Mindset-XR Innovation In Mental Health Roadshow

South West England

25 September 2025

PROBLEM

UNMET HEALTH & SOCIAL CARE CHALLENGES

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* **Healthcare Anxiety:** Prevents access to essential services (e.g. MRI scans).

* **Impact:** ~£11m lost annually to missed MRI appointments in the NHS; poorer outcomes and greater reliance on sedation, especially in children.

* **Workplace Stress:** £32.7bn lost productivity in the UK in 2023 due to stress-related absenteeism; high burnout among NHS and frontline workers.

* **Current Gaps:** Traditional interventions (CBT, sedation, referrals) are costly, slow, and not widely accessible.

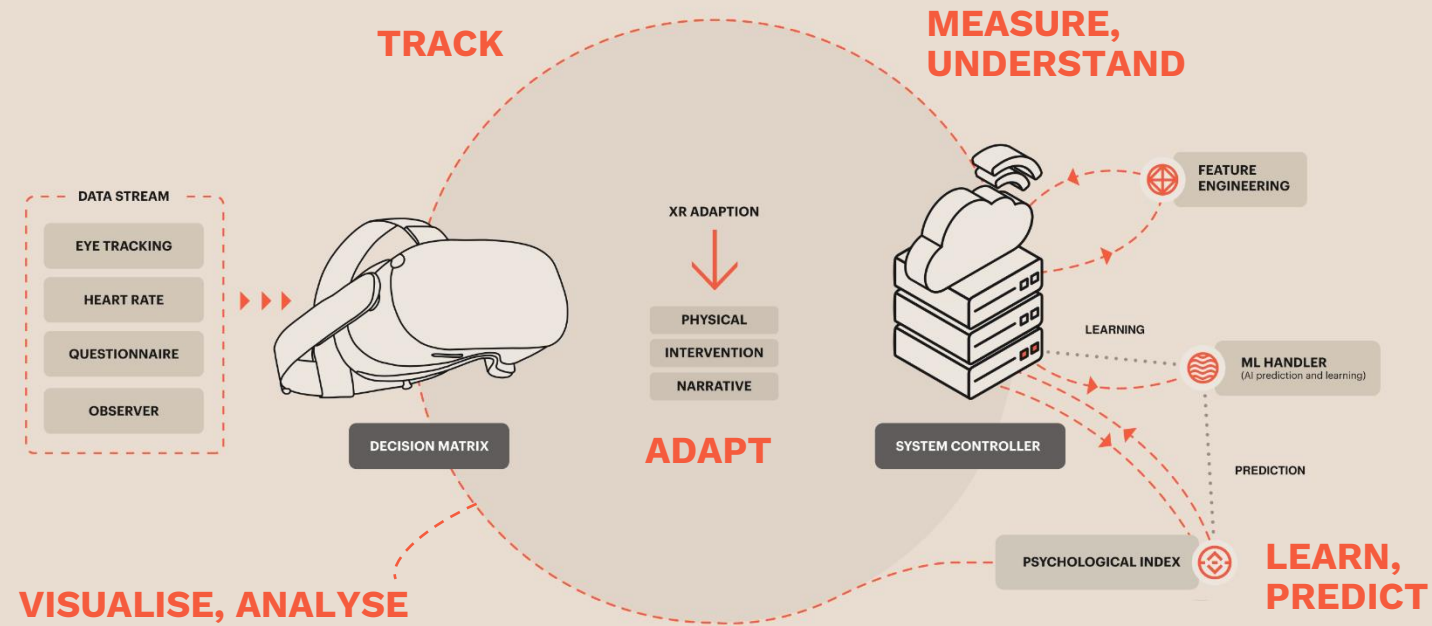# COLLABORATORS

NHS
Torbay and South Devon
NHS Foundation Trust

Innovate UK

NHS
University Hospitals
Plymouth
NHS Trust

UNIVERSITY OF
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Health
Innovation
South West

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EMPATHIC
LEARNING
ENGINE

TRACK

MEASURE, UNDERSTAND

DATA STREAM
- EYE TRACKING
- HEART RATE
- QUESTIONNAIRE
- OBSERVER

XR ADAPTION

PHYSICAL
INTERVENTION
NARRATIVE

ADAPT

DECISION MATRIX

SYSTEM CONTROLLER

FEATURE ENGINEERING

LEARNING

ML HANDLER
(AI prediction and learning)

PREDICTION

PSYCHOLOGICAL INDEX

LEARN, PREDICT

VISUALISE, ANALYSE

01
Track,
measure and
understand gaze

02
Objective insight
into emotion and
performance

03
Real-time
adaption and
personalisation

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SOLUTION – ELE ENABLED APPLICATIONS

ISAVE (IMPROVING SERVICE ACCESS USING VIRTUAL EXPOSURE)

* A VR-based preparation tool that reduces healthcare anxiety before patients reach hospital.

* Adaptive exposure powered by ELE, ensuring every session responds to the individual.

* Initially developed for MRI scans, where anxiety leads to missed appointments, sedation, and poorer outcomes.

* A flexible platform that can be extended to other high-anxiety healthcare settings beyond MRI.

ELE-STRESS (NEWLY FUNDED PROJECT)

* An immersive, self-led XR tool designed to help NHS and police staff manage workplace stress and trauma.

* Built on ELE to deliver adaptive, personalised experiences based on real-time emotional and physiological data.

* Supports staff wellbeing, reduces burnout and absenteeism, and provides anonymised insights into workplace pressure points.

* Designed as a platform for broader occupational stress interventions and as an API for integration with other XR-based mental health applications.

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KEY LEARNINGS - ISAVE

iSAVE in NHS

* **Realism works:** VR environments elicit authentic anxiety responses, preparing patients effectively.

* **Impact stories:** Patients who previously cancelled multiple MRI scans felt able to attend after using iSAVE.

* **Clinician feedback:** Radiographers and pediatric specialists saw opportunities for integration into referrals, play therapy, and community use.

* **Accessibility matters:** Patients and clinicians stressed the need for inclusivity for all, including age, disability, neurodivergence and setting. Digital Healthcare has the ability to transform the industry, but also risks excluding certain groups of patients due to issues around digital literacy, etc.

* **Access:** Pressure on staff limiting bandwidth for pilots and integration.

> " It offers a realistic and engaging experience that helps patients feel more prepa and less anxious before their MRI examination. The tool is easy to use, reliable has been a valuable support in my clinical practice.
>
> **Stéphanie Podgorski, Psychologue, Hôpital de la Citadelle**

ELE STRESS

Police Absence & Mental Health

- In 2023, UK police officers took 774,000 mental health-related absence days, costing an estimated £116M annually (£150 per lost shift).

NHS Staff Turnover & Mental Health Costs

- 11.7% turnover in NHS England means 140,000 staff leave annually, with each nurse replacement costing ~£4,500.
- 7M+ working days lost in 2022 due to stress, depression, or anxiety, worsening staff shortages and patient care.

Excessive Support Waiting Times

IAPT services have 15+ month wait times in some regions. Even in best cases, 1 in 4 patients wait over 90 days, delaying treatment and worsening conditions.

Stigma & Accessibility Barriers

Emergency workers often avoid seeking help due to job security concerns and stigma. Uptake of employer-provided counselling is low due to scheduling issues and perceived ineffectiveness.

STRESS AND ANXIETY MODEL

7. Market Research — WORK PACKAGE

6. Evaluation — WORK PACKAGE

5. App Development — WORK PACKAGE — APPLICATION — **ELE-Stress**
(XR INTERVENTION)
An XR-based resource hub designed to support workplace mental health by integrating adaptive VR exposure therapy for traumatic workplace scenarios that contribute to mental health-related absences or workforce attrition. The hub also includes additional resources such as green/blue therapies for stress relief and recovery.

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4. PPIE — WORK PACKAGE

3. API Development — WORK PACKAGE — DEVELOPMENT — **ELE-API**
An Application Programming Interface (API) that serves as a bridge, enabling external systems to access ELE's advanced features or data without revealing its underlying code. This allows seamless integration and the ability to enhance other digital therapeutic solutions with personalised and adaptive functionality.

2. Regulation — WORK PACKAGE

1. Project Management — WORK PACKAGE — DEVELOPMENT — **ELE**
(EMPHATIC LEARNING ENGINE)
A sophisticated data architecture comprising machine learning (ML) and artificial intelligence (AI) models and pipelines, developed through years of research and data collection. ELE leverages eye-tracking and other human movement data to estimate psychological states and responses in real time, enabling dynamic, user-specific insight and interventions.

APPLICATION — **iSAVE**
Our previous application utilising the PAVE closed-loop system. An adaptive VR exposure therapy solution tailored to help individuals overcome healthcare-related phobias, such as anxiety around MRI scanning. iSAVE integrates PAVE technology to provide automated, graduated exposure therapy, guiding users through challenging environments in a safe and controlled manner.

PAVE
(PSYCH ADAPTIVE VIRTUAL ENVIRONMENTS)
The foundational R&D project for ELE. Psych Adaptive Virtual Environments focused on developing mathematical models capable of analysing eye movements and identifying features linked to specific psychological constructs, laying the groundwork for ELE's ability to estimate real-time psychological states.

MEASURING OUTCOMES

How are we measuring success?

Planned Trials:

- NHS staff and Police service evaluations through University of Bath and Torbay & South Devon NHS Trust (Return to Practice Scheme).

Key Metrics for Efficacy:

- AI model accuracy in detecting changes in anxiety and stress

- Improvement in self-reported well-being

- Qualitative feedback on usability and engagement
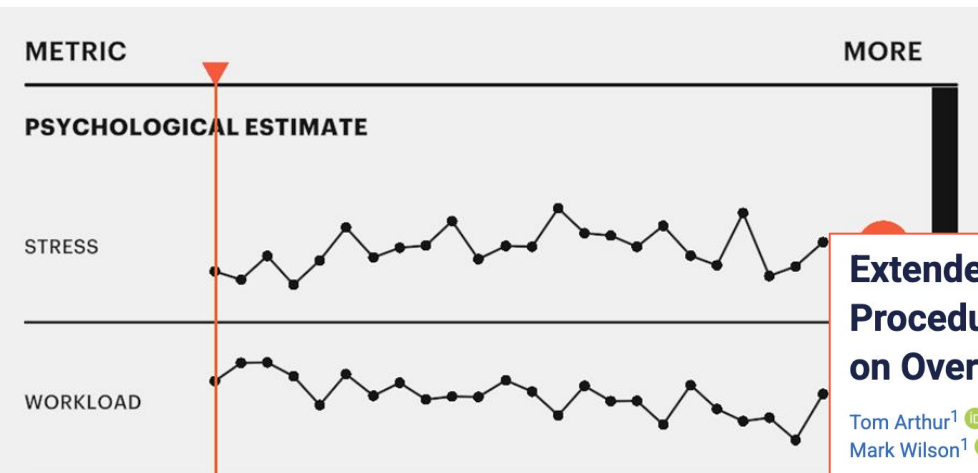
Post Project

Longitudinal tracking would look at the impact on workforce retention in terms of a decrease in absenteeism and attrition rates.

A clinical evaluation of the tool would determine its efficacy in reducing anxiety and stress. Further funding (NIHR) would allow us to undertake this clinical evaluation and achieve IIa medical device classification.

Evaluation Strategy

Health Innovation Network South West are assisting us in creating and delivering our evaluation strategy for measuring success and ensuring regulatory compliance post project.

Extended Reality Interventions for Health and Procedural Anxiety: Panoramic Meta-Analysis Based on Overviews of Reviews

Tom Arthur[1] iD; GJ Melendez-Torres[1] iD; David Harris[1] iD; Sophie Robinson[1] iD; Mark Wilson[1] iD; Sam Vine[1] iD

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Exposure Therapy Content

① Aggression or belittling from patients or their relatives

- Feel threatened
- Doing the best to help, what more could be done
- Play out possible scenarios – what if they have a knife?
- Hypervigilant – plan escape and withdraw when possible
- Defensive to protect oneself
- Support from colleagues

② Witnessing pain and suffering of others, not always under own care

- Desperate to help, but not able to – conflict between personal values and protocol
- Responsibility – do something, can't let them down
- Feel sadness, guilt, empathy
- Take control, reprioritise, work harder, gather info
- Keep thinking about it after

③ Decisions and judgments are ignored or questioned

- Question why they didn't trust decision – self-doubt
- Lowers confidence and self-worth
- Feel undermined, insecure and dejected
- Prove them wrong
- Disengage or dismiss – can't make them listen

Exposure Therapy Content

① Overwhelming and high-pressure work environment

- Unrealistic expectations
- Pressure & hostility from others. Feel out of control
- Lower self-confidence & self-worth – feel like a failure
- Frustrating and unfair
- Work harder and faster to keep on top, but doesn't solve core problems

② Secondary trauma from calls with vulnerable and distressed victims

- Desperate to help, but can't always stay on the line
- Want to make it better, but not always clear how – helpless
- Responsibility – worry about letting the victims down
- Question abilities and dwell
- Double-check decisions/info

③ Decisions and judgments are ignored or questioned

- Question why it wasn't good enough
- Doubt own judgment and value of work
- Feel undermined
- Vent to colleagues
- Conflict between decisions on risk vs resource – tension
- Influence future decisions

SUPPORT WE NEED

* **NHS / Social Care Pilot Partners:** To integrate iSAVE into diagnostic pathways and co-develop ELE-Stress in real-world frontline contexts.

* **Evidence Building:** Clinical evaluations, service data, and impact measurement to accelerate adoption.

* **Navigation Support:** Guidance on NHS procurement, regulatory pathways, and scaling across Trusts.

* **Funding & Collaboration**: To refine, scale, and expand ELE's applications in healthcare and occupational wellbeing.

Why this matters

For patients: Reduced anxiety, improved access, better outcomes.

For clinicians: Less sedation, improved workflow, more reliable scans.

For the NHS: Cost savings, improved throughput, community-based prevention.

For the workforce: Scalable, stigma-free support for stress and burnout.

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ANY QUESTIONS?

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THANK YOU

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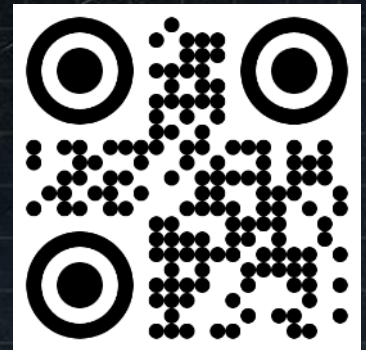
Thank you for attending!

Mindset-XR Innovation Support Programme roadshow evaluation form