
- Demand for scalable digital health systems.

4. Solution Overview

PrePARE VR provides structured immersive outbreak triage:

- Real-time decision-based simulation.
- Scoring across Accuracy, Priority, and Time.
- Blockchain-secured logging.
- Aggregated institutional readiness dashboards.

5. Platform Architecture & MVP Flow

The MVP demonstrates scalable workflow:

- Outbreak Preparedness (Active) & Remote Health Monitoring (Coming Soon).
- Blockchain wallet-based clinician login.
- Nipah Virus (Active); Measles & Mpox (Coming Soon).
- India (Active); Nigeria & Congo (Coming Soon).
- Guided triage: Isolate, Treat, Discharge.

6. Performance & Readiness Framework

Simulation generates measurable indices:

- Accuracy Score.
- Priority Patient Selection Score.
- Time Score.
- Total Readiness Score.

7. Blockchain Data Integrity

Trust and integrity are foundational:

- Cryptographically hashed session data.
- Immutable records.
- Anonymized aggregation.
- Secure reporting architecture.

8. Scalability Strategy

PrePARE VR scales across multiple dimensions:

- Technical scalability through Unity build and cloud aggregation.
- Disease modular expansion.
- Geographic multi-country dashboards.
- Clinician to national-level data aggregation.

9. Unity Production Expansion & Dynamic Storytelling Engine

The first full Unity production build will significantly expand beyond the MVP to introduce deeper realism, larger scale simulation, and consequence-based outbreak modeling:

- Expanded patient volume with dynamically generated cases based on clinician decisions.
- Multiple active countries and sub-national regions beyond India.
- Dynamic hospital congestion system where wrong discharge increases infection waves and facility overcrowding.
- Correct treatment and isolation reduce patient inflow and visibly decongest hospital capacity.
- Real-time outbreak escalation modeling if cumulative triage errors occur.
- Multi-day outbreak progression showing evolving system stress.
- Resource scarcity simulation (limited beds, PPE, isolation units, staff).
- Visual public health indicators such as alert levels, emergency sirens, and regional outbreak maps.
- Adaptive AI-driven patient case variability ensuring no identical sessions.
- Performance-based difficulty scaling and scenario progression.
- Policy intervention layer allowing simulated lockdowns, funding allocation, or emergency response actions.
- Scenario replay and performance heatmaps for institutional debrief.
- Multiplayer institutional coordination mode for joint outbreak response training.
- Longitudinal clinician readiness tracking across multiple sessions.

10. XR Hardware Scalability & Qualcomm Ecosystem Alignment

The platform remains hardware-agnostic and optimized for XR chipset ecosystems:

- Unity build optimized for Snapdragon-powered XR devices.
- Efficient performance on standalone headsets.
- Scalable to future Qualcomm reference XR platforms.
- Suitable for cost-effective deployment in emerging and low-resource regions.

11. Designed for Low-Resource Regions

Equitable access remains central:

- Standalone XR compatibility.
- Offline-first capability.
- Low bandwidth architecture.
- Portable immersive deployment.

12. Monetization Model

Dual-tier revenue approach:

- Clinician subscription tiers.
- Institutional aggregated data licensing.
- Quarterly and annual analytics dashboards.

13. Validation & Pilot Plan

Next phase includes structured validation:

- Clinician pilot cohorts.
- Multi-session benchmarking.

- Pre/post comparison.
- Institutional feedback integration.

14. Funding Request & Use of Funds

Grant funding supports transition to production scale:

- Unity production development.
- Snapdragon XR optimization.
- Multi-disease and country expansion.
- Secure backend and blockchain scaling.
- Low-resource pilot deployment.

15. Ethics, Governance, and Long-Term Vision

PrePARE VR is designed with responsible governance:

- No real patient data used.
- No medical diagnosis or treatment guidance provided.
- All simulations fictional and training-focused.
- Anonymized performance aggregation.
- Vision to shift preparedness from paperwork to practice.
- Enable faster, coordinated outbreak responses globally.

16. Conclusion

PrePARE VR evolves from MVP to intelligent preparedness ecosystem:

- Dynamic consequence-based modeling.
- Institutional readiness intelligence.
- Scalable across diseases and regions.
- Optimized for Snapdragon-powered XR ecosystems.