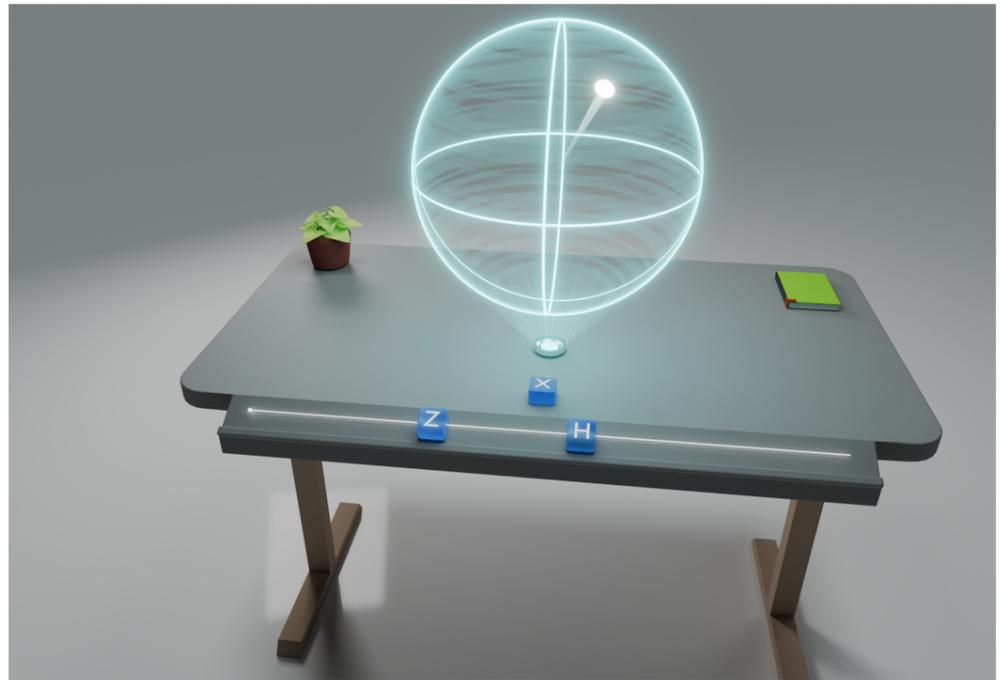


# Quantum Xperience

Experience the elements of quantum computing in a virtual world

Visualizing key concepts of quantum computing in an interactive VR application for outreach and educational purposes

- Outreach
- Virtual Reality
- Education



## Introduction

As part of the Quantum Year 2025, the first version of the outreach project "Quantum Xperience" was created, an interactive VR application for visualizing and manipulating a single qubit. Building on its success, we currently develop two further VR projects to bring the fascination of quantum computing closer to non-specialists.

VR offers a modern and playful approach to visualize various aspects of quantum computing that would be difficult to achieve with a two-dimensional representation, which is accessible to pupils, politicians and engineers alike. For this reason, we have chosen this platform for this outreach project.

## Utilizing VR to transfer knowledge

Many aspects in science, especially in the field of physics and mathematics benefit from a rigorous three-dimensional imagination of the subject. This kind of knowledge is very difficult to convey. However, modern advancements in the field of virtual reality offer a new way to develop interactive three-dimensional experiences to illustrate those topics.

## Planned applications

Besides the deployment on fairs, the VR applications developed in Quantum Xperience are planned to be used

- inside the QCI-Showroom
- as a demonstrator of real QC hardware

## Using VR on fairs

VR applications are an eye-catcher on every fair, especially for attracting a younger audience. In Quantum Xperience we implemented several features for a successful exhibit on any fair with minimal support:

- Easy setup within 30min
- Streaming of the VR content to an external screen for easy support
- Exploring our quantum puzzle takes around 5min
- Controlling via handtracking → no clumpy controllers needed
- Completely free and untethered movement in a marked area
- Perform a reset of the scene by a simple hand gesture

## Perspective and further goals

In 2026 we want to build up on the success of our virtual Bloch sphere with two further VR projects:

- Extending to two qubits in order to bring the aspect of entanglement and spooky action at a distance closer.
- Collaboration with a hardware manufacturer to visualize a specific technology that enables quantum computing. In this way, we want to give a direct insight "under the bonnet" of a quantum computer.

Furthermore, we want to achieve the necessary know-how to build VR-applications and interactive 3D content for future projects.

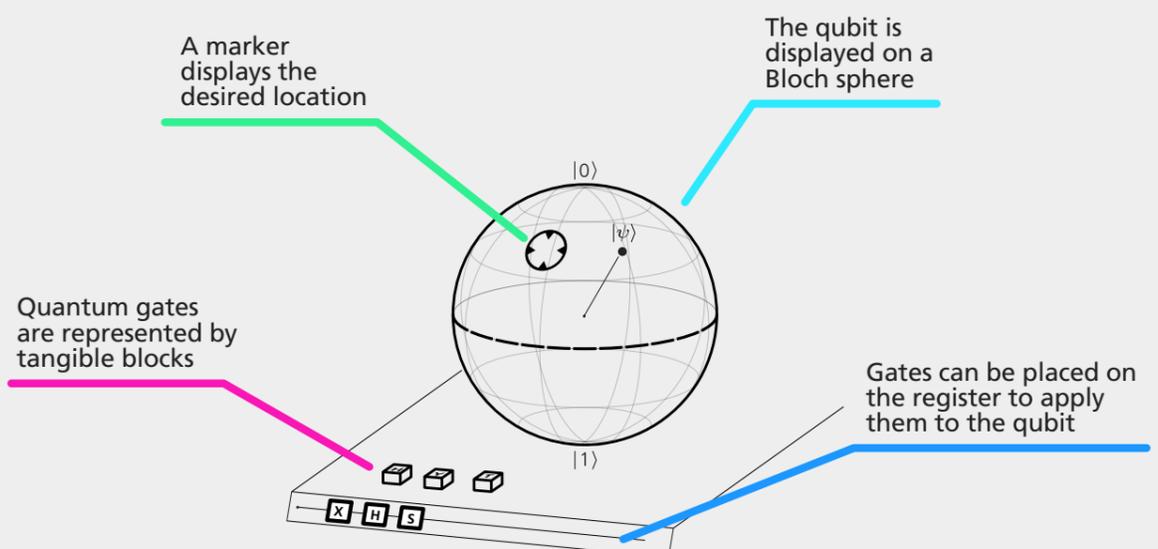


## Quantum Xperience (pilot version)

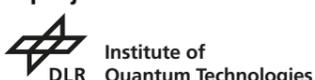
In Quantum Xperience participants can learn interactively what it means to calculate with a qubit instead of a classical bit.

In three levels you need to find the right gates to achieve the marked destination on the Bloch sphere. The action of the gate is performed live and in an animated way.

Many quantum phenomena can be illustrated by this simple concept.



A project of



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Get in touch.  
We enable quantum!



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