

national **dance**
company **wales**
cwmni **dawns**
cenedlaethol **cymru**

clwstwr

**Research and development around AR
technology and performance**



Overview

Interviewees:

Paul Kaynes, chief executive, National Dance Company Wales

Saoirse Anton, former touring and projects officer, National Dance Company Wales

www.ndcwales.co.uk

The *Moving Layers* project from National Dance Company Wales (NDCWales) explores the application of augmented reality (AR) technology in performance practice and audience engagement contexts, and ultimately seeks to initiate a conversation around the potential impact of emerging technology. This case study also provides information about Microsoft's HoloLens AR headset, which offers many possibilities for the creative industries. The research and development was funded by an Early Stages grant from Clwstwr, a Creative R&D Partnership, as part of the UK Creative Industries Cluster Programme delivered by the Arts and Humanities Research Council (AHRC).

Moving Layers case study film

(Click to play)



Microsoft HoloLens introduction

(Click to play)



Project context

Moving Layers was a collaboration between NDCWales and digital artist Rob Eagle, who worked closely with Fearghus Ó Conchúir, NDCWales artistic director at the time. Preparation for the project began in 2019, leading up to an initial week-long residential workshop in late January 2020. This was followed by a second week of performance and audience-based experimentation in March 2020. The goal of the research was to explore how dancers could create new forms of performance experiences using wearable AR headsets, and in doing so explore concepts of physicality and performance practice as they relate to this new technology.

Moving Layers sought to explore the commercial potential of developing dance performance using current technology. The R&D was also focused on generating a deeper understanding of the skill sets required and providing a framework for transferrable knowledge that may advance the UK's position at the forefront of creative and cultural exports. "This project aimed to explore knowledge exchange between choreographers, academics, mixed reality designers and programmers to build a basic demonstrator that addresses a longer-term ambition to connect to audiences outside the traditional touring model and develop vital new markets for dance," NDCWales stated.

The background is a reproduction of the painting 'Hylas and the Nymphs' by John William Waterhouse. It depicts a young man, Hylas, in a forest setting, surrounded by several women (nymphs) who are seducing him. The scene is set in a lush, dark forest with a pool of water in the foreground. The painting is characterized by its detailed, somewhat somber and atmospheric style, typical of the Pre-Raphaelite movement.

Creative framework

The creative partnership central to *Moving Layers* came about after Ó Conchúir saw Eagle's digital artwork on [Twitter](#) and discovered they had a shared interest in examining queer identities and queer bodies in performance. While Ó Conchúir's work is focused specifically within dance, Eagle's PhD research at the Digital Cultures Research Centre, University of the West of England, Bristol, explores the place of AR and virtual reality (VR) technology within creative practice.

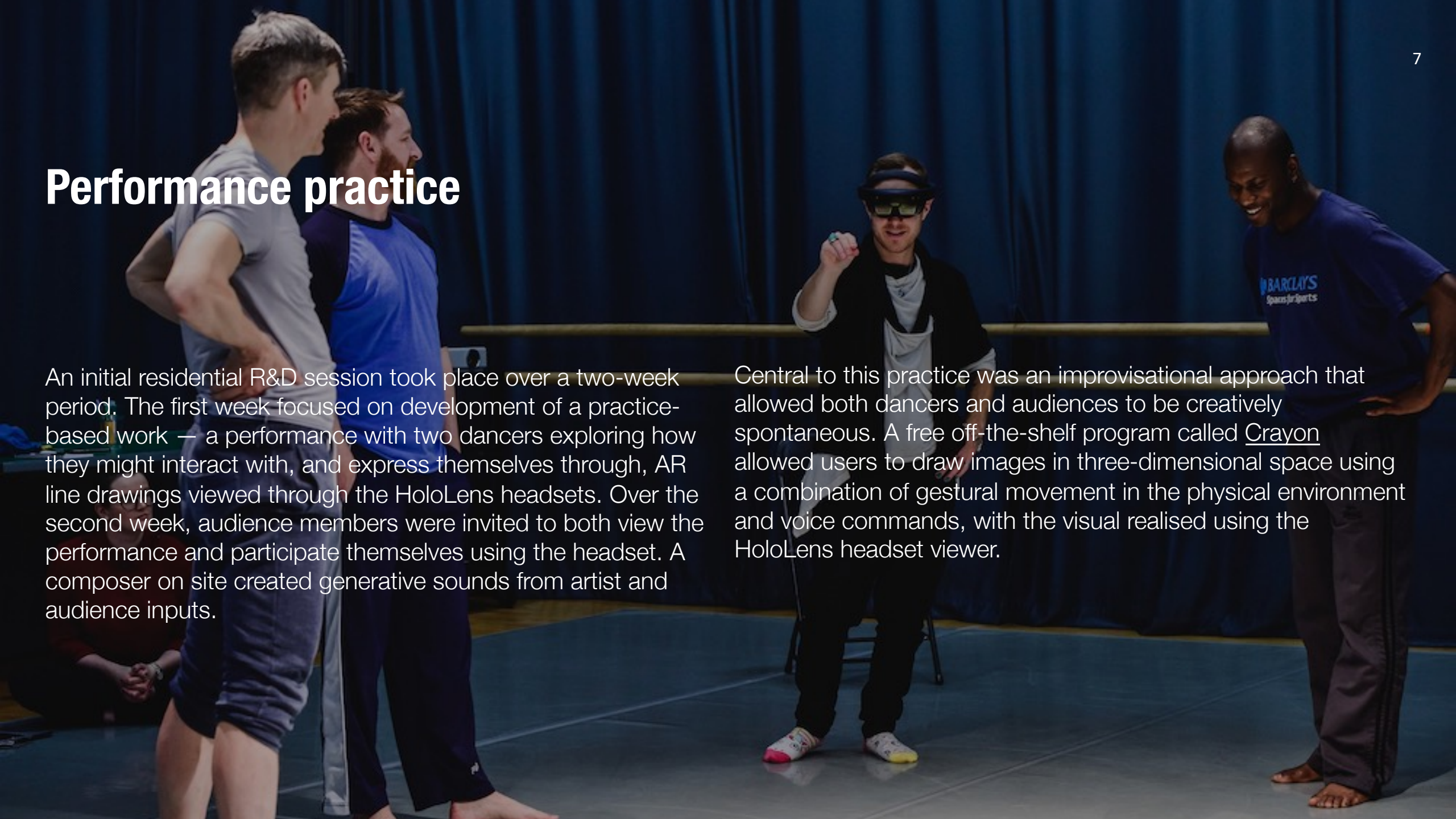
For *Moving Layers*, the pair took as their starting point the Pre-Raphaelite painting *Hylas and the Nymphs* by John William Waterhouse. In its depiction of the seduction of Hercules' lover, the image offered the creative opportunity to interpret notions of desire and representation within virtual spaces.

The pair recognised in the work the chance to offer a queer reading of Hylas as an object of homoerotic desire. The setting of the pool of water evokes ideas of submersion, which also aligns with the experience of a VR or an AR environment. The painting offered a framework of social and art history discourse against which to explore the ways in which bodies are represented within dance, with the added potential to explore and overlay new meanings through a queer eye.

Performance practice

An initial residential R&D session took place over a two-week period. The first week focused on development of a practice-based work — a performance with two dancers exploring how they might interact with, and express themselves through, AR line drawings viewed through the HoloLens headsets. Over the second week, audience members were invited to both view the performance and participate themselves using the headset. A composer on site created generative sounds from artist and audience inputs.

Central to this practice was an improvisational approach that allowed both dancers and audiences to be creatively spontaneous. A free off-the-shelf program called Crayon allowed users to draw images in three-dimensional space using a combination of gestural movement in the physical environment and voice commands, with the visual realised using the HoloLens headset viewer.



Microsoft HoloLens Crayon

(Click to play)



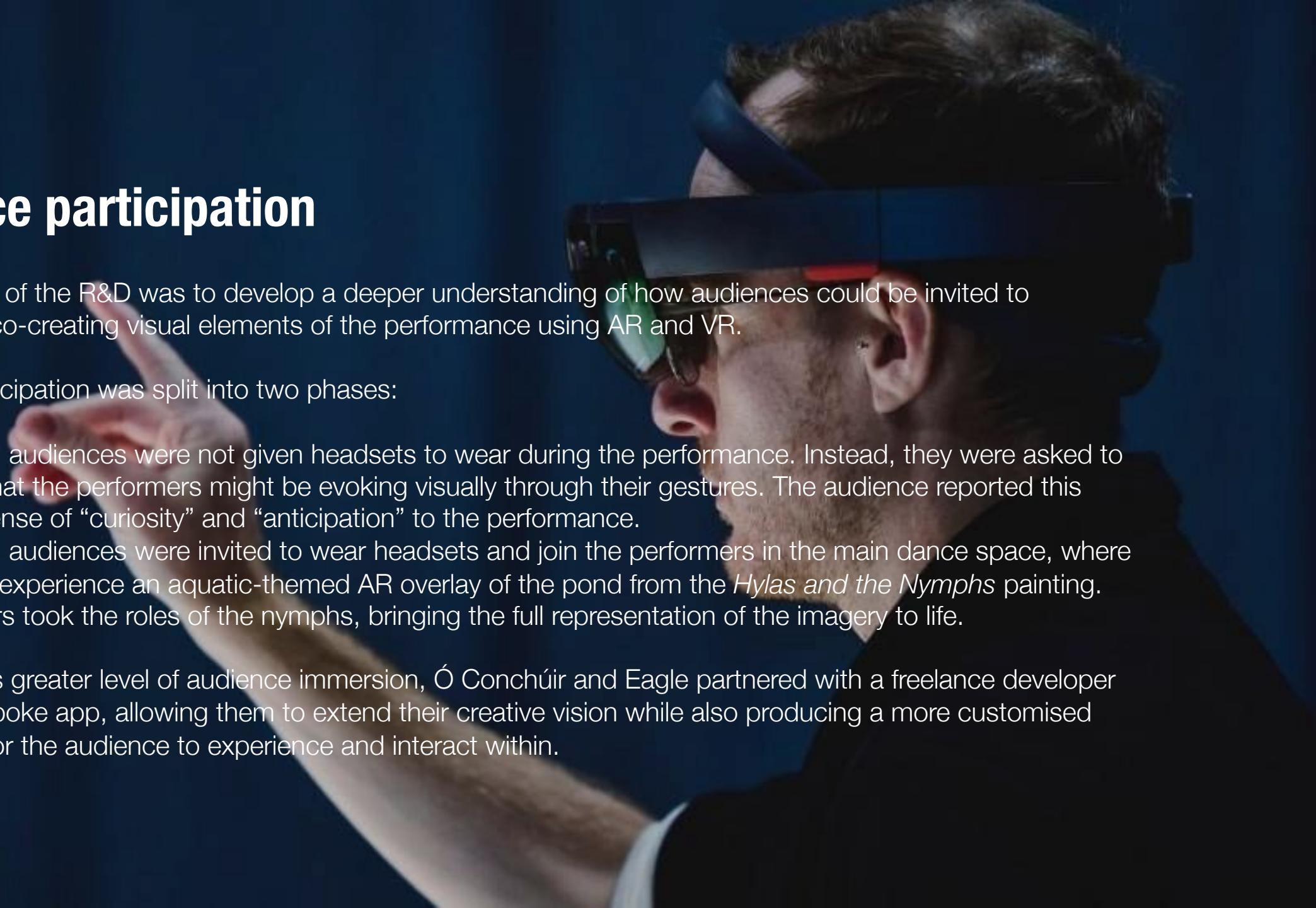
Audience participation

A key function of the R&D was to develop a deeper understanding of how audiences could be invited to participate in co-creating visual elements of the performance using AR and VR.

Audience participation was split into two phases:

- In Phase 1, audiences were not given headsets to wear during the performance. Instead, they were asked to imagine what the performers might be evoking visually through their gestures. The audience reported this added a sense of “curiosity” and “anticipation” to the performance.
- In Phase 2, audiences were invited to wear headsets and join the performers in the main dance space, where they could experience an aquatic-themed AR overlay of the pond from the *Hylas and the Nymphs* painting. The dancers took the roles of the nymphs, bringing the full representation of the imagery to life.

To achieve this greater level of audience immersion, Ó Conchúir and Eagle partnered with a freelance developer to build a bespoke app, allowing them to extend their creative vision while also producing a more customised environment for the audience to experience and interact within.



Reaching new audiences

Moving Layers represents a significant technical advance for NDCWales, both in terms of creative output and as a springboard to consider new models of audience engagement. The R&D project as a proof of concept achieved:

- 1) new ways to bring AR and VR experiences to a diverse and geographically disparate group of participants
- 2) new audiences beyond the core or traditional demographic.

Key learnings from the project have begun to inform the ways in which NDCWales is looking to:

- augment audience experiences and extend the reach of a performance beyond the physical space of a theatre
- deliver immersive content within the theatre as part of a pre- or post-performance foyer experience, or integrated within the core performance itself
- distribute content in new ways, and in novel spaces and contexts.

Future impact

NDCWales will continue to shape the potential for emerging AR and VR technology in creative practice contexts, and the use of this technology will now inform the audience development strategy. Prior to the pandemic, NDCWales had begun to develop a range of approaches towards more inclusive and diverse audience development, and AR and VR have the potential to provide additional support by enabling alternative methods to create and participate in dance.

NDCWales observed significant audience uptake of streaming performances at home during the pandemic and periods of lockdown (with estimates between a five- and seven-fold increase). While these figures will no doubt be shown to revert now that the venue's reopening has permitted a return to fully realised in-person theatre productions, there has been a lasting impact on the NDCWales audience demographic in terms of geography and age. Also referenced is the increasing importance of social media platforms such as Facebook, YouTube and Instagram as spaces to market and deliver digital content to new audiences, in order to secure a more sustainable, longer-term vision for the company.

Further learnings

Parallel to the R&D achieved in the making of *Moving Layers*, NDCWales also pivoted to an online programme of streaming dance performances during the pandemic. A key challenge observed by Kaynes is the monetisation of such content in a highly overcrowded space, where so much material is available for free.

NDCWales has chosen an alternative strategy around its digital regeneration, opting to focus on delivering shorter-form content from clips around the three- to four-minute mark, even working to more standard social media content durations of between 10 and 30 seconds.

Kaynes also suggests that greater cross-sector collaboration and support around the challenges of monetising digitally produced content and online experiences will be vital to shoring up lasting resilience for dance as a specific performing-arts sector.