



**IMMERS-ED  
GLOBAL HACKATHON**

**OXFORD X-REALITY HUB**  
27 SEP.- 1 OCT. 2021

**PREPARED BY**  
LIA COSTINER

# OVERVIEW

---

Immers-Ed, the first hackathon at Oxford devoted to Immersive Technologies, took place virtually over the course of one week (27 Sept. - 1 October 2021). Organised by the Oxford X-Reality Hub in collaboration with the TORCH (En)coding Heritage Network, the event, modelled upon programming hackathons, tasked participants with devising solutions to challenges arising from the pandemic in four key areas: Cultural Heritage, Education, Environmental Sustainability, and Healthcare.

International teams composed of participants from eleven countries took part in the event (hailing from Germany, Austria, Slovenia, Saudi Arabia, Turkey, India, the Philippines, U.S.A., Guatemala, Kenya, and the U.K.). Participants benefited from a day of training courses covering the basics of designing immersive experiences, giving them an overview of the creative process, and introducing them to practical tools.

Over the course of 72 hours, each team worked on shaping and developing an idea, guided by a subject specialist from the University of Oxford. Projects were encapsulated into a 4-6 minute presentation which was submitted on the final day of the event. The entries were judged by a panel academics as well as industry leaders.

Winning projects included: in the field of education, the creation of an immersive experience which monitored students' engagement in order to enhance chemistry learning; in the cultural heritage field, a way of exploring a museum remotely using a robot; in medicine, a virtual application for ophthalmological care; and in environmental sustainability, an application which predicts flash floods, prevents damage and saves lives. The Grand Prize winner, Team Atrium, proposed the creation of a mobile application that 'creates a more expansive experience for audiences that exists outside of the physical space of traditional institutions and increases exposure and engagement for artists by inviting participation from viewers through augmented reality.'

The grand prize winner was awarded \$10,000 of Amazon Web Services credit, while each individual challenge winner received a mentorship package from the Oxford X-Reality Hub to assist in the future development of their ideas. This hackathon revealed the power of immersive technologies to tackle challenges in a range of disciplines and the ways in which technology can be harnessed to assist in post-pandemic recovery.

---

# ORGANISING TEAM

## OXFORD X-REALITY HUB MEMBERS



**LISANDRA (LIA) COSTINER**  
ACADEMIC LEAD



**RICHARD SMITH**  
TECHNOLOGY LEAD



**ANGELA BERMUDO**  
PARTNERSHIPS &  
ENGAGEMENT

The Oxford X-Reality (OXR) Hub is the central place at the University of Oxford for engagement, exploration and research devoted to immersive technologies. Its mission is to harness immersive technologies to tackle some of humanity's greatest challenges: educational inequalities, big data, manufacturing optimisation and heritage preservation. The team comprises technical experts, humanities researchers and engagement specialists with diverse and interdisciplinary skills.

# HACKATHON CHALLENGES

## RECOVERY AND RESILIENCE AFTER COVID-19

### EDUCATION

**How can we create more engaging learning experiences and foster academic success especially in distance-learning environments?**

COVID-19 has created the largest disruption of education systems in history, affecting nearly 1.6 billion learners in more than 190 countries, according to the United Nations. Underprivileged students are disproportionately affected when studies are interrupted and the quality of education decreases. Furthermore, virtual school performance lags behind that conducted in-person. Immersive technologies can help develop students' sense of curiosity and potentially create richer learning experiences in the classroom and in distance learning environments. This challenge explores potential schemes and designs leveraging immersive technologies to create engaging learning experiences and foster academic success for primary and secondary school students. Supported by the University of Oxford Department of Education.

### HEALTHCARE

**How can we redesign medical training, foster global collaboration, and improve patient care to save lives?**

The global pandemic placed immense pressure on health care systems. At dire times, this revealed deficiencies in infrastructure, supply chains, and equitable health care which resulted in the loss of lives. As we emerge from COVID-19, how can we learn from this experience to improve healthcare and build more resilient healthcare systems? Supported by Reuben College, Oxford & The MRC Weatherall Institute of Molecular Medicine.



# HACKATHON CHALLENGES

## RECOVERY AND RESILIENCE AFTER COVID-19

### CULTURAL HERITAGE

#### How can technology facilitate inclusivity and access in the cultural heritage sector?

According to the International Council of Museums, 90% of museums closed their doors during the global health crisis. Of these, 10% may never open again. Many museums and heritage sites struggle with limited capacities and digital infrastructures to be able to adapt to these challenges and ensure long-term survival. This challenge explores how immersive technologies can enable institutions to connect with and engage audiences, expand inclusivity and access and, in the process, increase the resilience of the cultural heritage sector. Supported by the University of Oxford's Heritage Network and TORCH (En)coding Heritage Network.

### ENVIRONMENTAL SUSTAINABILITY

#### How can we emerge out of the pandemic and create more sustainable environmental practices?

Global support for sustainability and conservation is increasing, especially as industry explores its profitability. At the 2019 UN General Assembly High-Level Meeting, world leaders warned we had less than 11 years left to prevent irreversible damage from climate change. Since that gathering, we have seen an increase in global initiatives and call to actions in this area. In March 2021, Oxford University's Council voted in favour of adopting an Environmental Sustainability Strategy to move the University to net zero carbon and biodiversity net gain by 2035. This challenge explores how immersive technologies can assist in the shift towards more environmentally sustainable working practices

# PARTICIPANTS

## GLOBAL REACH

The hackathon attracted 317 applicants from around the globe, of which 180 submitted their applications individually and 137 formed part of 44 teams. After a rigorous selection process, 9 teams were selected to participate, comprising of 41 individuals. These represented eleven countries and four continents. Participants counted the U.K. as their home, Germany, Austria and Slovenia. From the North American continent, the U.S.A. and Guatemala were represented. The event also attracted participants from Africa, Kenya in particular, and from the Middle East, with Saudi Arabia. The Asian continent was represented by Turkey, India, South Korea and the Philippines.

The hackathon included participants at different career stages: undergraduates, Masters and doctoral students, senior academics, artists and professionals. The group was gender balanced, due entirely to self-selection. Of the 41 participants, more than half, 21, were female.



# BY THE NUMBERS

317

INTERNATIONAL  
APPLICANTS

72

HOURS

41

PARTICIPANTS

1

GRAND  
PRIZE



# PARTNERS & SPONSORS

We would like to thank a number of sponsors and partners who have made this event possible:



**\$10,000**

AWS CREDIT  
WINNING PRIZE

## ACADEMIC PARTNERS



MRC  
Weatherall  
Institute of  
Molecular  
Medicine



## INDUSTRY PARTNERS



Microsoft

---

# HACKATHON TEAM SUPERVISORS

SUBJECT EXPERTS SPANNING FOUR DISCIPLINES



**ABBEY PALMER**  
EDUCATION



**STEPHEN TAYLOR**  
MEDICINE



**LIA COSTINER**  
CULTURAL HERITAGE



**TRISTRAM WALSH**  
ENVIRONMENTAL  
SUSTAINABILITY

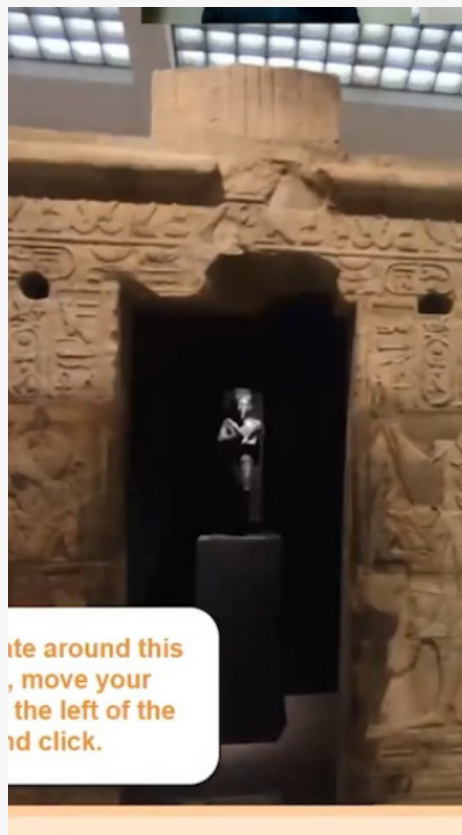


**ANGELA BERMUDO**  
ENVIRON. SUSTAINABILITY  
AND CULTURAL HERITAGE



**LIA COSTINER**  
EDUCATION

## CHALLENGE WINNERS



### CULTURAL HERITAGE

#### Museums of The Future

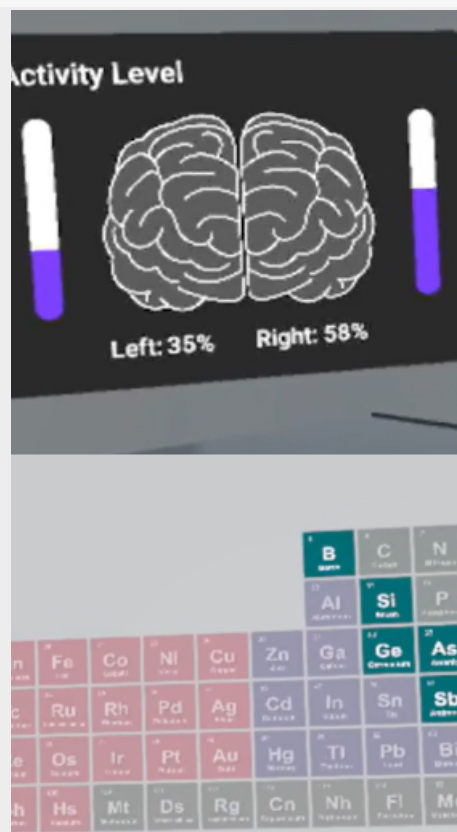
developed by **Team Culture Crunch** is an immersive learning experience within the museum setting. It proposes a live virtual tour of a museum space using a robot that is remote-controlled by the learner, encouraging engagement with individual museum objects through gamification, from the comfort of one's home.

### EDUCATION

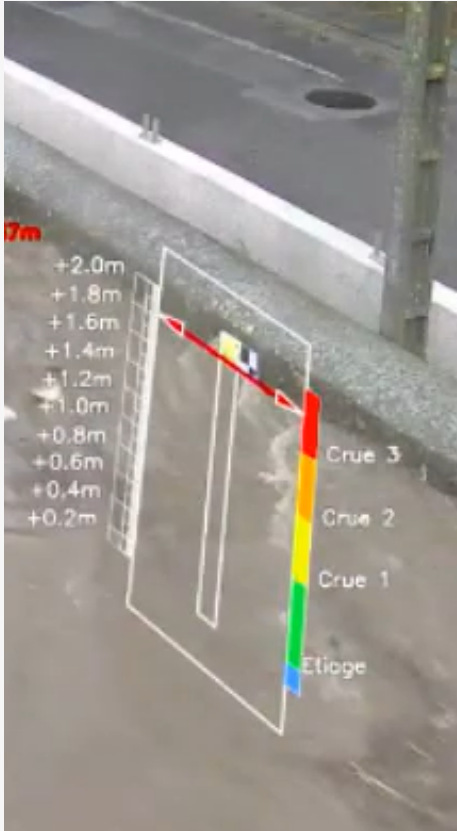
#### Chemist's Interactive Lab

created by **Team C.I.I.L**

**Developers** addresses the disruptions in education wrought by the pandemic. It creates a virtual reality learning experience that measures attention and EEG activity simultaneously to promote engagement and retention of chemistry material.



## CHALLENGE WINNERS

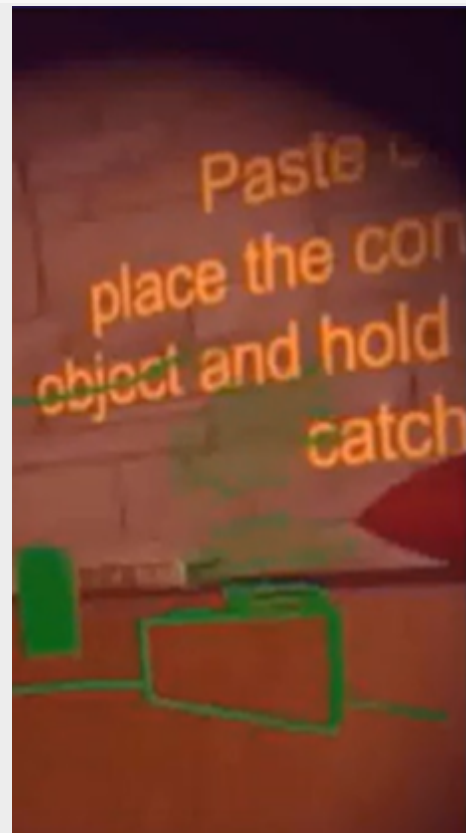


### ENVIRONMENTAL SUSTAINABILITY

**Flood Alerting System** created by **Team Hacked Insights** addresses an environmental challenge linked to global warming. The project proposes a mobile application that predicts flash floods, unpredictable occurrences that are prevalent in South Asian countries. It reduces the damage caused by these and saves lives.

### HEALTHCARE

**Havik Eye** designed by **Team Novum Initium** redesigns ophthalmological care. It uses Virtual Reality and Augmented Reality to deliver therapy through stimulation and immersion. The application is remote, widening accessibility to healthcare and eliminating the need to travel to medical appointments.

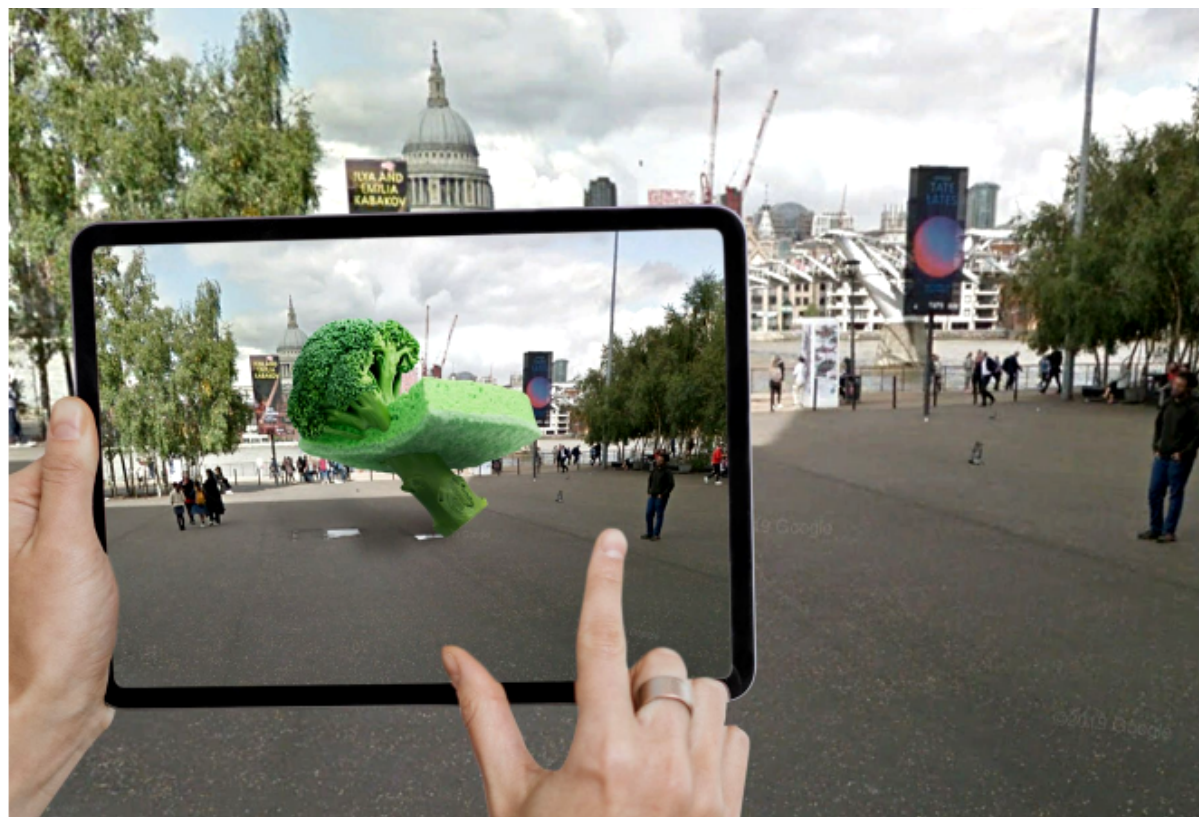
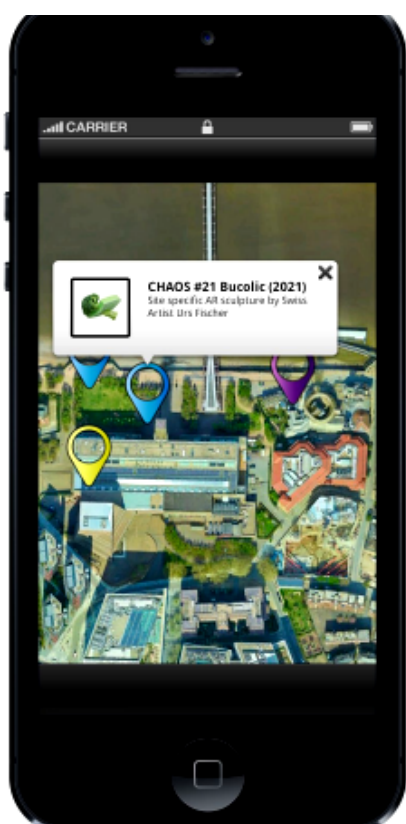




# GRAND PRIZE WINNER

Team Atrium

The grand prize winner, **Atrium**, designed by **Team Atrium**, revolutionises audiences' experience of artworks. It proposes the creation of a mobile application that 'creates a more expansive experience for audiences that exists outside of the physical space of traditional institutions and increases exposure and engagement for artists by inviting participation from viewers through augmented reality.'



# Oxford X-Reality Hub

<http://oxr.eng.ox.ac.uk>

## **CONTACT**

[v-hub@it.ox.ac.uk](mailto:v-hub@it.ox.ac.uk)