



Science Gateway

Emma Sanders

Head of CERN's exhibitions team, IR-ECO-EXH

IPPOG meeting 29.11.19 - CERN

The building

The Globe

Start of guided tours
Temporary exhibitions

Temporary
exhibitions

Auditorium

Science shows
Conferences
Debates
Lecture-demonstrations

Labs

Enquiry based learning
Hands-on experimentation

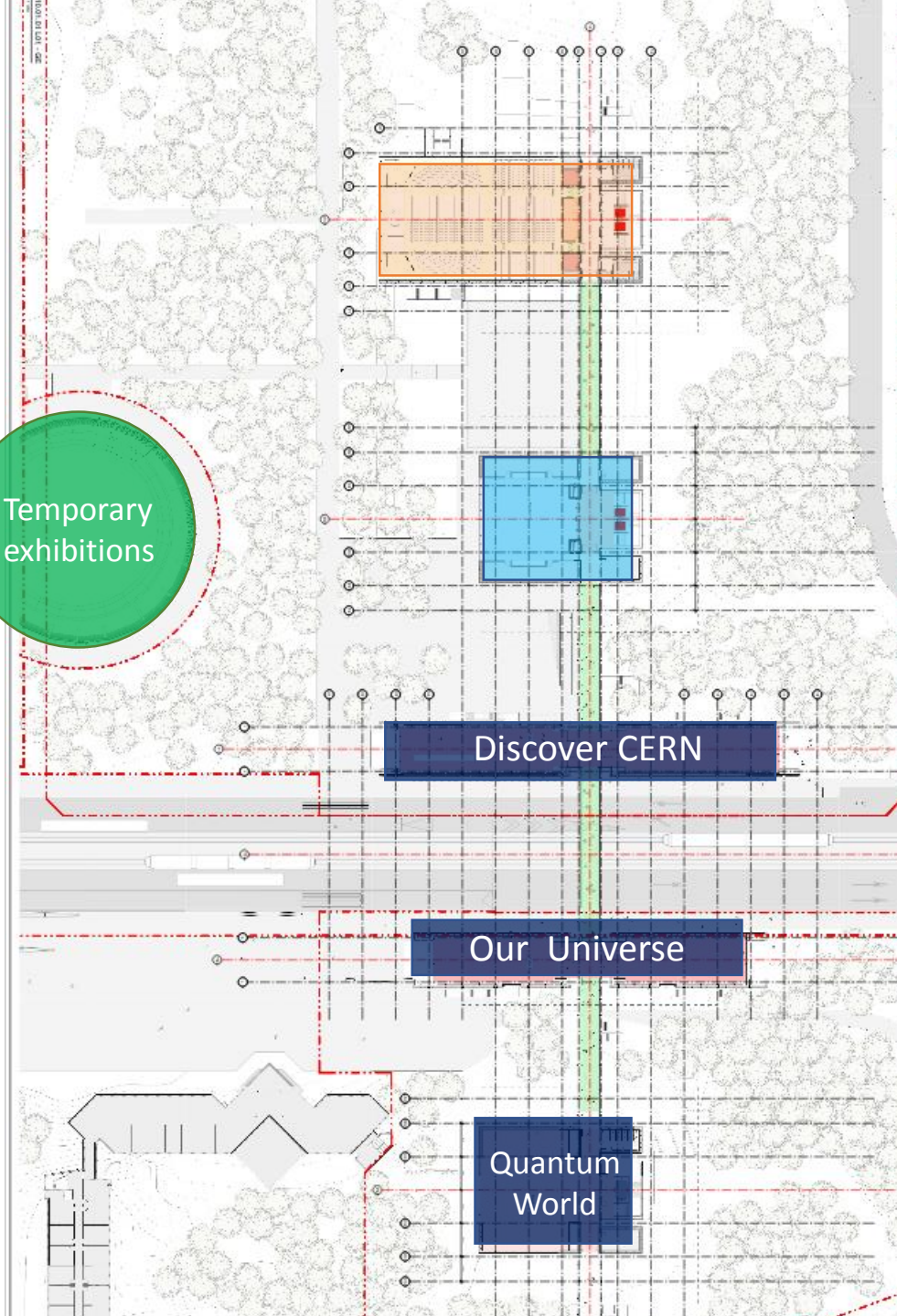
Discover CERN

Our Universe

Quantum
World

Permanent Exhibitions

Discover CERN
Our Universe
Quantum world



Science Gateway's mission

Inspire

Inspire more young students to **pursue a career in science**. Empower the next generation of adults to **make sense of the science that shapes their lives**.

Educate

Enable a diverse audience across all sectors of the public to **engage with the science, the discoveries and the technologies at CERN**.

Engage

Convey the importance and relevance of fundamental science in bringing nations together through **peaceful collaboration and driving innovation**.

Enable **interaction with the people working at CERN, the science and the discoveries**, in keeping with the spirit of openness that pervades this publicly funded laboratory

Treasure

Conserve and display the heritage of big science, the objects and stories that transmit the tremendous human endeavour in a tangible way.

Collaborate

Build ties across Member States and beyond, sharing content and encouraging co-creation with other museums, science centres and education networks.

The building

The Globe

Start of guided tours
Temporary exhibitions

Temporary
exhibitions

Auditorium

Science shows
Conferences
Debates
Lecture-demonstrations

Labs

Enquiry based learning
Hands-on experimentation

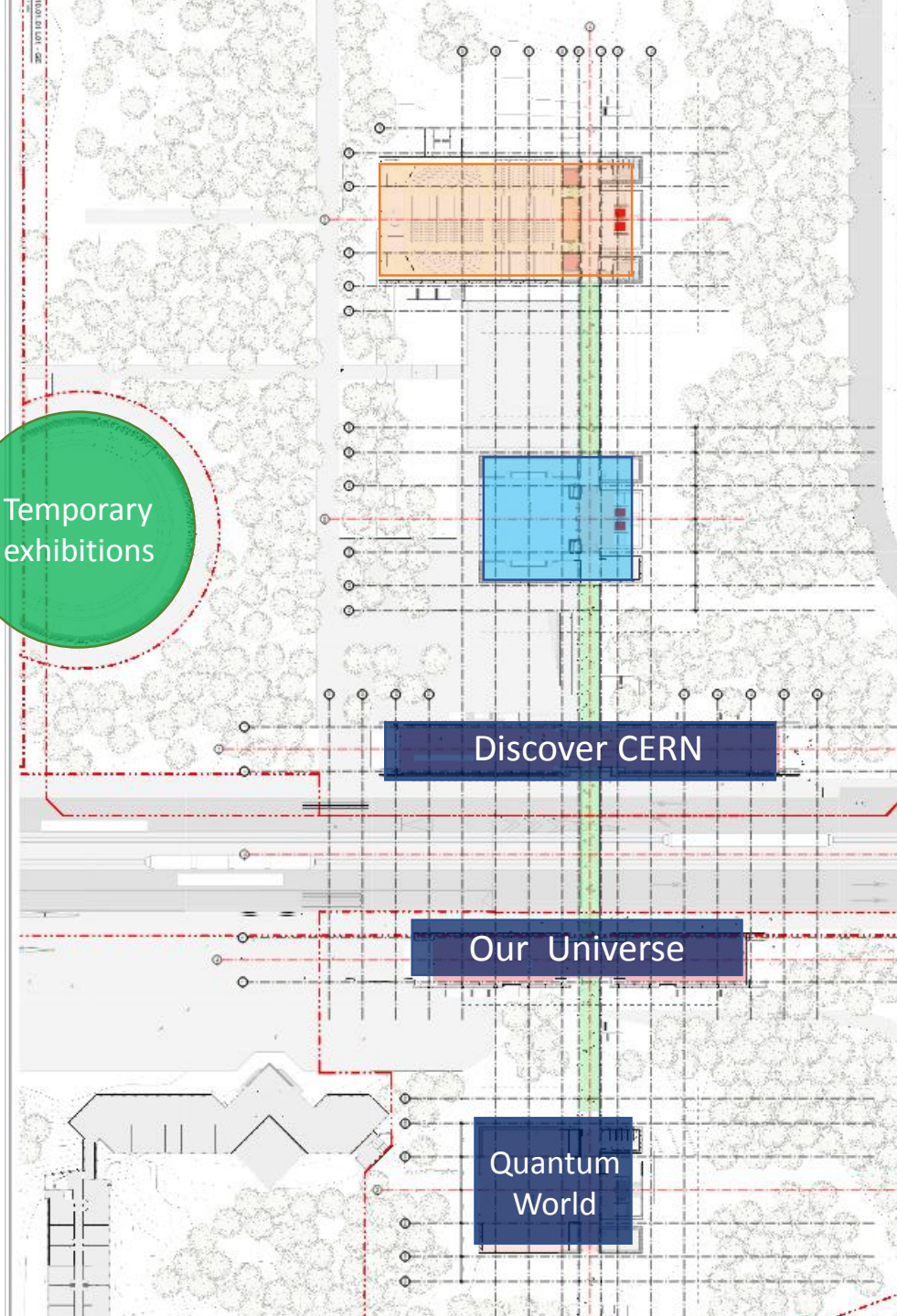
Discover CERN

Our Universe

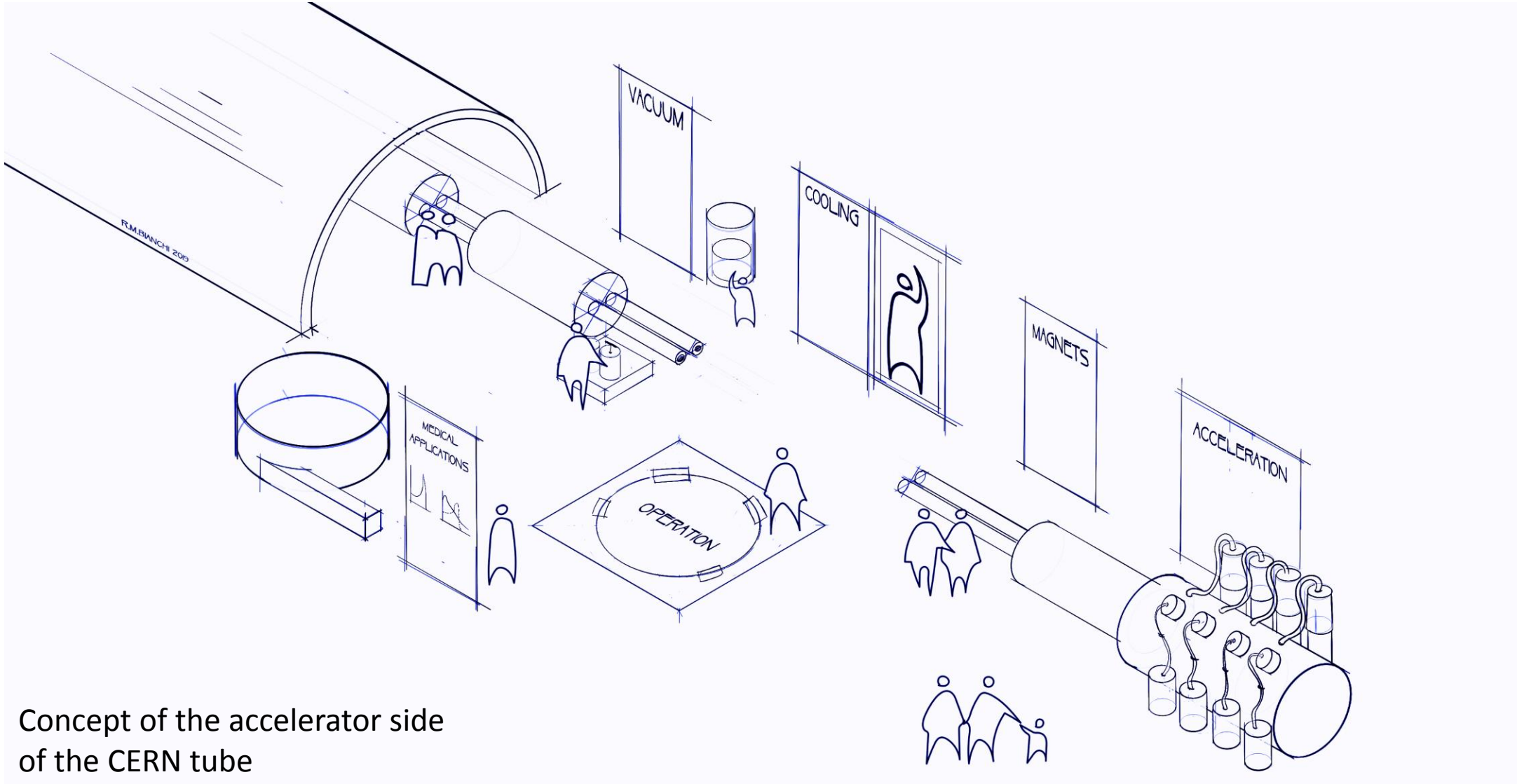
Quantum
World

Permanent Exhibitions

Discover CERN
Our Universe
Quantum world



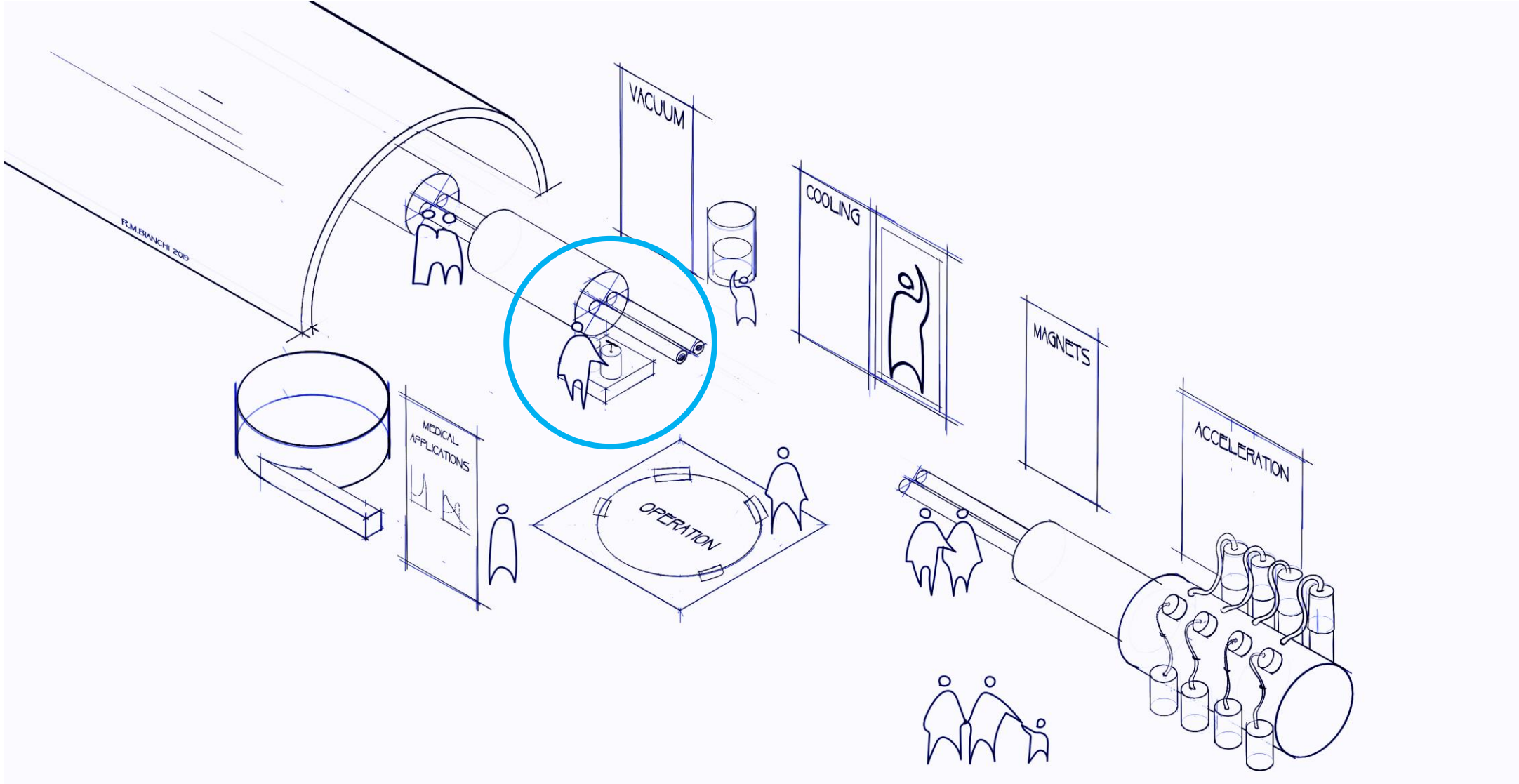
The exhibitions: overall approach



Concept of the accelerator side
of the CERN tube

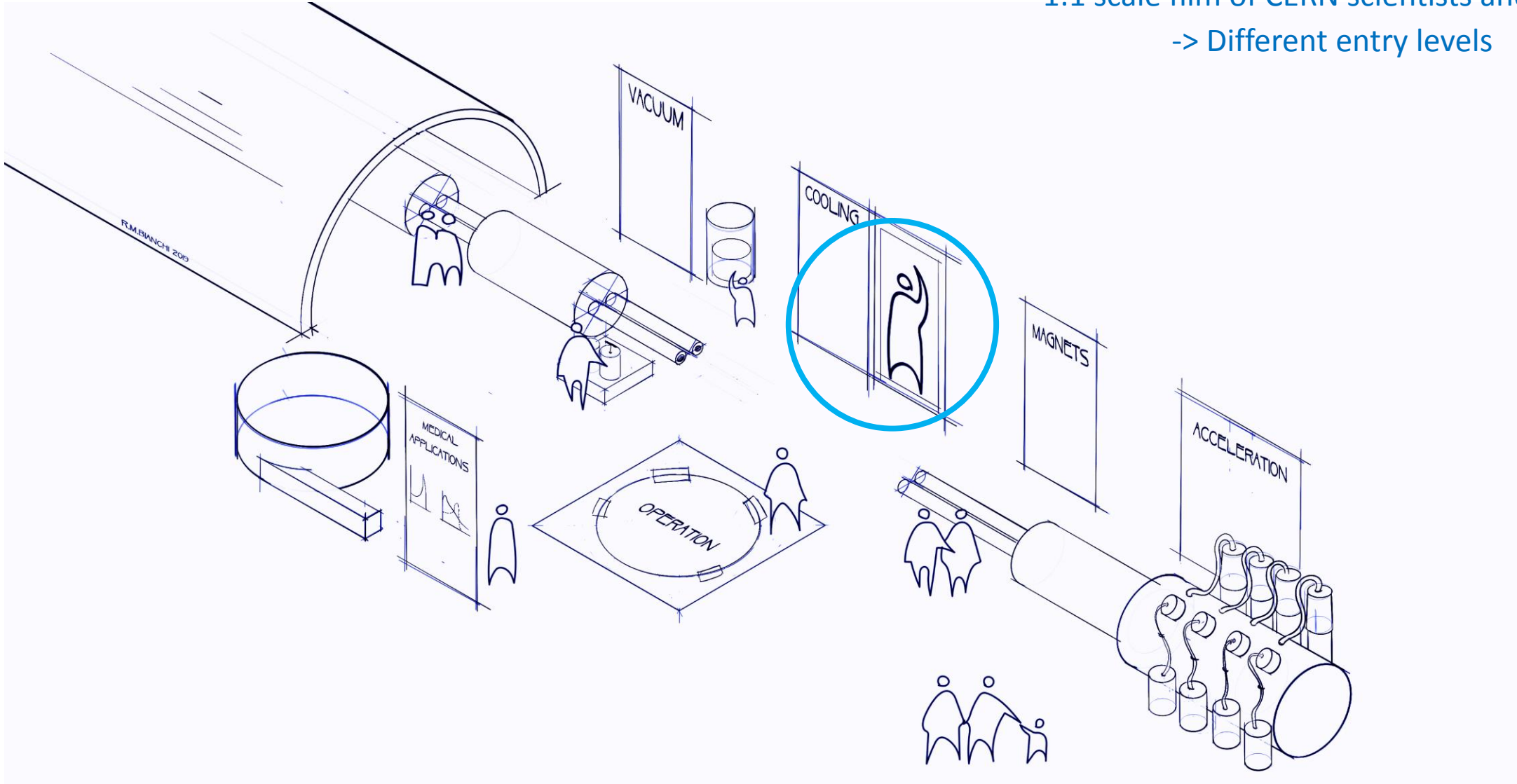
Overall approach

Hands-on experimentation embedded in authentic immersive environments



Overall approach

Hands-on experimentation embedded in
authentic environments
1:1 scale film of CERN scientists and engineers
-> Different entry levels

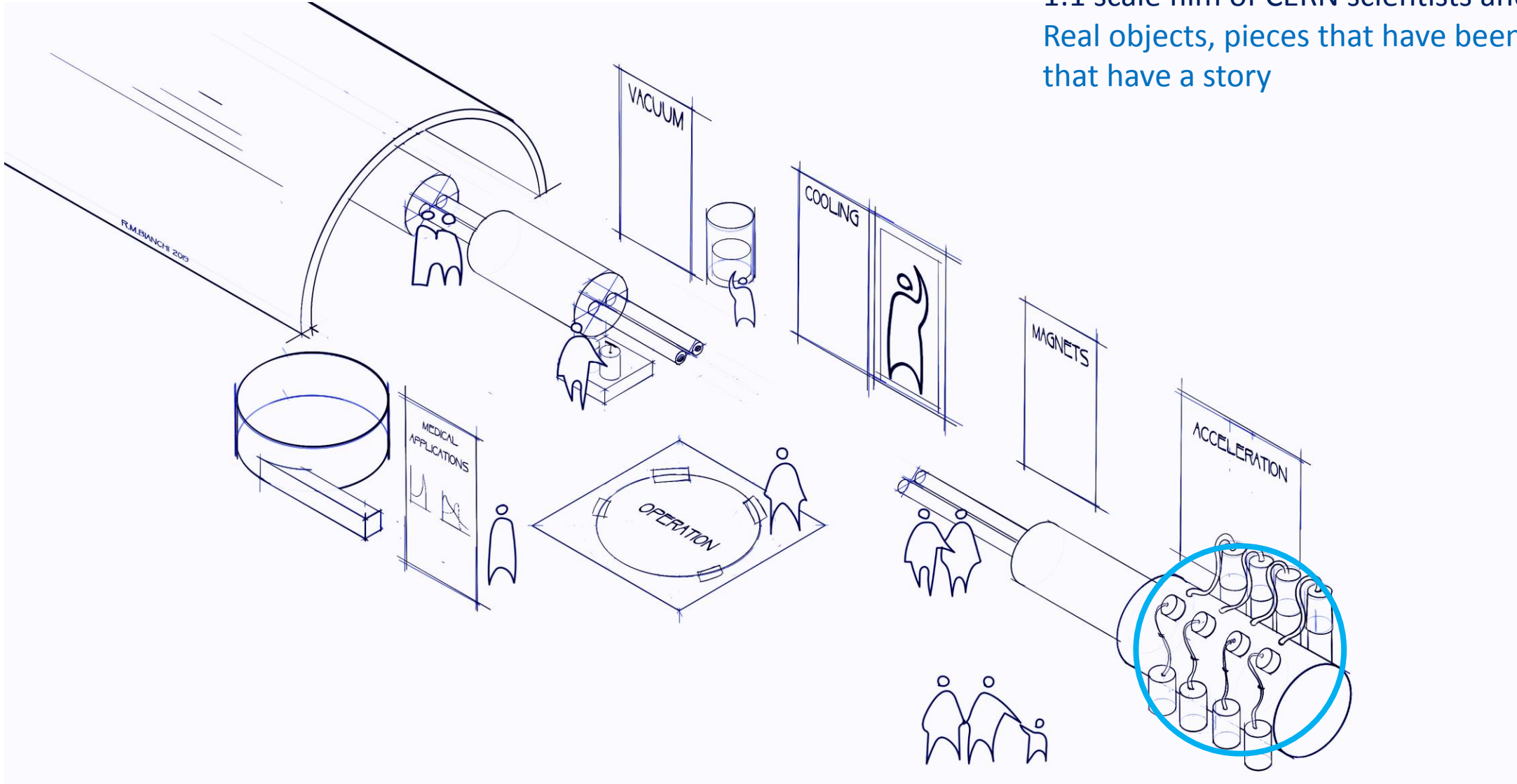


Overall approach

Hands-on experimentation embedded in authentic environments

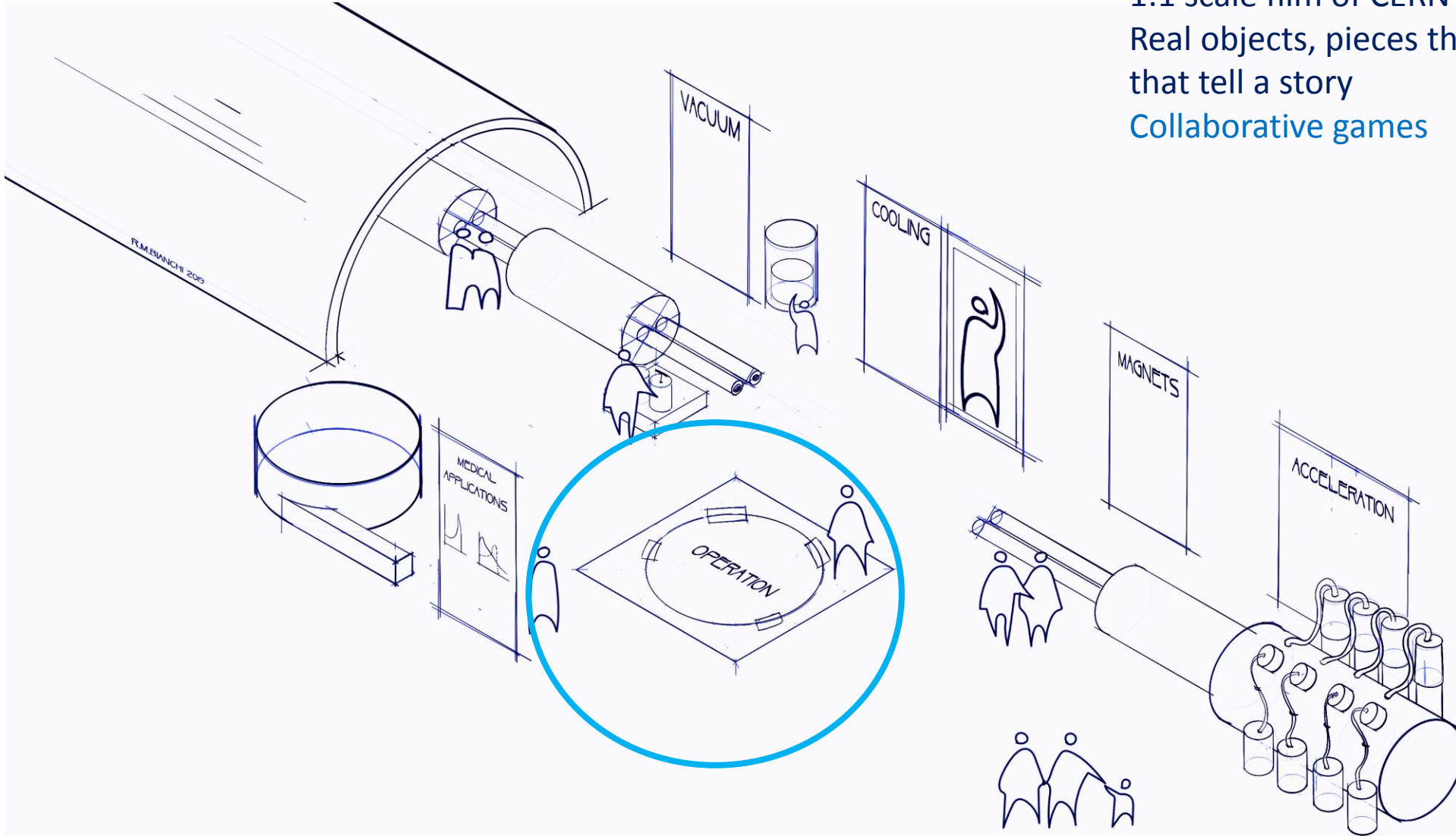
1:1 scale film of CERN scientists and engineers

Real objects, pieces that have been used at CERN, that have a story



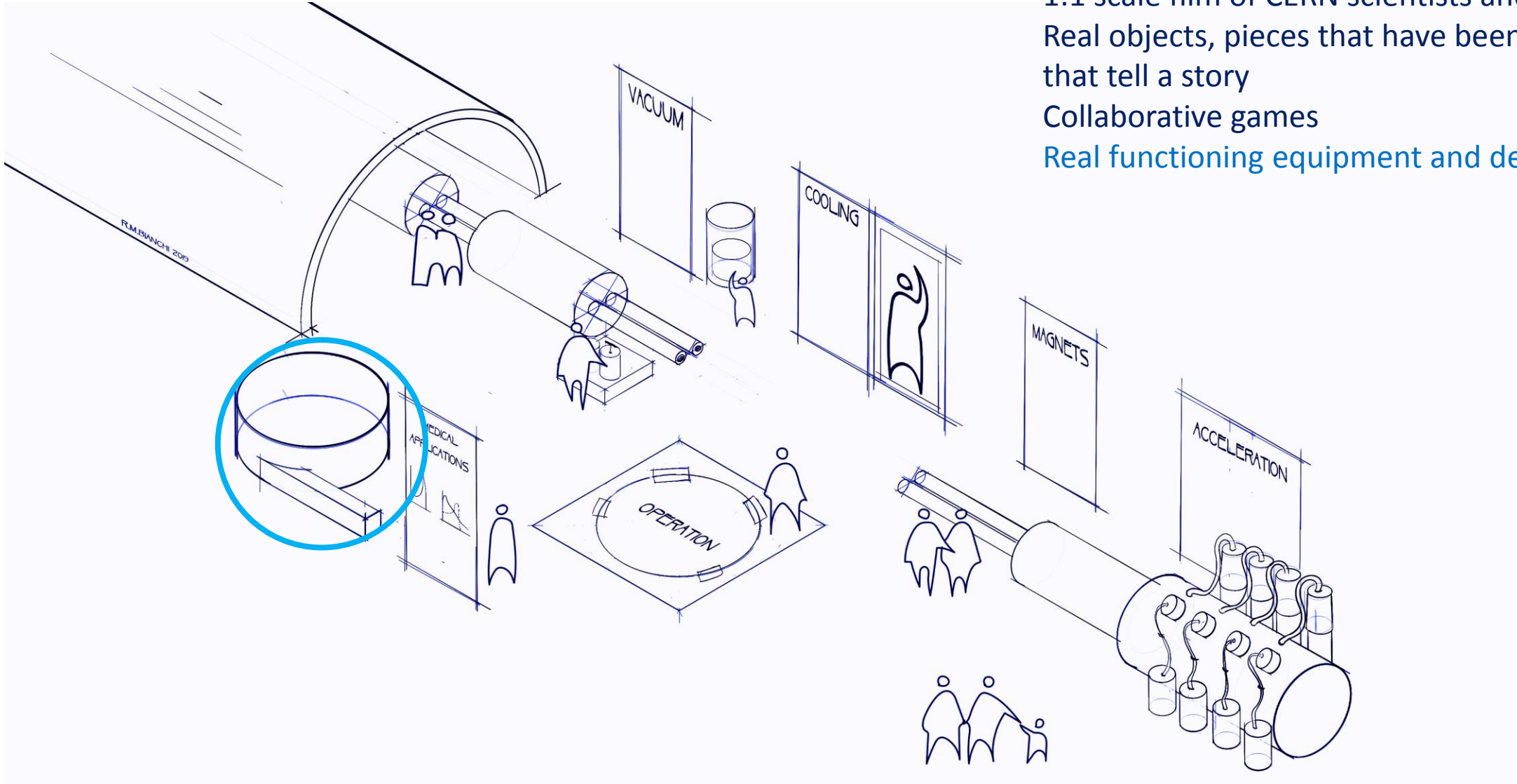
Overall approach

Hands-on experimentation embedded in
authentic environments
1:1 scale film of CERN scientists and engineers
Real objects, pieces that have been used at CERN,
that tell a story
Collaborative games

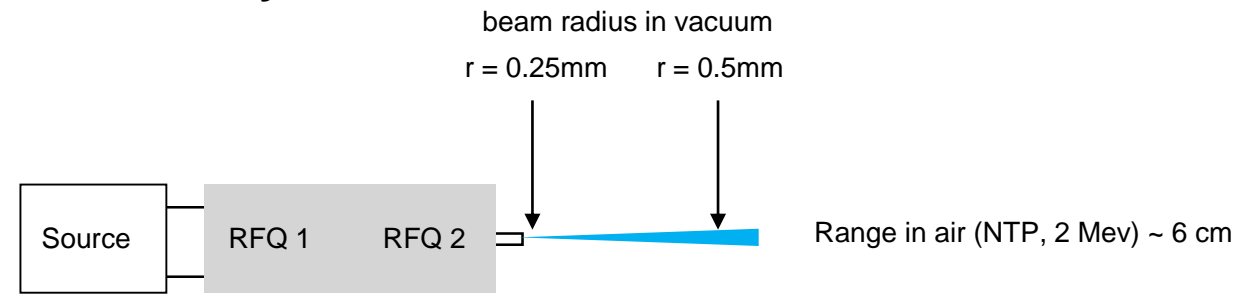


Overall approach


Hands-on experimentation embedded in authentic environments
1:1 scale film of CERN scientists and engineers
Real objects, pieces that have been used at CERN, that tell a story
Collaborative games
Real functioning equipment and demos

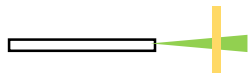



MACHINA for Science Gateway

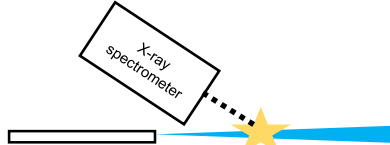


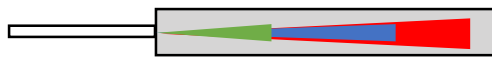
$E = 2 \text{ MeV}$; $\langle I \rangle = 5 \text{ nA}$; peak = 200 nA (during bunch)
 200 bunches/s, 0.125 ms length, $1.5 \cdot 10^8$ protons/bunch
 To clarify: expected light intensity in visible range?

- 1) Inject different gases (He, Ne, Ar)
 

observe different colours (visual)
 using spectrometre: see spectral lines
- 2) Range variation by moderators
 

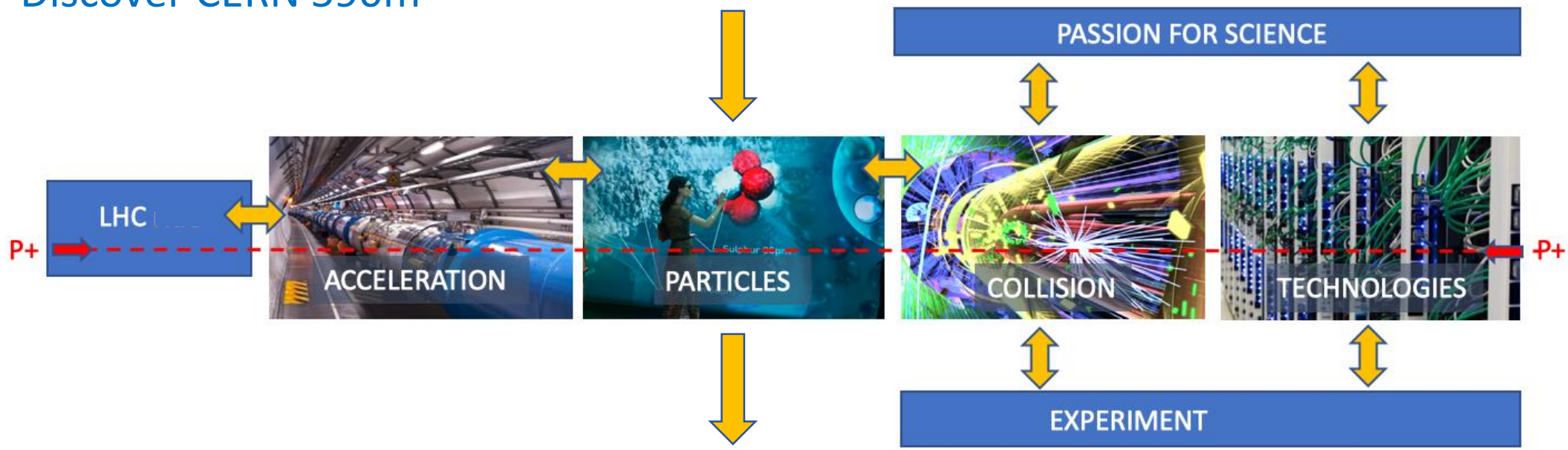
different materials (thickness, density, composition)
- 3) Deviation in magnetic field
 

deviate beam with magnets (few hundred Gauss)
- 4) PIXE (proton-induced X-ray emission)
 

artefacts (Au, Ag), pigments (paintings)
- 5) Pressure variations
 

Bragg peak shift by lower/higher pressure

Discover CERN 590m²



accelerating <

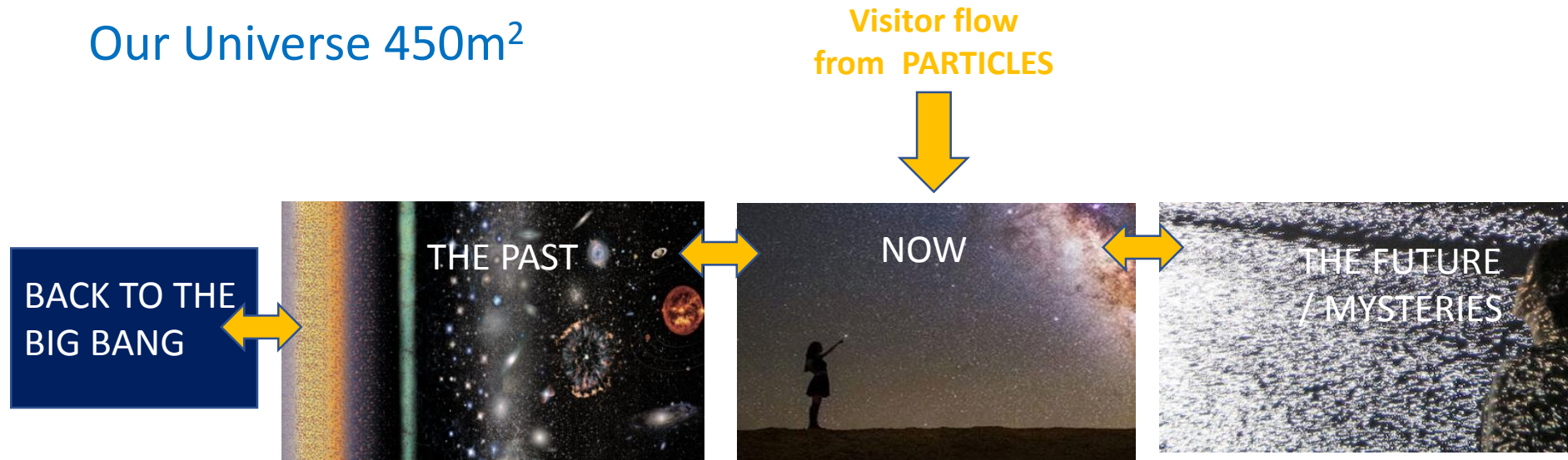
> exploring

Hands-on experimentation
Authentic environments with real objects

Contemplative
Immersive AV

Real objects
Human stories
Experimentation

Our Universe 450m²



Past <

225m²

How did the universe evolve to become what we see today?
A journey back in time to the Big Bang, passing through the different epochs with a particular focus on CERN stories.

Hands-on experimentation in immersive scenography

> future

225m²

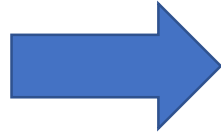
Discover the big mysteries that govern the future of our universe and how we explore them at CERN.
An art-led exhibition space, accompanied by the story of the dialogue between the artists and the scientists at the forefront of exploration at CERN.

Art-led space

Visitor flow
towards
Quantum World

Quantum World 450m²

A playful immersive experience that allows visitors to directly experience the wonder and strangeness of quantum effects, scaled up to our macro world.



Accompanied by :

- Explanations and illustrations (with hands-on experimentation & inquiry based learning)
- The context at CERN and also elsewhere (biology, computing)
- Real set-ups