Innovative approaches to GMP Through Virtual Reality & Working in Collaboration

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Introduction

- QAT symposium 2024
- Wrexham Maelor Hospital & Wrexham University
- Working Collaboratively
- Understand the capability of VR and Immersive technology.
- How can we use it within Pharmacy Technical services



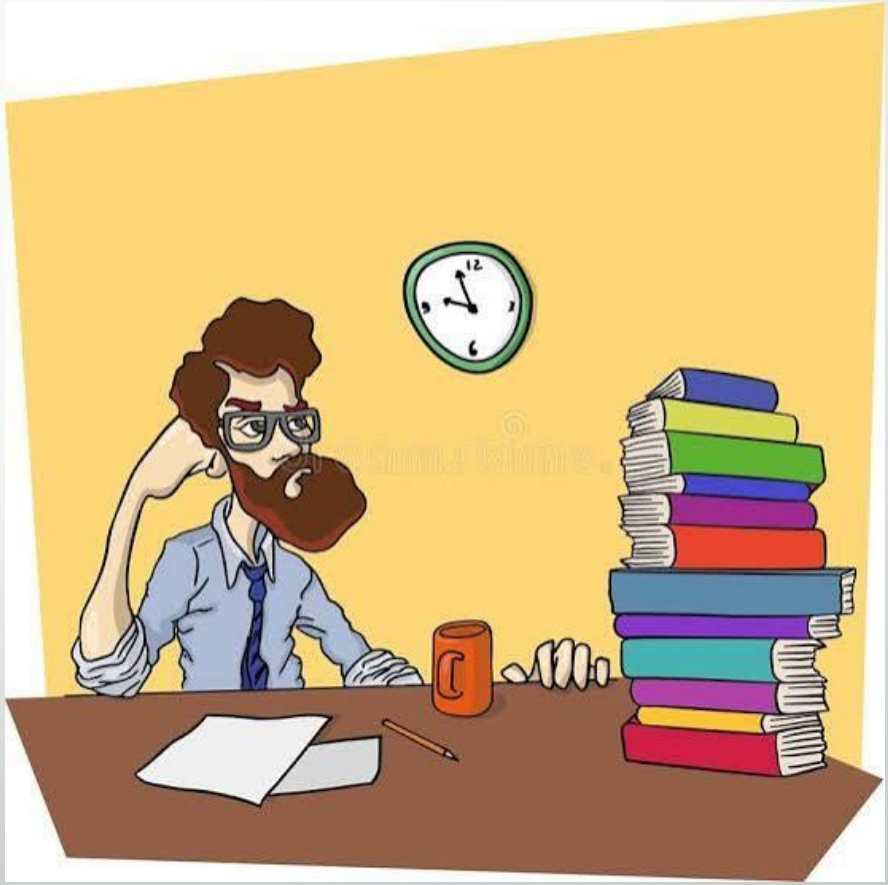




Our Situation

- Struggling with recruitment and staff retention
- New staff with a lack of familiarity of Aseptic Units and cleanroom environments.
- Length of time to train staff.
- Some aspects of induction and training can be laborious
- Feedback from new starters
- Lack of staff and equipment capacity to train

Recurrent GMP Training challenges



What if …

- We could familiarise people with the department before they apply for a job, attend interview without them having to visit the department?
- Training could be made more interactive and for new starters relevant to the environment they will be working in.
- New starters could perform elements of training on their own outside of the production facility?
- GMP training could be made more efficient, interactive and effective.
- Could VR and immersive technology help?

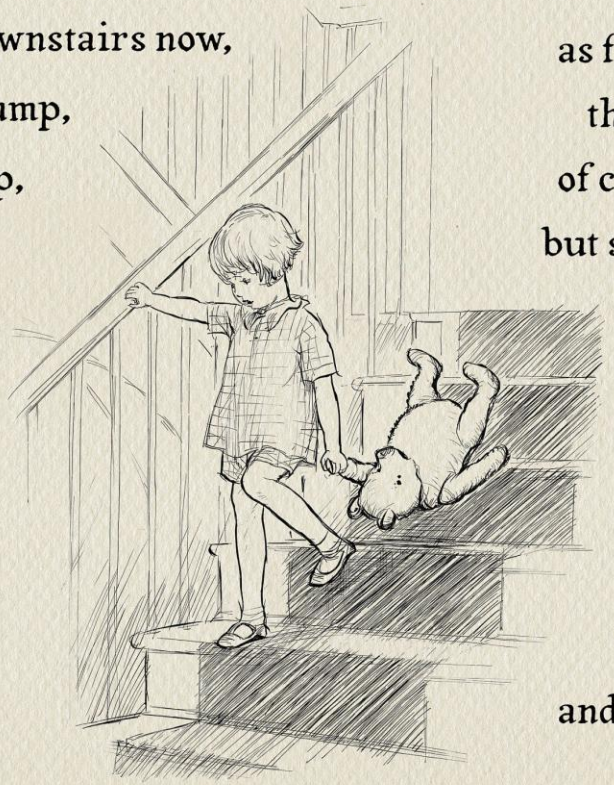
How did we start?

- Chris Goodwin, Scientist (Pharmaceutical analyst)
- Bevan exemplar project in Wales relating to OPAT, elastomerics and semi automation.
- Climb leadership course
- Bevan Fellowship.
- Innovation leads to more innovation and opportunities to work with education establishments and other companies outside of the NHS.
- Wrexham University, Bangor University
- Different partners offering solutions to different elements.
- Mutually beneficial workstreams.

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" Here is Edward Bear,
coming downstairs now,
bump,
bump,
bump,
on the back
of his
head,
behind
Christopher
Robin.

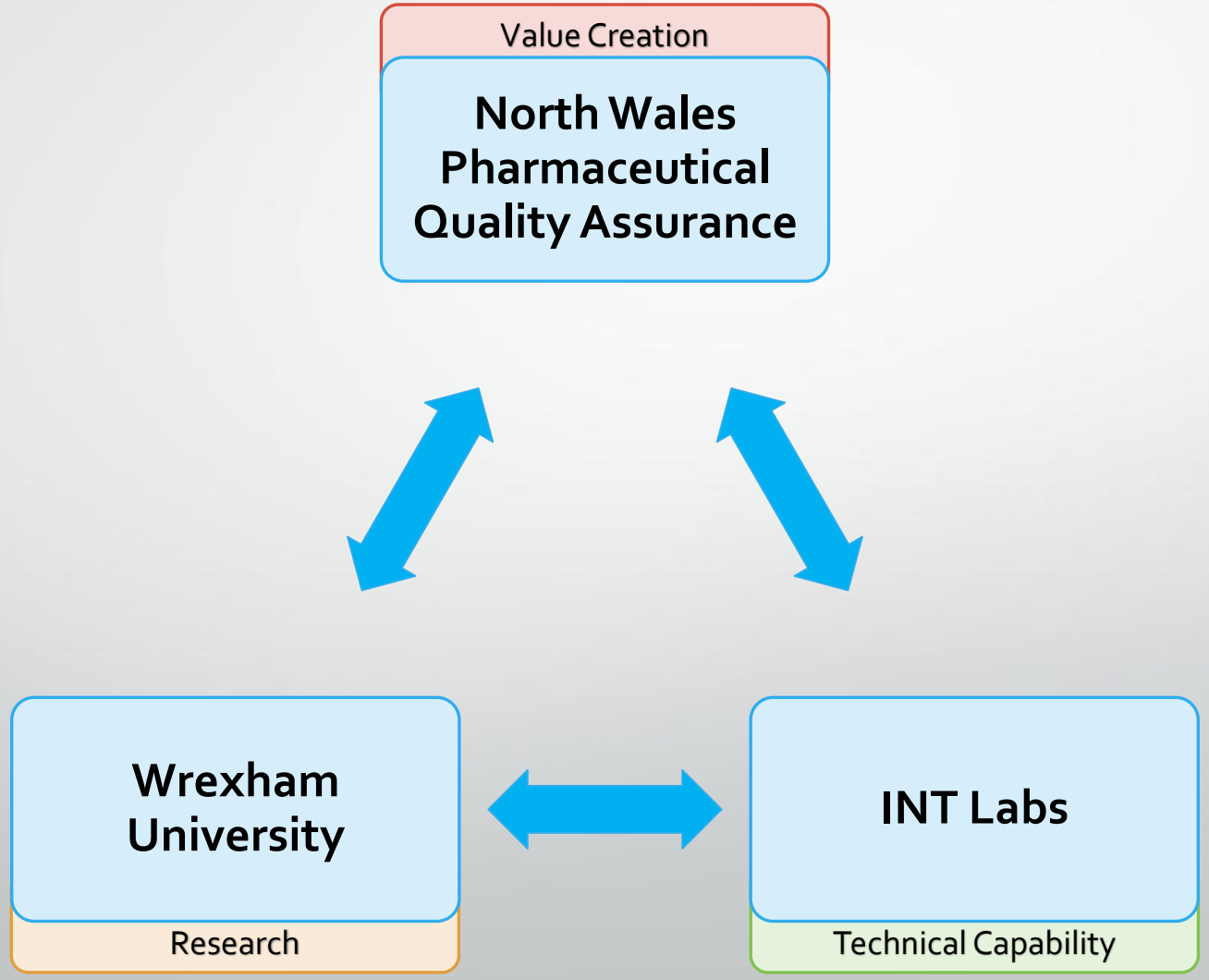


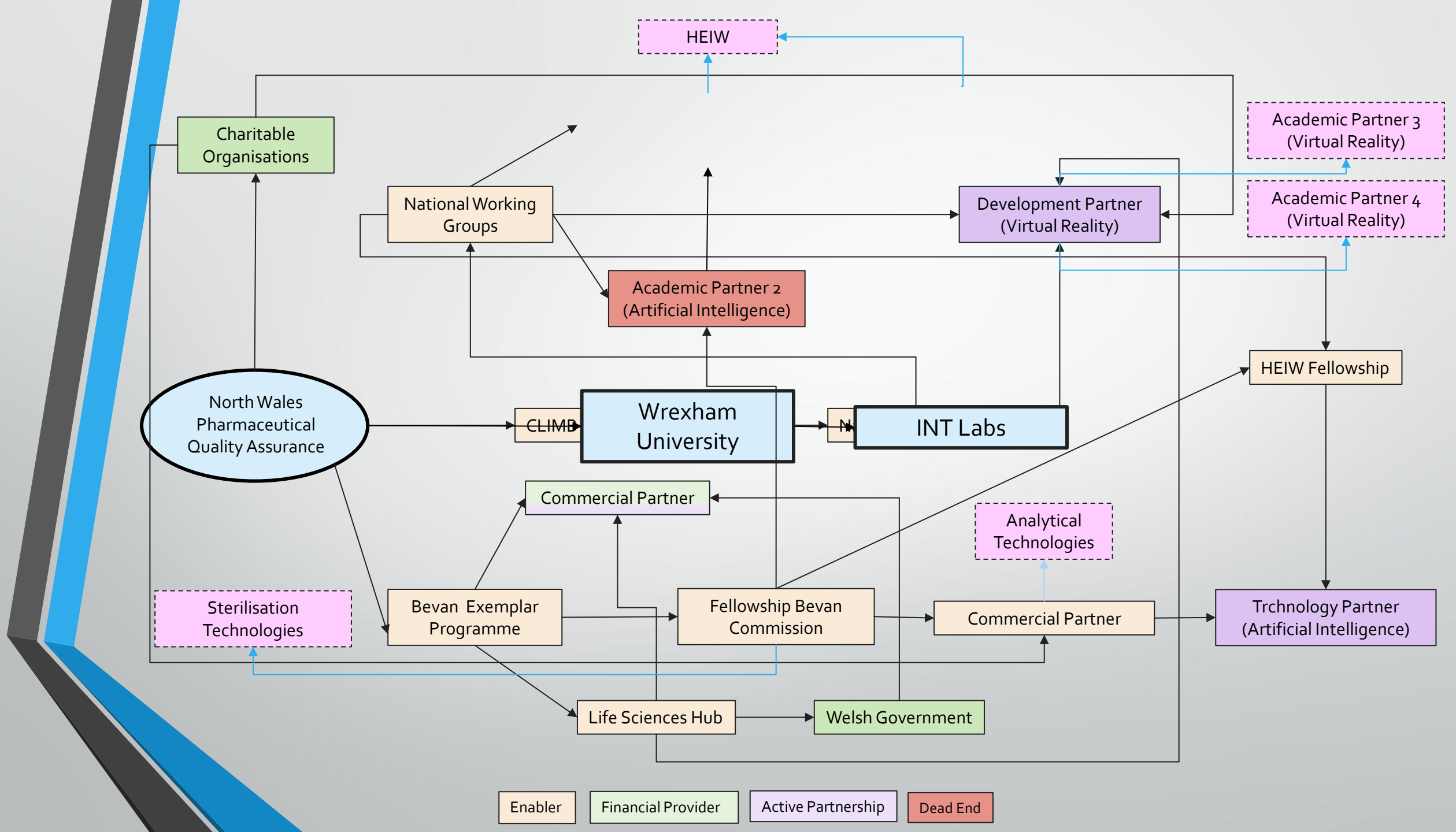
It is,
as far as he knows,
the only way
of coming downstairs
but sometimes
he feels
that there really is
another way,
if only he could stop
bumping
for a moment
and think ."

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Collaboration Model

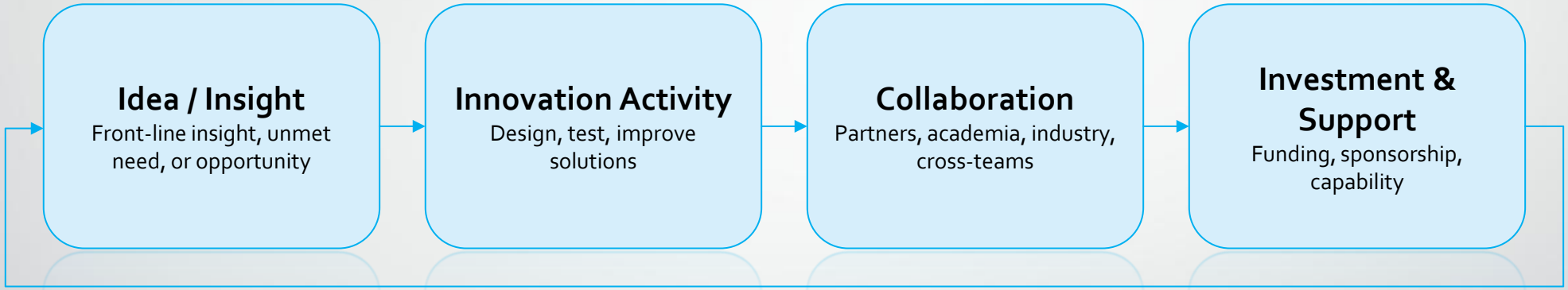



HEIW
Charitable Organisations
National Working Groups
Development Partner (Virtual Reality)
Academic Partner 3 (Virtual Reality)
Academic Partner 4 (Virtual Reality)
Academic Partner 2 (Artificial Intelligence)
HEIW Fellowship
North Wales Pharmaceutical Quality Assurance
CLIMB
Wrexham University
INT Labs
Commercial Partner
Analytical Technologies
Sterilisation Technologies
Bevan Exemplar Programme
Fellowship Bevan Commission
Commercial Partner
Trchnology Partner (Artificial Intelligence)
Life Sciences Hub
Welsh Government
Enabler
Financial Provider
Active Partnership
Dead End

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Ideation to Innovation Ecosystem



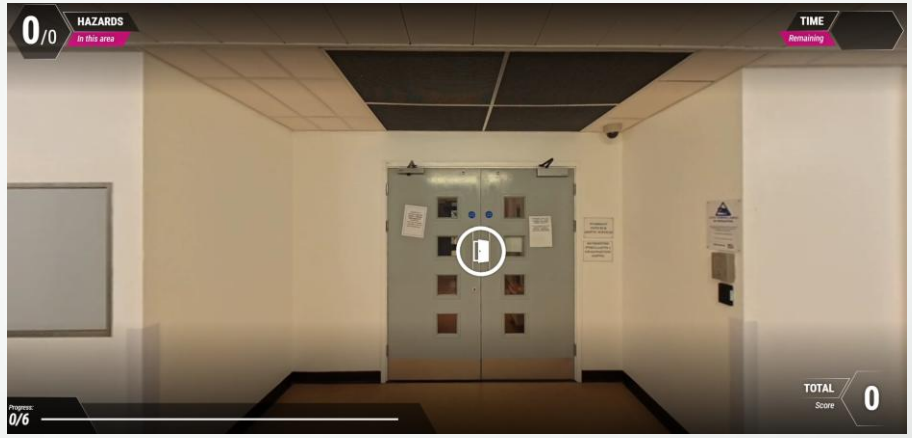
Outcome: A sustainable innovation ecosystem where each success increases capacity and capability for the next idea

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Immersive Technology in NWPQA

- 2 Work streams
  - Immersive Technology
  - Virtual Reality
- Both fit 2 very different needs



- 1 provides a holistic induction training experience encompassing GMP training, departmental orientation, and familiarisation
- 1 provides specific procedural training.
- Both complement each other





Immersive Learning at Wrexham University

University expertise in simulation, now applied to pharmaceutical familiarisation.

Nathan Roberts / Wrexham University

EARLIER HEALTHCARE TEACHING PILOT

97 students involved with trial

100% wanted further use of technology in the future

98% of students felt it was essential for the future

100% pass rate

Automated assessment and bespoke feedback opportunities

Traditional Practical Assessment would take

5 days and 5 members of staff → **3 hours** with 2 members of staff

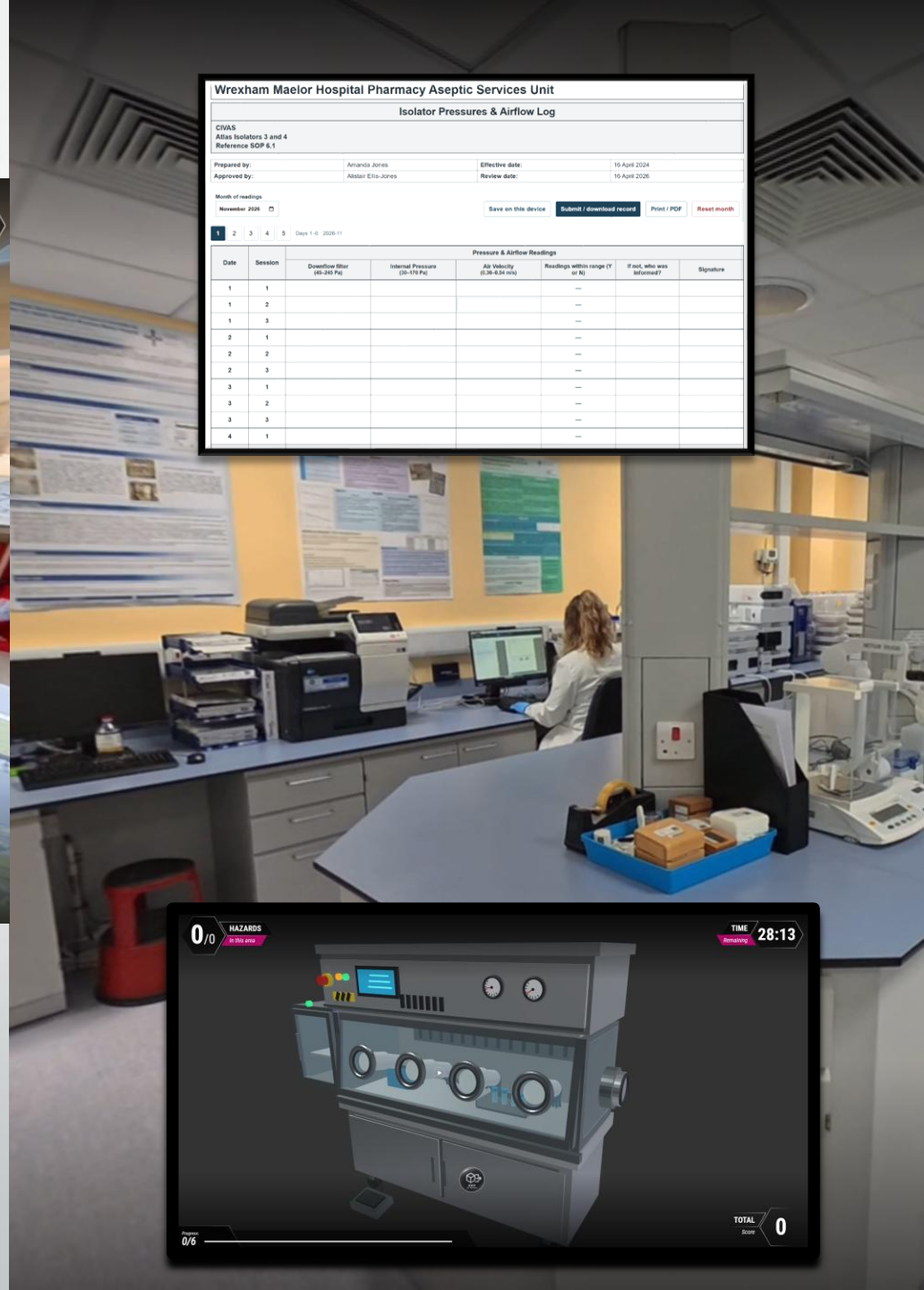
Multiple-choice questions were replaced with a patient simulator AI that requires them to apply their knowledge through an AI conversation which edapts to the conversation, where on completion their feedback is immediately available

Adapting the same assessment to an Immersive Environment accelerated this to 3 hours with 2 members of staff

THE CURRENT PROTOTYPE

A first look inside pharmaceutical practice



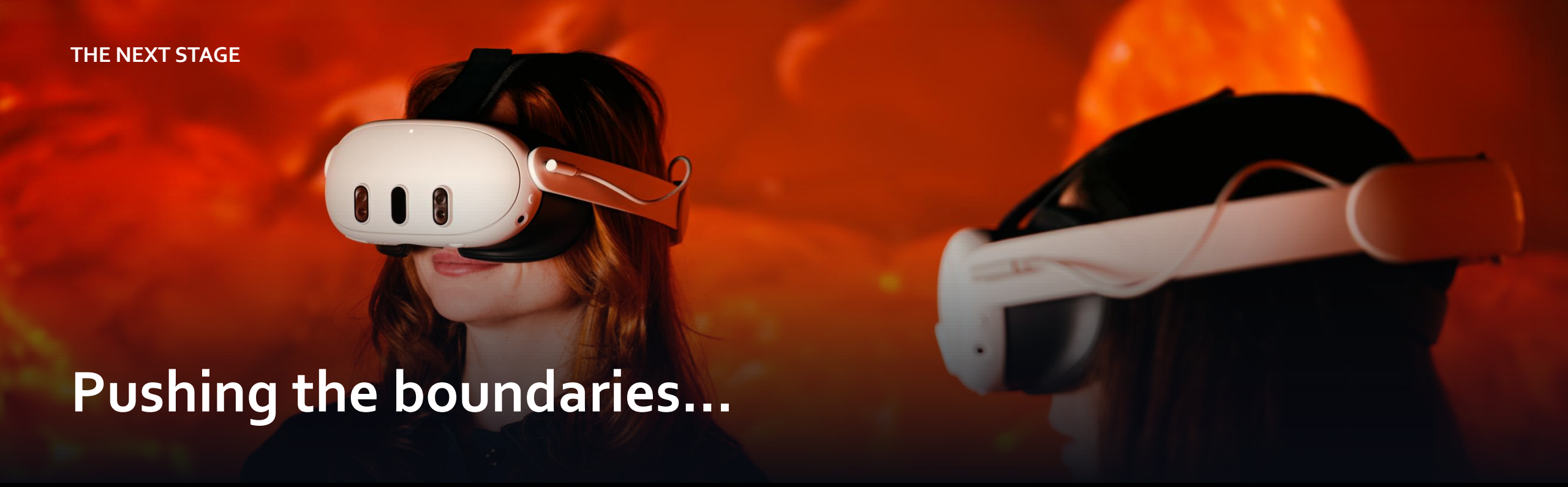


Try the tour

Scan to explore the prototype

- 360° Exploration
- 3D Equipment models
- Phone, VR and Immersive Space

THE NEXT STAGE



Pushing the boundaries...

Planned Pharmaceutical Programme Developments

01

Shared Tours

Explore the same environment together, with multiple people taking part.

02

AI Job Shadowing

Follow a day in a role. Ask questions and practise processes with feedback.

03

Dynamic Safety Scenarios

Identify hazards as a team. Set or randomise risks, vary severity and add time limits.

Nathan Roberts / Wrexham University

Future Development

- Liaising with Health Education and Innovation Wales (HEIW), how can utilise Immersive technology Wales for Pharmacy training.
- Looking to expand the use of VR and Immersive technology as TrAMS develops across Wales.
- Technology is advancing at a rapid rate.
- How can the power of AI be utilised.
- Planned 2 year study to quantify/demonstrate any benefits – R&D Approval.
- Need to focus on key/specific areas.
- Regulatory compliance and acceptance will be a factor going forward.

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Summary

- Hopefully we have given you some food for thought.
- Demonstrated how we can collaborate effectively with external partners in particular Universities and education providers.
- Different providers and establishments can provide solutions to different elements.
- Potential is exciting and technology is developing all the time.
- Whilst there is a financial impact it may not be as significant as first thought if we work collaboratively.

