XR in Action: Transforming Health and Care Delivery in the NHS

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Successful XR integration in the NHS requires more than just innovative technology—it demands a holistic approach that considers people, processes, and long-term impact.

Overview of Digital Futures TSDFT

"The NHS should expand research and development programmes to co-create digital technologies"

- Interactive and collaborative space for digital healthcare innovation
- Based in the Horizon Centre, Torbay Hospital
- Aligns with national recomendations, such as the Topol Review (2019) and Longterm workforce plan (2023)

The Digital Futures Team

DIGITAL FUTURES
HUMAN CENTERED DIGITAL INNOVATION

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DIGITAL APPRENTICE

JETT BRADFORD

DIGITAL T LEVELS PLACEMENT

Learn more on our website:

Working with Digital Futures

Partner services:

- Engagement workshops with suppliers and innovators
- 'Testbed' for XR products in health and care applications
- Safe environment for clinical staff and end-user testing
- Subject matter expert feedback and evaluation
- Supports digital upskilling through: 'Deep Dive' sessions on emerging technologies
- Digital Clinics for healthcare professionals
- University fellowships and studentships

In-House Projects at Digital Futures

VR Sexual Harassment Training:

- Developed with Health Education England funding
- 360-degree video format for immersive experience
- Aims: Enhance empathy, reduce reporting stigma, drive culture shift
- Synchronised VR classroom kit for group viewing
- Structured debriefing to encourage reflection and discussion

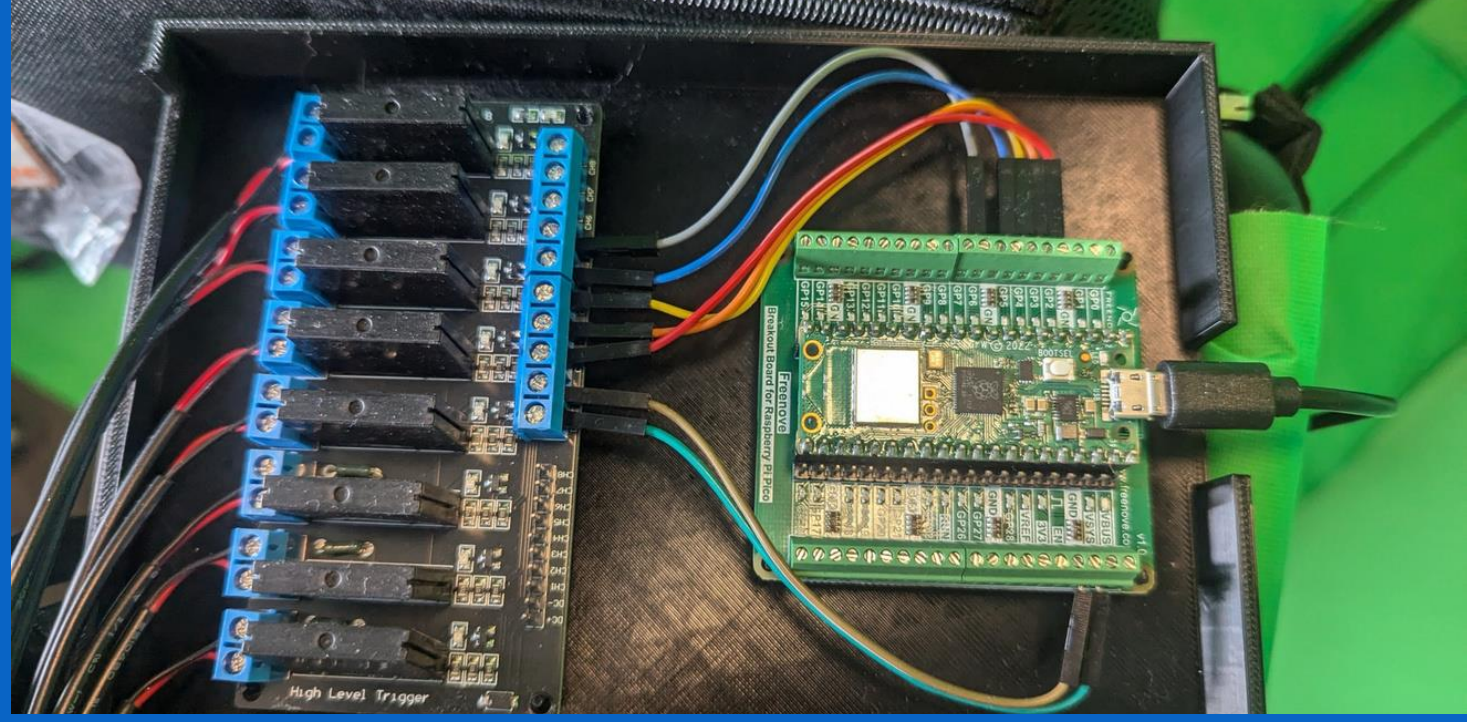
Eye tracking controlled MND Wheelchair

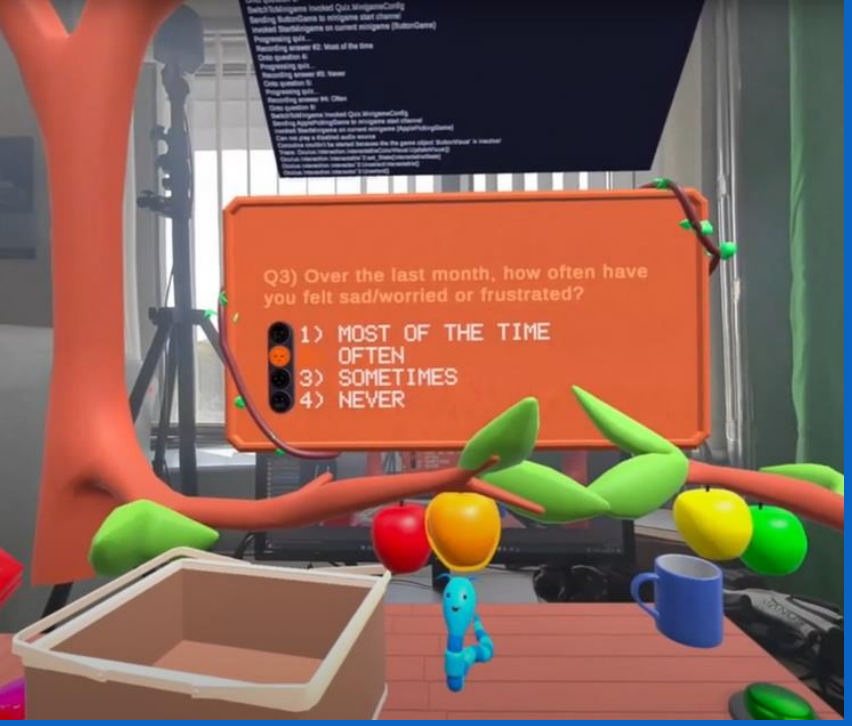
In-House Developed XR Eye-Tracking Solution

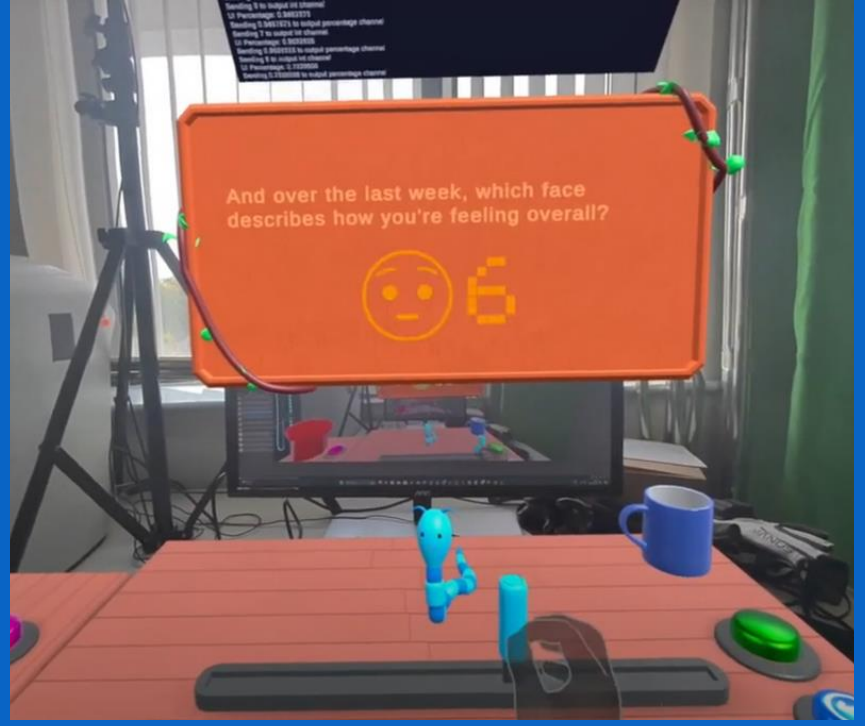
Intuitive Control for MND Wheelchairs and Devices

Powered by Our Team's Specialised Technical Expertise

£45 chipset + XR headset (working on a variety)







Rheumatology Adolescents Pain scores

Addressing SEND Patients in Rheumatology

Revolutionising Pain Score Questionnaires

- Utilising hand tracking and passthrough in XR devices (Quest 3)
- Creating an interactive and engaging experience for young patients
- Transforming traditional questionnaires into accessible activities

Guided by Rheumy, The Rheumatology Worm

- Friendly character guides users through the XR questionnaire
- Provides comfort and clear instructions for a smooth experience
- Responses securely transmitted to clinicians in real-time

Interactive AI Virtual Patients

Harnessing XR Passthrough and Hand Tracking Technology

- Creating immersive virtual simulated patient scenarios
- Providing a safe practice environment for trainees and medical students

Integrating AI for Enhanced Interaction

- Enabling conversation with virtual patient avatars
- Allowing trainees to ask questions and perform basic observations
- Simulating realistic patient encounters and responses

Customisable Scenarios for Diverse Training Needs

- Tailoring scenarios to cater to various specialties and learning objectives
- Collaborating with multiple teams to develop bespoke training modules
- Ensuring adaptability and relevance across different medical disciplines

Microsoft HoloLens for MS patient care

- Collaboration with IQVIA nurses and Stroll (digital therapeutics company)
- PARAMS research study with Exeter University
- Enables 3D clinical assessment and bidirectional communication
- £400k investment from NHS England
- Taking the technology into homes

Collaboration with Mindset XR Companies & Projects

Cineon

Project: Improving Service Access using Virtual Exposure (iSAVE)

Anagram

Project: "Inside Mental Health" An immersive training tool for healthcare professionals. Simulates mental health experiences to enhance empathy towards patients

PhaseSpace

Project: VR hypnotherapy as an early intervention for anxiety in students and young people.

Benefits of industry partnerships:

- Accelerated innovation cycle
- Access to cutting-edge technologies
- Cross-pollination of ideas between healthcare and creative tech sectors

Coastal to Rural: The South West's Unique Digital Health Ecosystem

Demographic need in Devon and Cornwall:

- Ageing population: 26.5% aged 65+ in Torbay (vs 18.5% England average) (ONS, 2021)
- Rural and coastal communities: 61% of Devon classified as rural (Devon County Council, 2021)
- Average travel time to a GP in rural South West: 13 minutes (vs 9 minutes in urban areas) (Department for Transport, 2019)
- Health inequalities: Life expectancy gap of 8.7 years between most and least deprived areas (Public Health England, 2019)
- 1,130 km of coastline in South West, presenting unique healthcare access challenges (Environment Agency, 2021)
- Seasonal population fluctuations due to tourism: up to 40% increase in some areas during peak season (South West Tourism Alliance, 2022)

Regional strengths:

- Digital and creative sectors: 26% year-on-year growth in tech roles (Tech Nation, 2021)
- Supportive healthcare ecosystem: HIN, Digital Futures, Centre for Health Technologies, Healthtech Research Centre (HRC)
- Academic partnerships: University of Plymouth's Centre for Health Technology, University of Exeter's Institute of Health Research
- Unique testing environments: Diverse population demographics for piloting XR solutions
- Mix of urban and rural settings to test scalability and adaptability

The South West is uniquely positioned to become a leader in digital health innovation, combining technological expertise with a real-world testbed for addressing complex health challenges.

Key Learnings for XR Integration in the NHS

- Empower the workforce with digital skills
- Listen and create co-design opportunities
- Work with NHS organisations to navigate funding routes
- Engage with innovation hubs
- Consider the process beyond the headset
- Prioritise accessibility and inclusivity
- Build and share the evidence base for long-term sustainability and scalability
- Address data security and patient privacy

XR Journey Design in Healthcare

Pre-experience preparation

Understand the healthcare need you're addressing.
Ensure the XR solution fits or supports existing healthcare pathway.
Plan for a smooth introduction to healthcare settings by engaging early.

Onboarding

Create a user-friendly introduction to the XR technology.
Consider the digital literacy of your users and familiarity.
Think about the environment used in as much as the technology itself.
Set clear goals for what your XR solution aims to achieve for both you and user.

XR experience

Prioritise user safety and comfort:
Offer easy exit options.
Ensure a suitable physical environment (privacy, space).
Include simple customisation features.

Debriefing

Provide space and opportunity for feedback and thoughts.
Include ways to gather meaningful feedback.
Think about how the XR solution impacts overall care.
Use these insights to improve the experience.

Long-term integration

Consider the impact of the XR solution
ROI / improved user experience / time saving etc
Plan for updates and ongoing support
Affordability and on-going access.

Opportunities for Collaboration

Benefits of cross-sector collaboration:

- Diverse perspectives: health, creative industry, tech, academia
- Accelerated innovation through shared expertise
- Enhanced user-centred design with multi-stakeholder input

Potential collaborative areas:

- Joint funding applications
- Co-created solutions addressing specific health challenges
- Shared testbeds and evaluation frameworks

Importance of involving people with lived experience:

- Ensures relevance and acceptability of XR solutions
- Helps identify unmet needs and opportunities

Immersive, Simulation and Related Technologies Dynamic Purchasing System

The NHS England endorsed approach to procuring immersive, simulation and related technologies resources and services

Please contact cds@gstt.nhs.net if you would like to join the DPS.

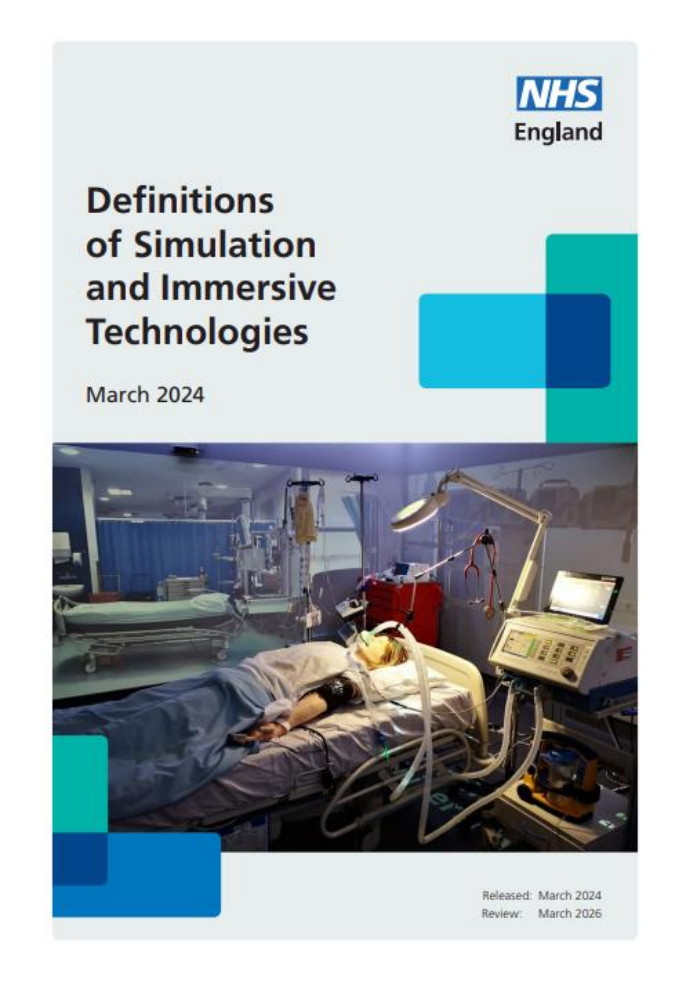
Virtual Reality in Education

Monthly group to share, discuss and inform best practice in virtual reality use for education.

england.simimmtech@nhs.net

Definitions of Simulation and Immersive Technologies

Available on the NHS England Learning Hub



NHS Learning Hub

Immersive Technologies Toolkit

Provides knowledge, skills and tools to help educators feel confident in using immersive technologies in their daily practice.

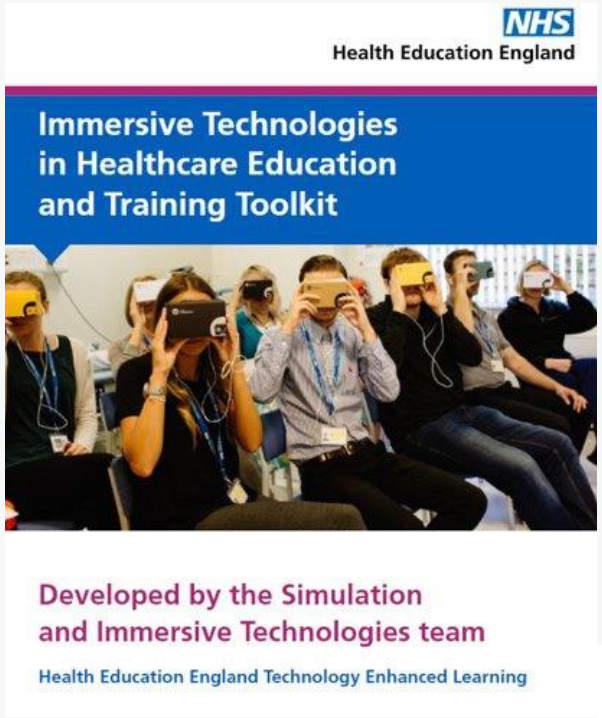


Figure 5: Overview of the 3 major user journeys

Any Questions?

Learn more on our website:

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