DESIGNING FOR HEALTHY DISENGAGEMENT

Health-Aware Engagement Framework (HAEF) and a 3D Virtual Mall Pilot Study

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THE RESEARCH PROBLEM

Immersive platforms use rewards, goals, and social interactions to sustain participation. Longer engagement is not inherently harmful, but users may need help recognizing when to leave for real-world commitments.

Design question: Can immersive UX support intentional disengagement?

RESEARCH CONTRIBUTION

HAEF extends engagement-centered design with three health-aware layers:

4 **Awareness & Reflection**

5 **Healthy Disengagement**

6 **Real-Life Reconnection**

METHODS

40 adults • 20 per condition

70 valid login sessions

25 no-intervention sessions

45 intervention sessions (incl. returns)

THE SIX-LAYER HEALTH-AWARE ENGAGEMENT FRAMEWORK



PILOT FINDINGS

44%
SHORTER SESSIONS
7.9 → 4.4 min ($p < 0.001$)

~93%
VOLUNTARY EXIT
After train reminder

79%
REMINDER SUPPORT
vs. 40% in control

VIRTUAL MALL PILOT

Browser-based 3D mall built using X3D and JavaScript, with café, fashion and garden areas.



Figure 2: No intervention (left) vs. Healthy Disengagement Intervention in 3D Virtual Mall(right)

remained across both the intervention and no-intervention con- behaviors. For RQ2, participants retained the ability to ignore

Control: no reconnection reminder. Intervention: train/dinner reminders and visible exit; users could continue.

LIMITATIONS & NEXT STEPS

Exploratory adult sample; short test. Returning users contributed sessions. Single-player mall cannot test FOMO or multiuser social obligations.

Next: youth and multiuser studies; longer sessions; adaptive timing; calendar and real-world context.

KEY INTERPRETATION

Contextual reminders and visible exit support were associated with shorter individual sessions and intentional exits.

Most participants who left later returned; cumulative time per user and perceived engagement did not significantly differ.

This pilot does not establish long-term health benefits or reduced problematic use.

Healthy disengagement is a positive interaction-design outcome — not a failure of retention.

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