



CERN Science Gateway
Inspiration book

Patricia Verheyden
IPPOG, 26 11 2024

CERN Science Gateway inspiration book

The goals of CERN Science Gateway are:

- Enable a diverse audience across all sectors of the public to engage with the science, the discoveries, the technologies and the people working at CERN
- Inspire the next generation to explore a career in science and technology.
- Empower visitors of all ages to make sense of the science that shapes their lives
- Convey the importance and relevance of fundamental science in bringing nations together through peaceful collaboration and driving innovation.
- Conserve and display the heritage of big science, the objects and stories that transmit the tremendous human endeavour in a tangible way
- Build ties across CERN Member States and beyond, encouraging co-creation with other museums, science centres and education networks.

CERN Science Gateway offers 3 exhibitions to our visitors:

- In Discover CERN, visitors find out how CERN explores particles using accelerators and detectors.
- In Our Universe, visitors travel back 13.8 billion years to discover how their particles came to be.
- In Quantum World, visitors discover in a playful way the rules that govern the behaviour of particles.

With this CERN Science Gateway inspiration book, we want to:

- Inspire and help science centres, museums and institutions who want to create exhibitions and/or events on the topics treated in our exhibitions.
- On the following pages you will find an overview of the material we can offer, please do not hesitate to contact us at exhibitions.team@cern.ch if you would like to find out more. In most cases you will be able to modify content to fit your needs locally. In which case, we would ask you to share your adaptations, so the ideas for the exhibits continue to grow and improve.



CERN Science Gateway
Inspiration book

Accelerating and related
technologies

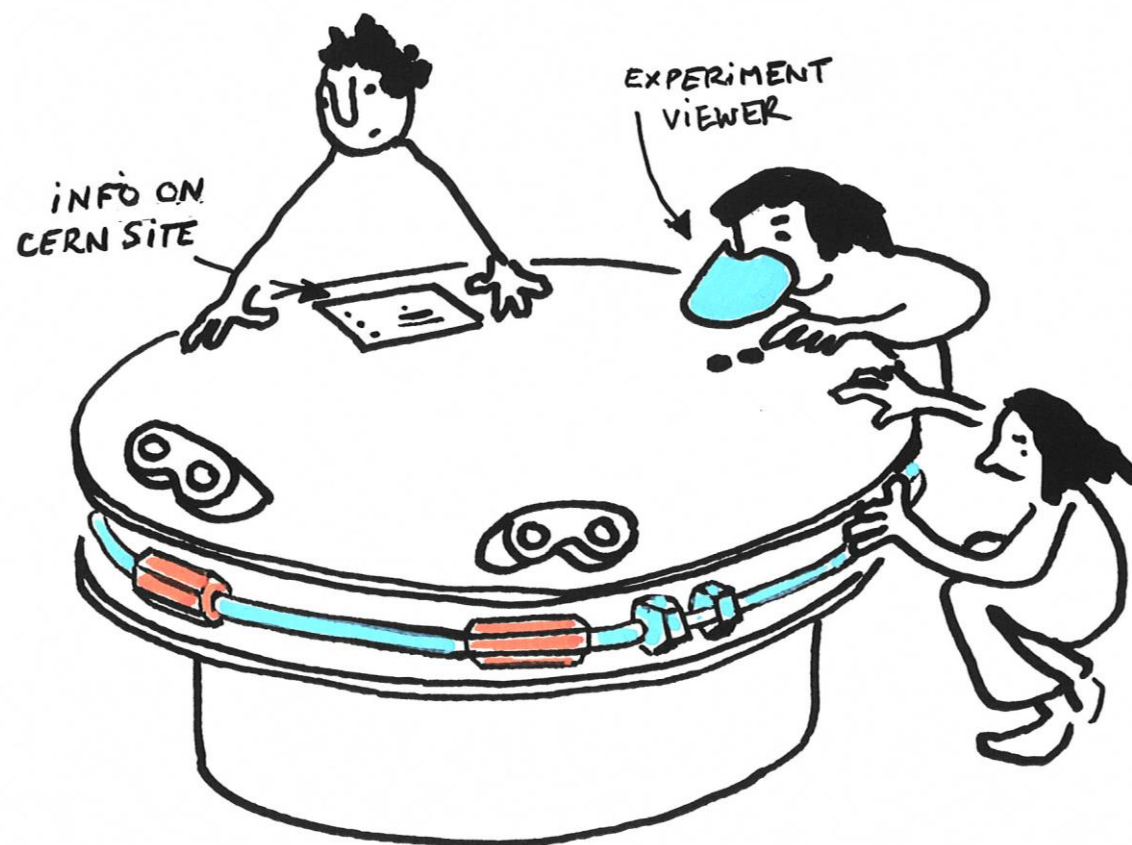
Introduction

A round table with an aerial print of the landscape above the Large Hadron Collider.

Screens, viewers and models of the experiments are incorporated. These allow visitors to explore the CERN campus, look inside the experiments and learn more about the main components of the Large Hadron Collider.

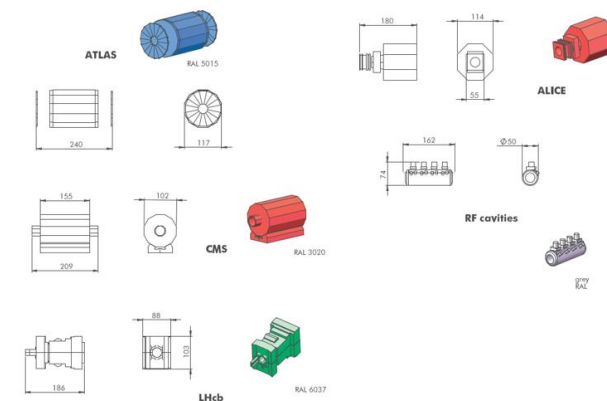
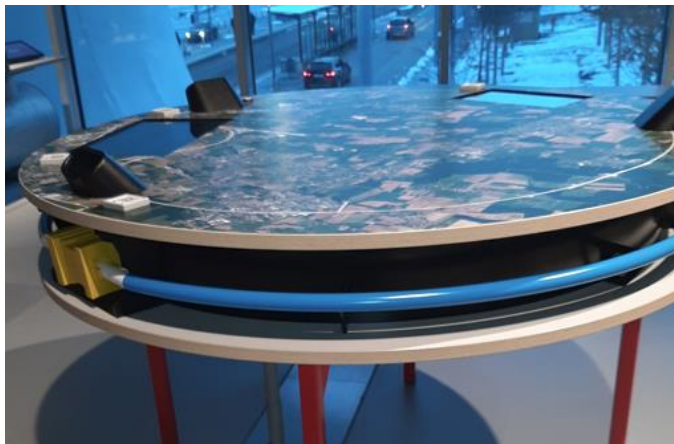
A combination of 3D models of the accelerator and its experiments and QR codes leading to audio descriptions make the exhibit accessible for blind and visually impaired people.

Explore the CERN campus



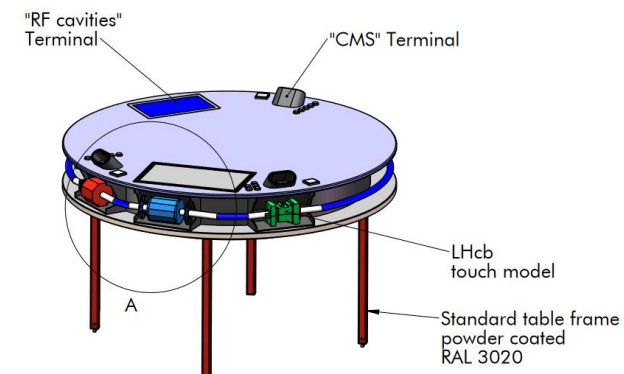
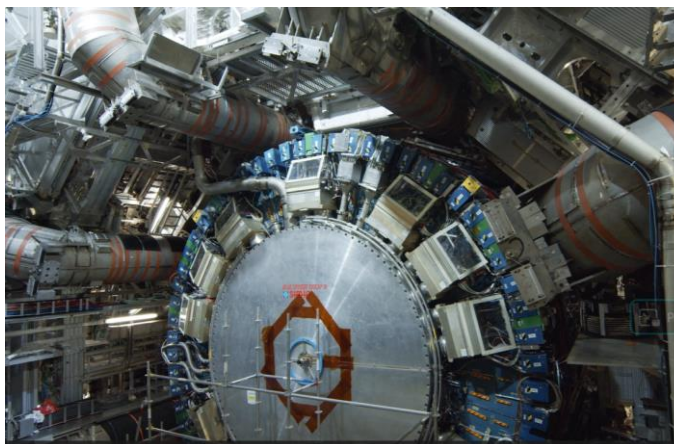
What CERN can deliver

- Software
- Videos and pictures
- Information texts
- Specifications for hardware
- Drawings of furniture



What you need to do/buy

- PCs
- Two touch screens
- 3 small screens
- Build furniture and models



Practical information

Diameter of the table is 1.6 metres.

It is also possible to just show the information that is on the screens:

- Screen with information on Meyrin and Preessin campuses (software is developed for use on a 22" touch screen).
- Screen with information on the accelerators (software is developed for use on a 15.6" touch screen).



CERN Science Gateway
Inspiration book

Detecting and analysing

Introduction

Working together across 3 screens, visitors collaborate to discover the Higgs Boson.

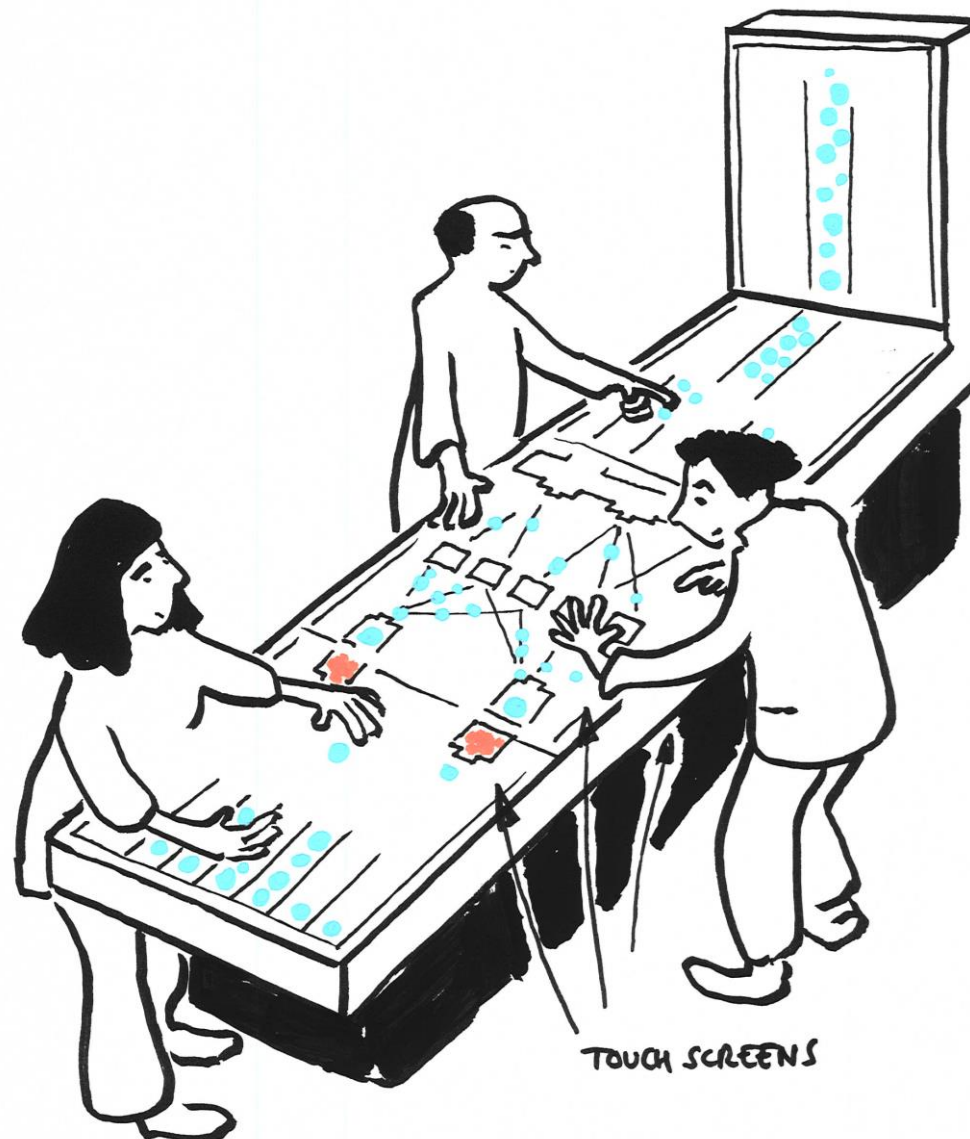
On screen 1, visitors select data from collisions that show signs of a Higgs boson, from the hundreds of millions of collisions that occur every second.

On screen 2, visitors feed this data across the World-wide Computing Grid so it can be analysed.

On screen 3, visitors analyse the data by sorting it into "histograms". If the data has been well selected, an excess of collisions in one of the columns can indicate the presence of a new particle.



Find the Higgs

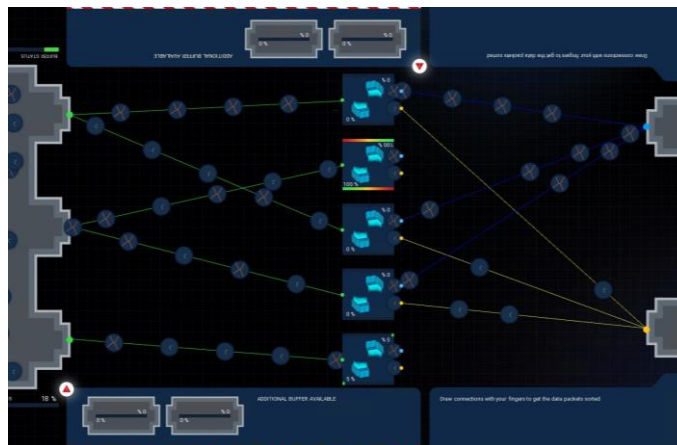
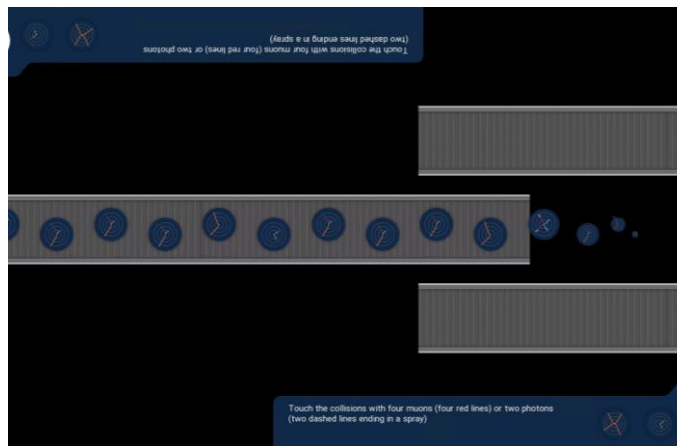


What CERN can deliver

- Software
- Information texts
- Specifications for hardware
- Instructions for set up

What you need to do/buy

- 3 large multitouch screens
- 1 screen
- PCs
- Furniture



Practical information

The software is developed for use on 43" touch screens



CERN Science Gateway
Inspiration book

Our Universe

Introduction

A trip back in time to the beginning of the Universe 13.8 billion years ago, showing the journey our particles took on their way to becoming us.

Topics treated in this short movie include:

- The Big Bang
- Inflation
- Matter and antimatter annihilation
- Particles and forces
- Higgs field
- Formation of first atoms
- Cosmic microwave background radiation



Big Bang movie



What CERN can deliver

Film with narration in 5 languages

What you need to do/buy

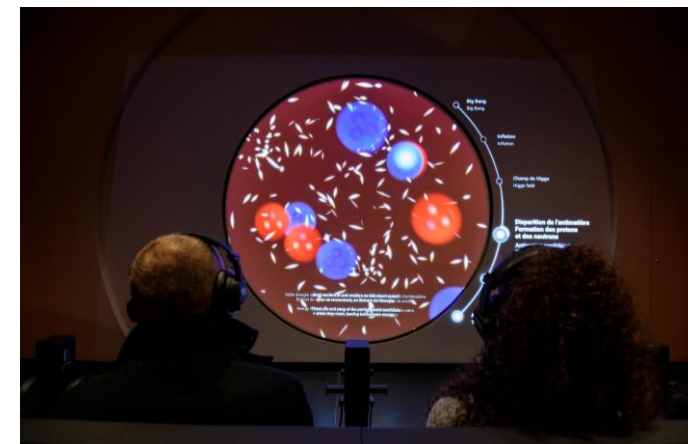
Projector

PC

Hardware for audio

Speakers or headsets

Buttons for language choice



Practical information

There is space for subtitles in 2 languages

Voice overs are available in 5 languages

The content of this film relates the journey through the Universe that the visitors have just experienced in the exhibition. Some of the content relates specifically to the exhibit environment at CERN Science Gateway.



Quantum World

Explore how the Universe works of tiny scales

Exploring the infinitely small means encountering some strange phenomena. At these scales, the laws of physics are very different to those we experience in our everyday lives. Quantum physics explains the behavior of particles at the smallest scales, where uncertainty rules: a particle can be in two places at once, and its position and momentum can't be precisely known at the same time. These are the laws of quantum physics, and they govern the behavior of atoms, molecules, and the building blocks of matter.

CERN Science Gateway Inspiration book

Quantum World

Introduction

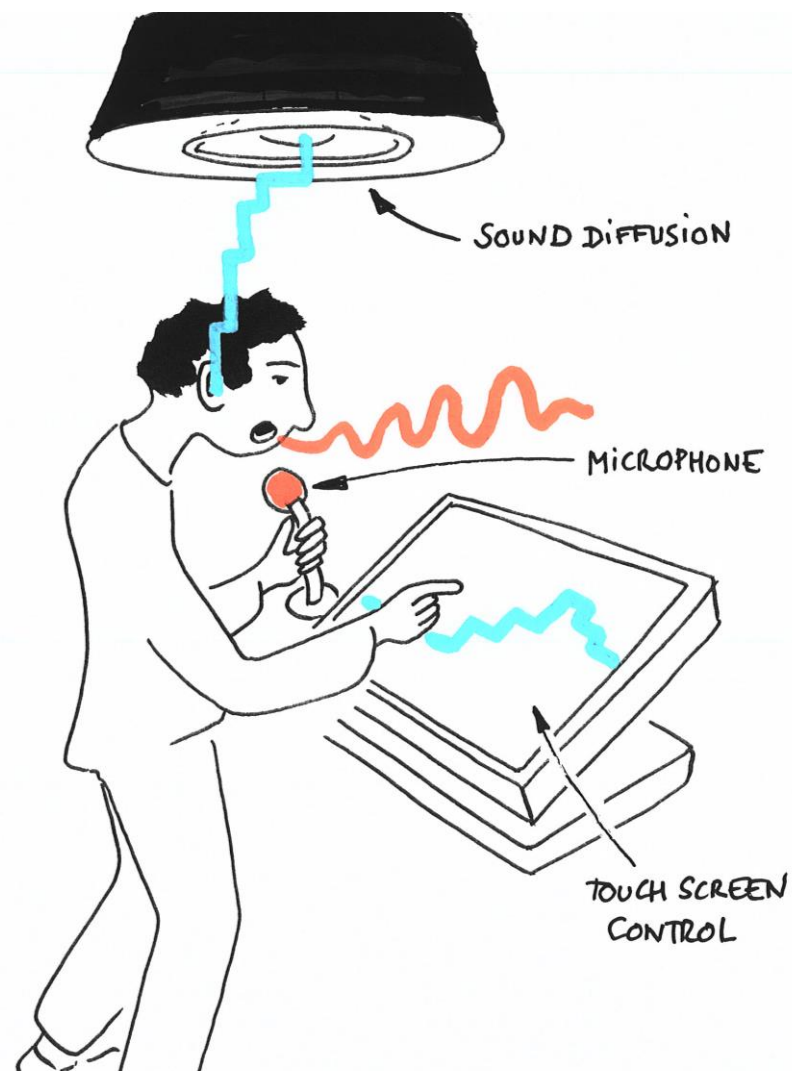
Normally, when you sing, your voice emits a continuous stream of notes. In quantum karaoke, only a few notes are allowed, which radically transforms the melody.

Quantum Karaoke allows visitors to explore quantisation in a recording booth. The booth is equipped with a touch screen, a microphone, and a speaker.

Quantisation is a fundamental principle of quantum physics.



Quantum karaoke

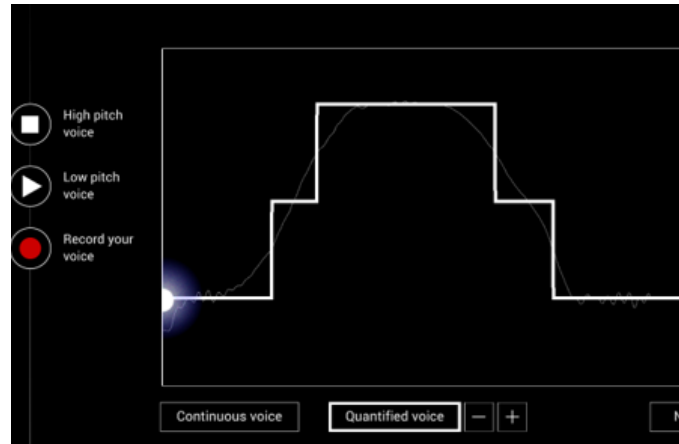


What CERN can deliver

- Software
- Information texts
- Specifications for hardware
- Instructions for set up

What you need to do/buy

- PC
- Touch screen
- Microphone
- Speaker
- Furniture



En savoir plus

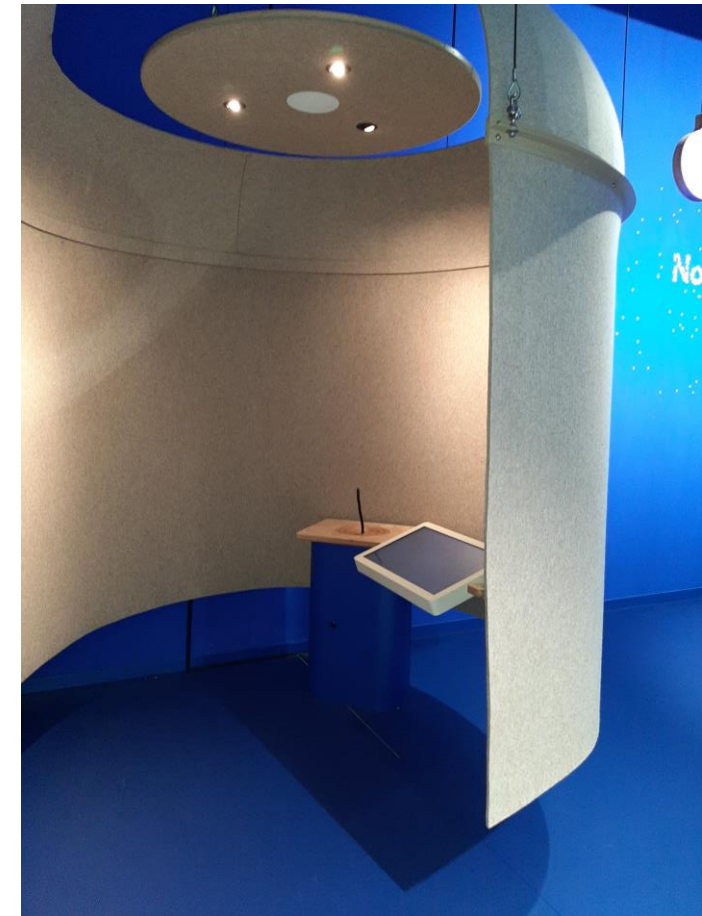
- Qu'est-ce que la quantification ? >
- D'où vient la quantification ? >
- Les atomes et les quanta >
- La quantification au quotidien >

Quitter

Qu'est-ce que la quantification ?

Quelle serait votre réaction si votre voiture passait sans transition de 50 à 70 km/h quand vous accélérez, pour redescendre subitement à 30 km/h quand vous freinez ? C'est ce qui se passe dans l'infiniment petit. Certaines grandeurs, comme l'énergie, peuvent prendre que des valeurs bien déterminées : elles sont quantifiées. L'énergie particules qui forment un atome, par exemple, n'est pas un continuum infini. Elle ne prend que certaines valeurs bien définies. C'est comme si pour gravir une colline, était obligé d'emprunter un escalier avec des marches de hauteurs variables.

Home AA FR



Practical information

The set up is quite small. However, we recommend to acoustically shield it from the rest of the space.
The software is developed for a 27" screen.

Are you interested?

Are you inspired by the previous pages?

Would like to know more about how you can use the content developed for Science Gateway to develop your own exhibition?

Please send an email to exhibitions.team@cern.ch so we can discuss how best to help you.

Please note that all documentation and software will be shared under a [licensing agreement](#).