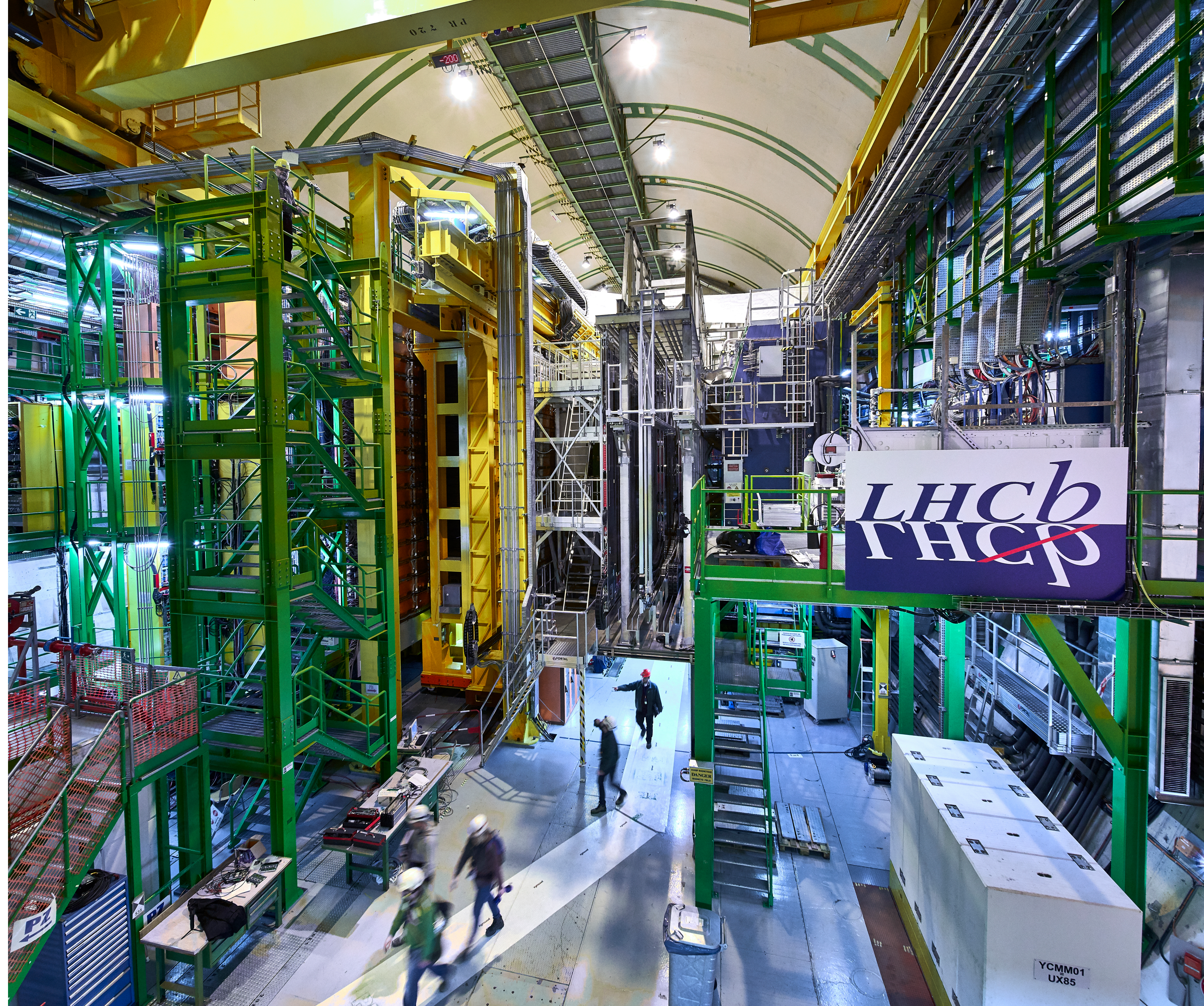
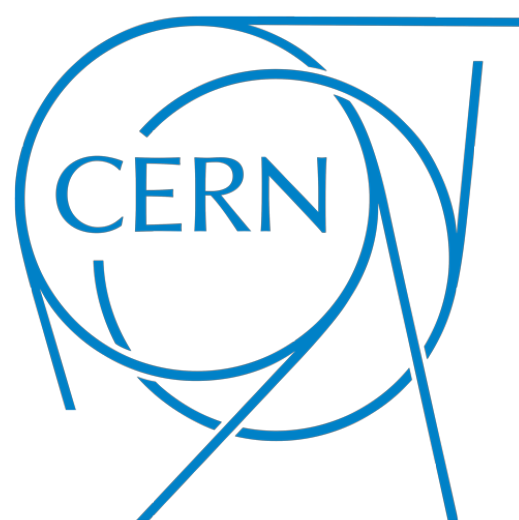


LHCb overview of outreach activities

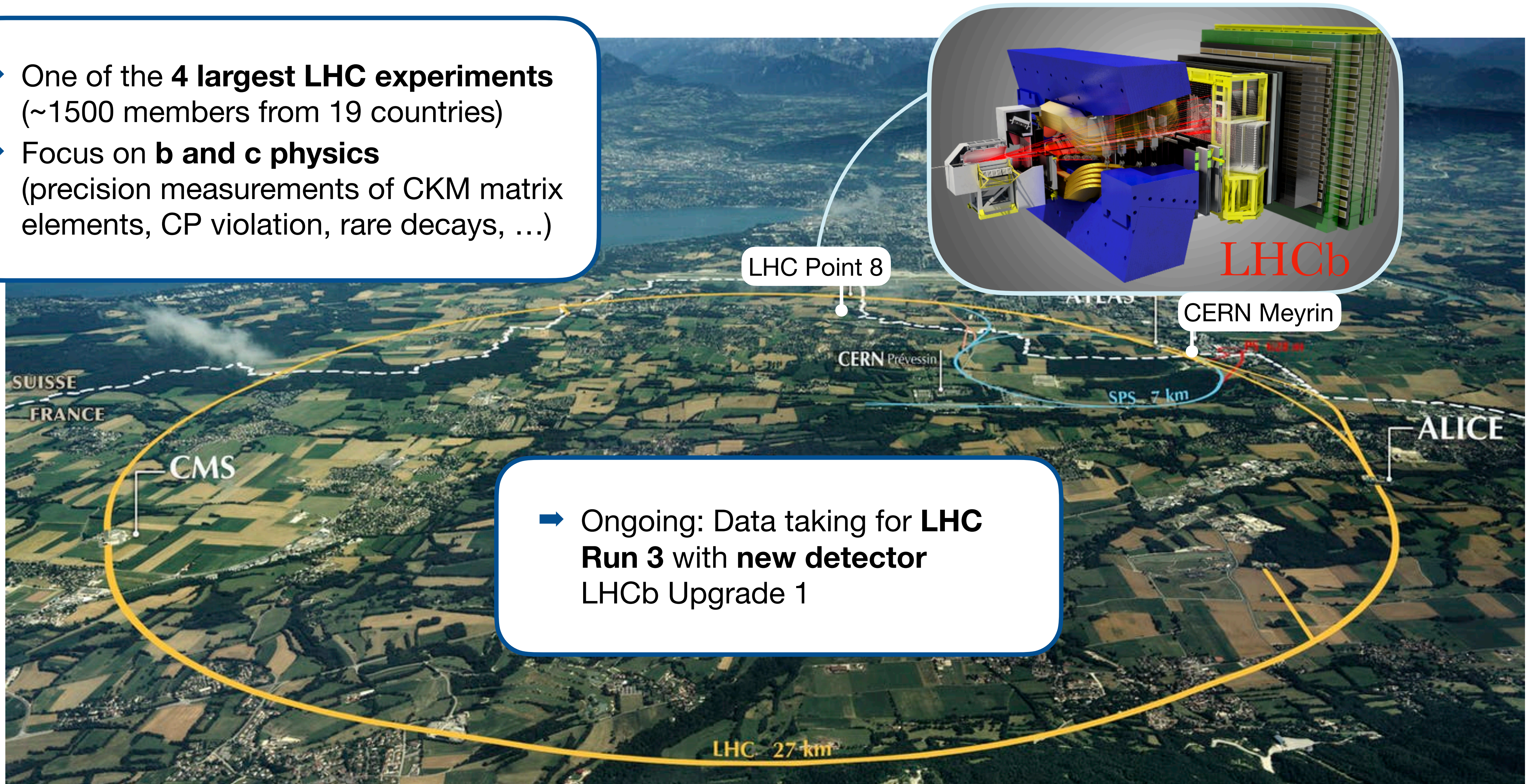
J. Nicolini on behalf of the
LHCb collaboration

EPS HEP 2025 Marseille
10th of July 2025

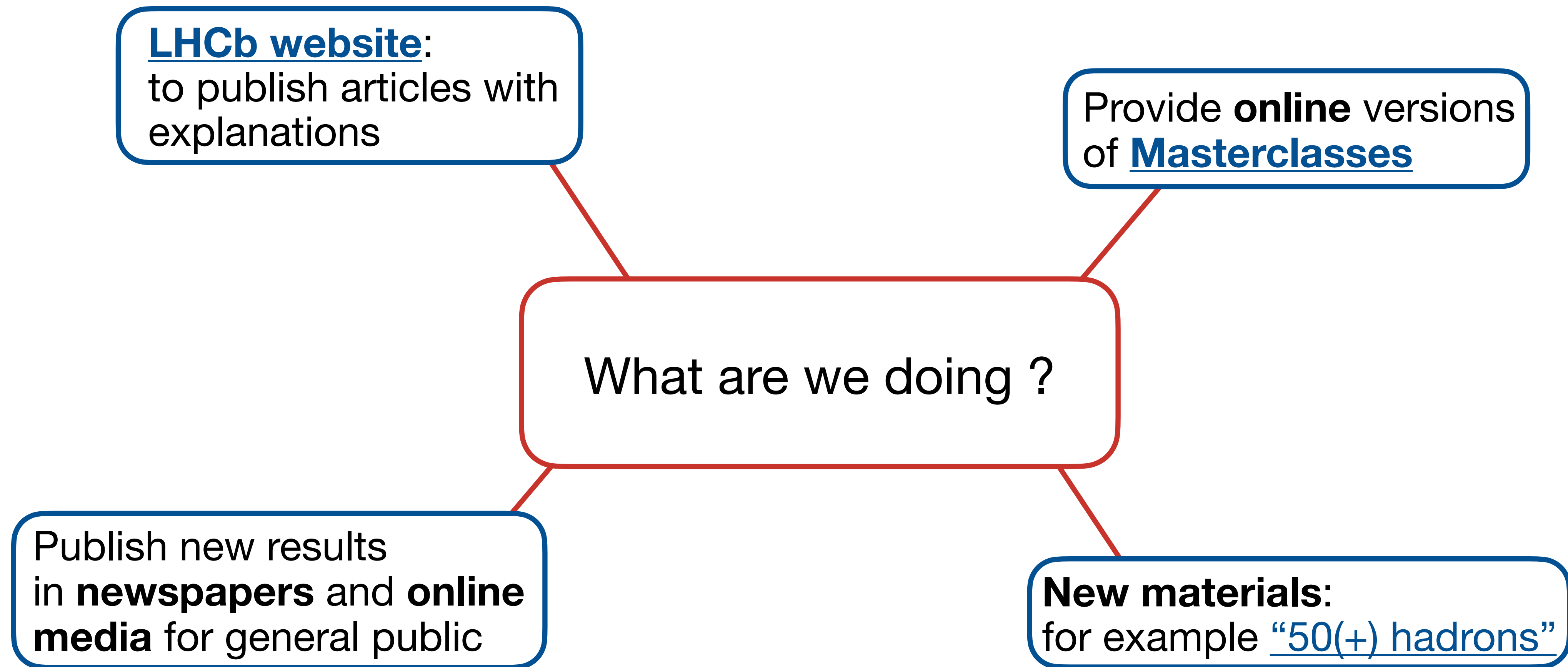


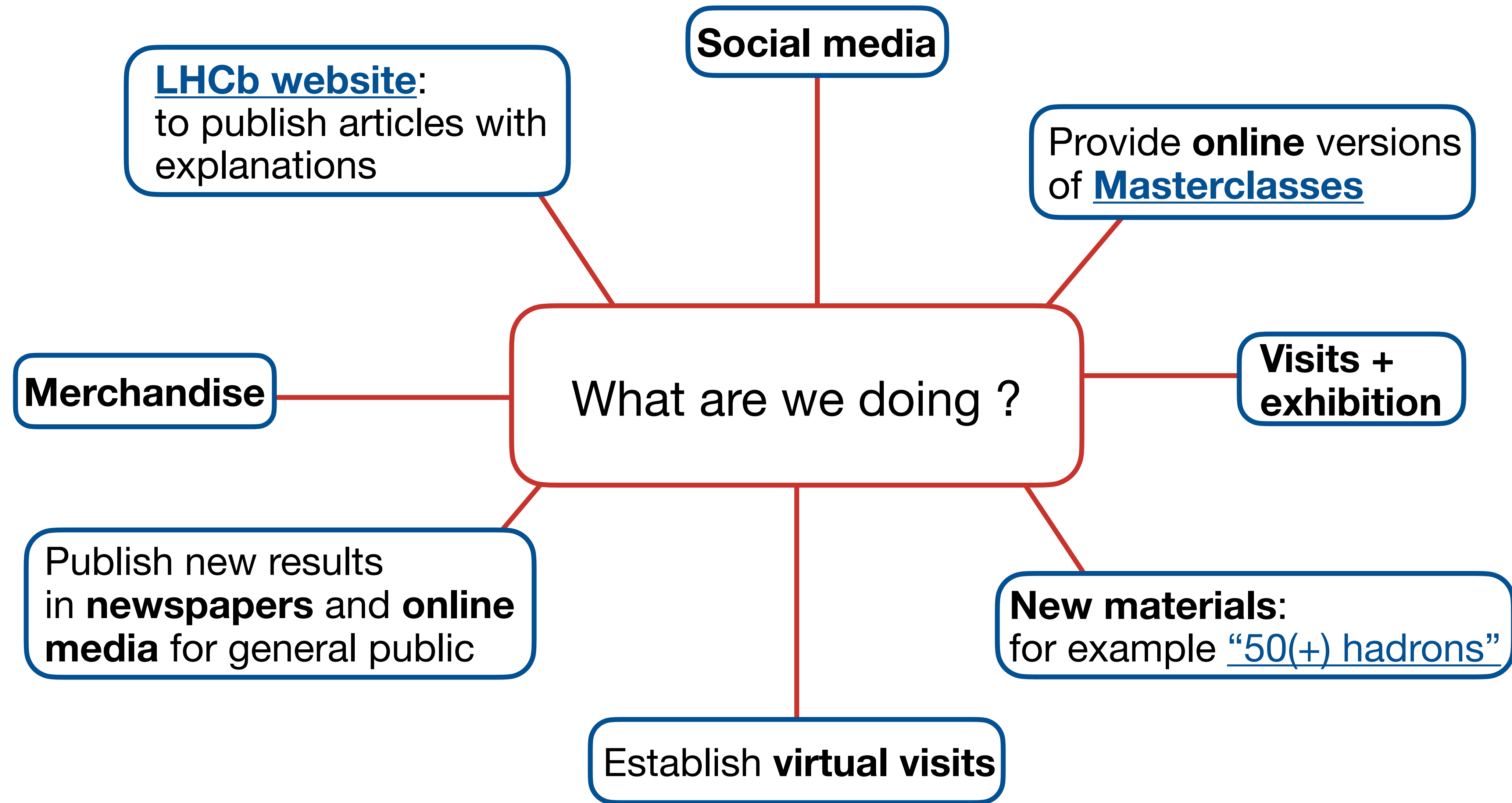
THE LHCb EXPERIMENT @ CERN

- ➔ One of the **4 largest LHC experiments** (~1500 members from 19 countries)
- ➔ Focus on **b and c physics** (precision measurements of CKM matrix elements, CP violation, rare decays, ...)



- ➔ Ongoing: Data taking for **LHC Run 3** with **new detector** LHCb Upgrade 1





Social media

LHCb website:

- ➔ **Outreach team** (Sara Celani, Nuria Valls Canudas, Carina Tripple coordinators), Bolek Pietrzyk managing public news / editorial + LHCb secretariat
- ➔ Dedicated social media team
- ➔ but **A LOT of inputs/helps** from the collaboration!!!
 - ➔ Yasmine Amhis children's colouring book
 - ➔ Gloria Corti organisation of visas, ...

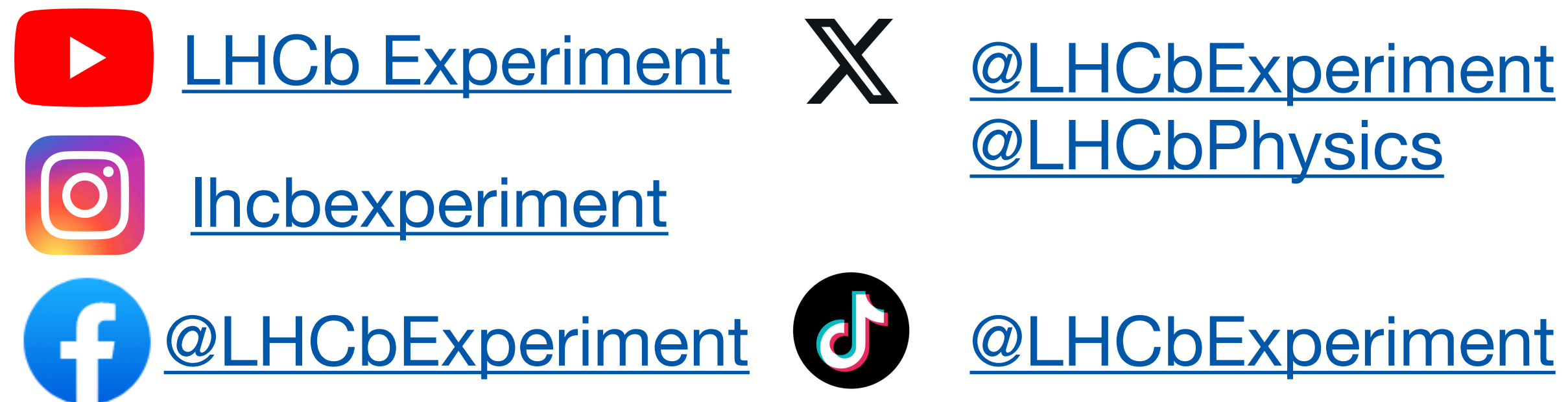
Publish new results
in **newspapers** and **online
media** for general public

New materials:
for example "50(+) hadrons"

Establish **virtual visits**

SOCIAL MEDIA

➔ LHCb uses social networks to publish news, performed upgrades and physics results



- X Experiment (29.6k followers)
- Instagram (18.6k followers)
- Facebook (20k followers)
- Youtube (495 followers)
- Tiktok (64 followers)

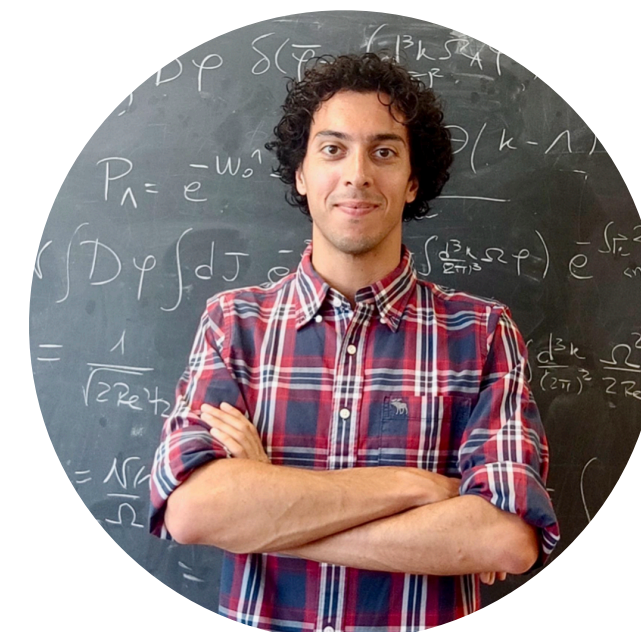
Non-expert team



Guilia Frau



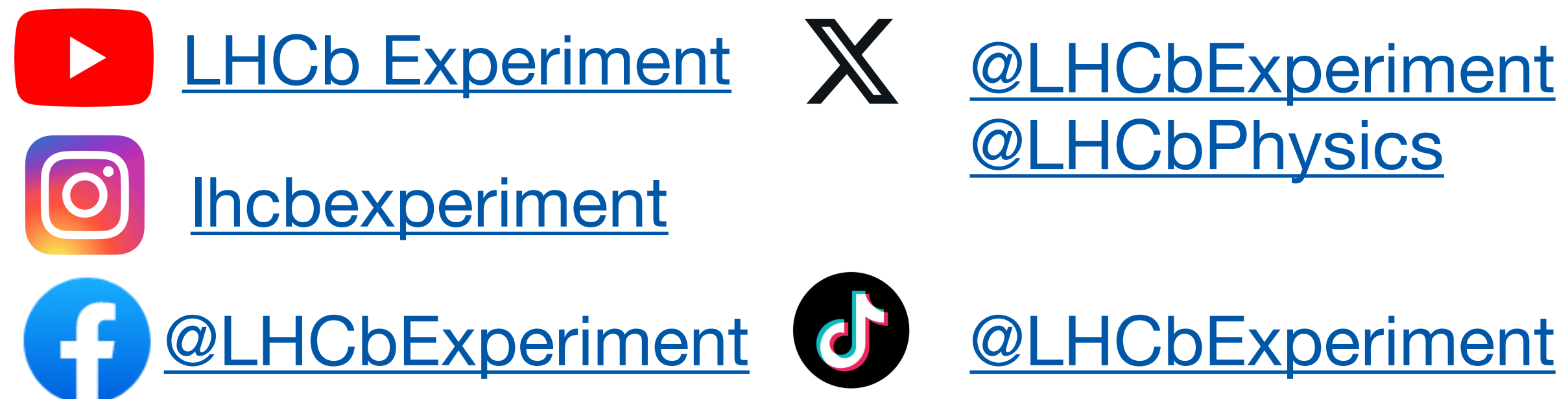
Lukas Calefice



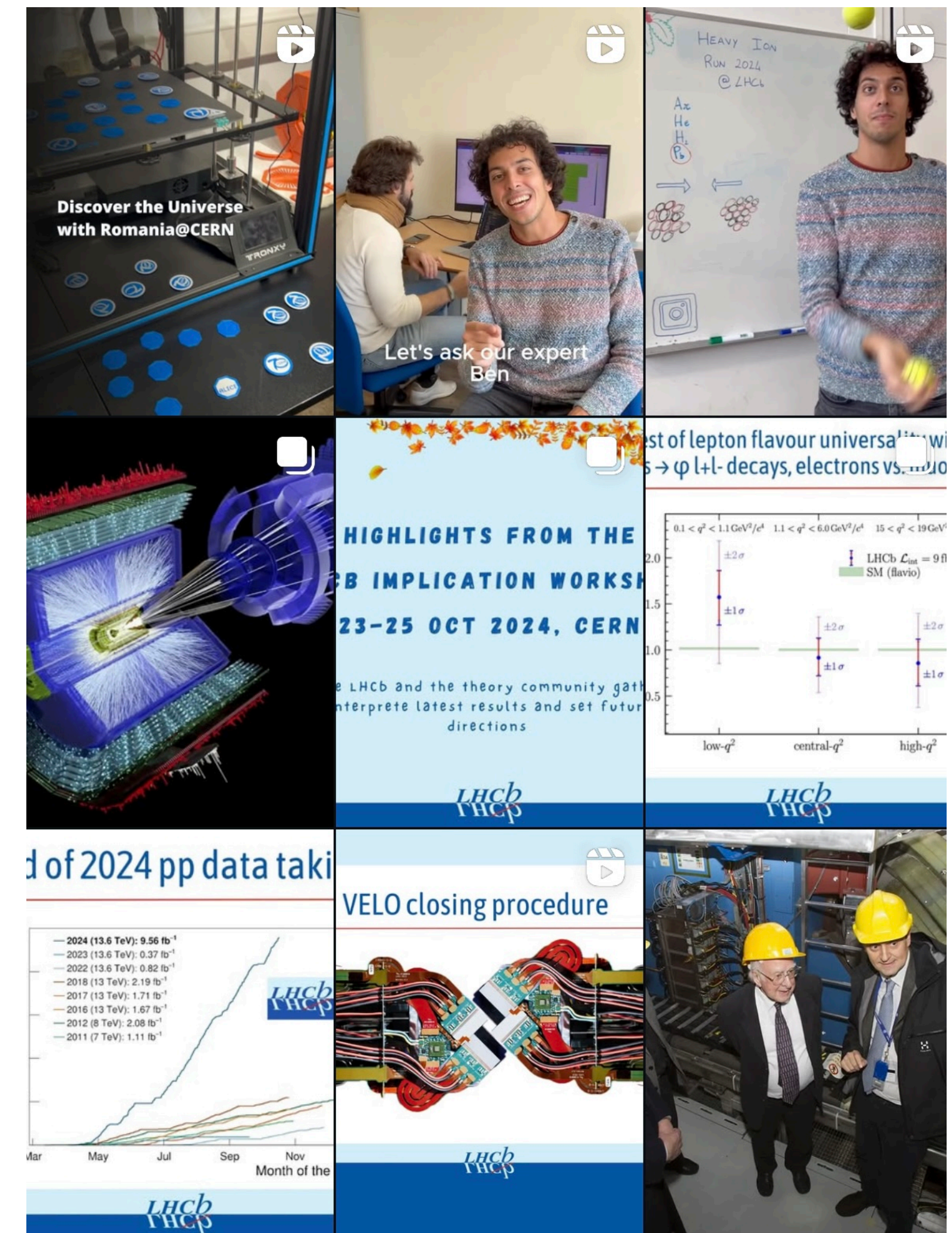
Andrea Mauri

SOCIAL MEDIA

- LHCb uses social networks to publish news, performed upgrades and physics results
- Most successful posts are about **physics results**
- **Pictures/plots** attract attention
- cross-post between all of them



- X Experiment (29.6k followers)
- Instagram (18.6k followers)
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SOCIAL MEDIA

- LHCb uses social networks to publish news, performed upgrades and physics results
- Most successful posts are about **physics results**
- **Pictures/plots** attract attention

- Explaining LHCb procedures
- Experts explaining physics
- New physics results
- Conference summaries
- Collaborative posts with CERN

- Instagram (18.6k followers)
- Facebook (20k followers)
- Youtube (495 followers)
- Tiktok (64 followers)

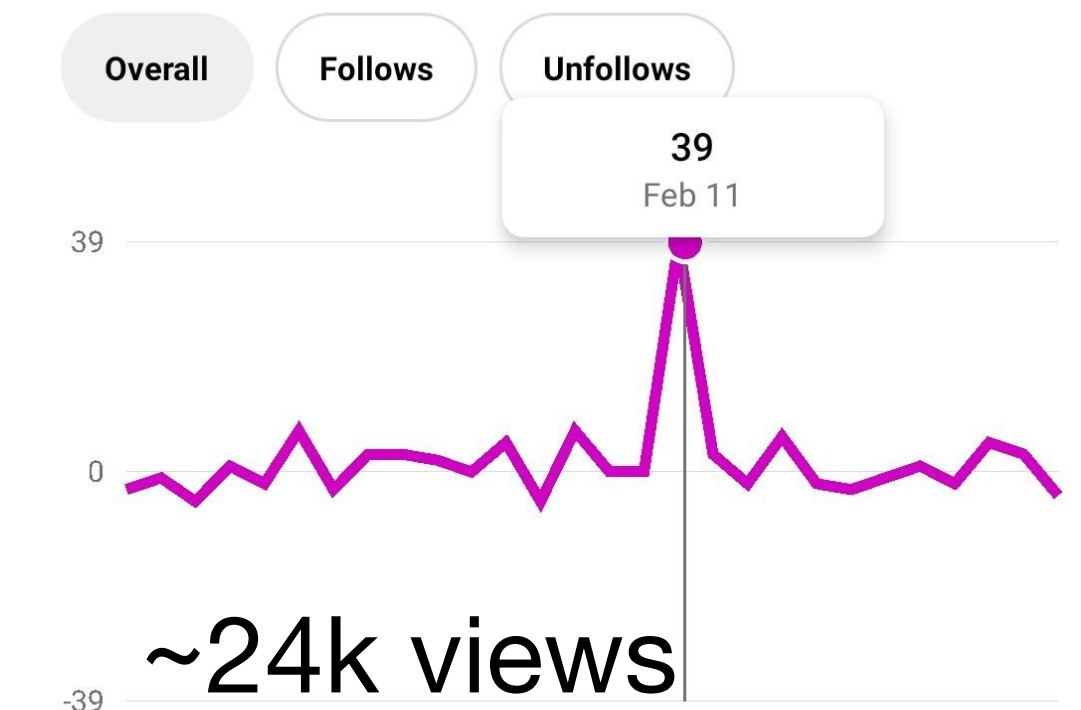


Past projects:

- International day of Women and Girls in Science
 - Celebrated on the 11th of February (established in 2015)
 - Our initiative
 - Video with short interviews
 - Shorter version for our Instagram channel [here](#)
 - Full version posted on YouTube [here](#)
 - Collage with photos of women in LHCb
 - Digital version available at this [link](#)



Follower details



Past projects:

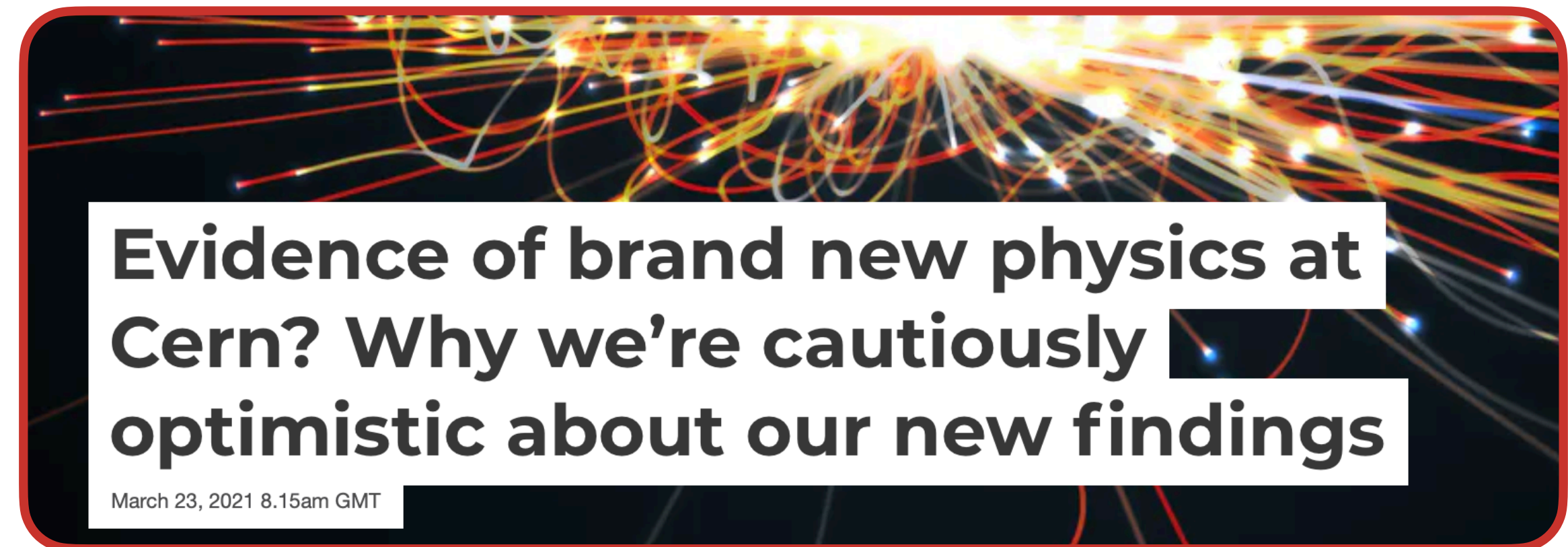
Ongoing projects:

- LHCb around the **world**
 - WHAT? A short video series showcasing universities and research institutes collaborating on LHCb
 - WHY? To highlight that LHCb is more than just CERN
 - it relies on a global network of researchers working on detector R&D and data analyses.
 - HOW? One or more volunteers from each participating institute will create videos, photos and short interviews following our guidelines.
- Video with CERN summer students

- ➔ LHCb used **traditional newspapers** and **new online media** to reach general public
- ➔ Coordination of important results allowed to **prepare articles in time** for publication



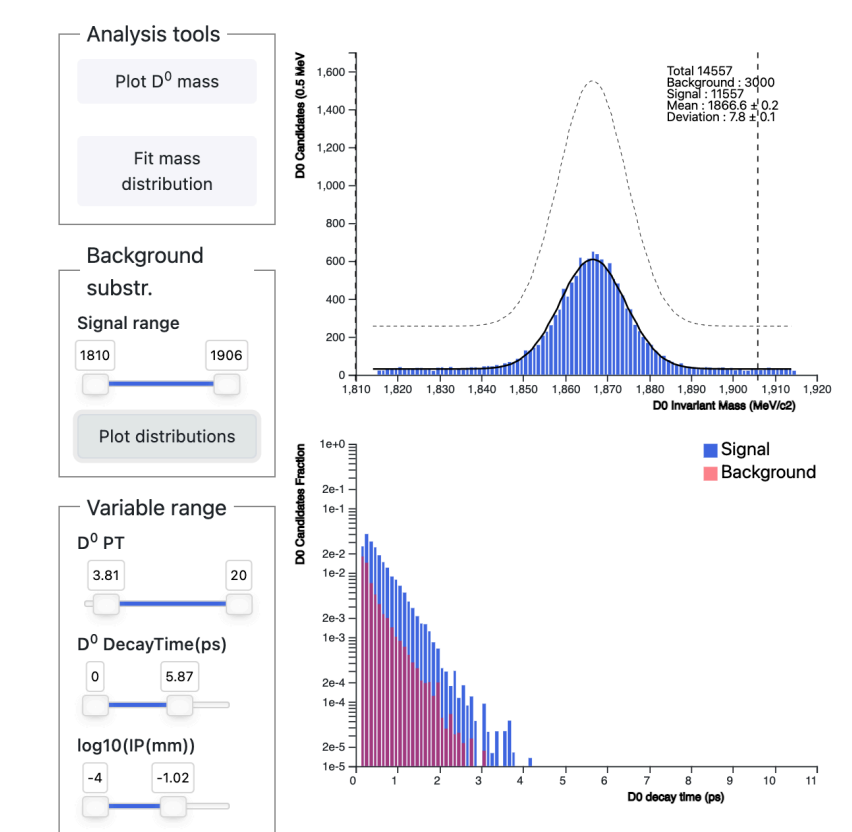
- ➔ LHCb used **traditional newspapers** and **new online media** to reach general public
- ➔ Coordination of important results allowed to **prepare articles in time** for publication
- ➔ New online media: stories written by **academics and researchers**



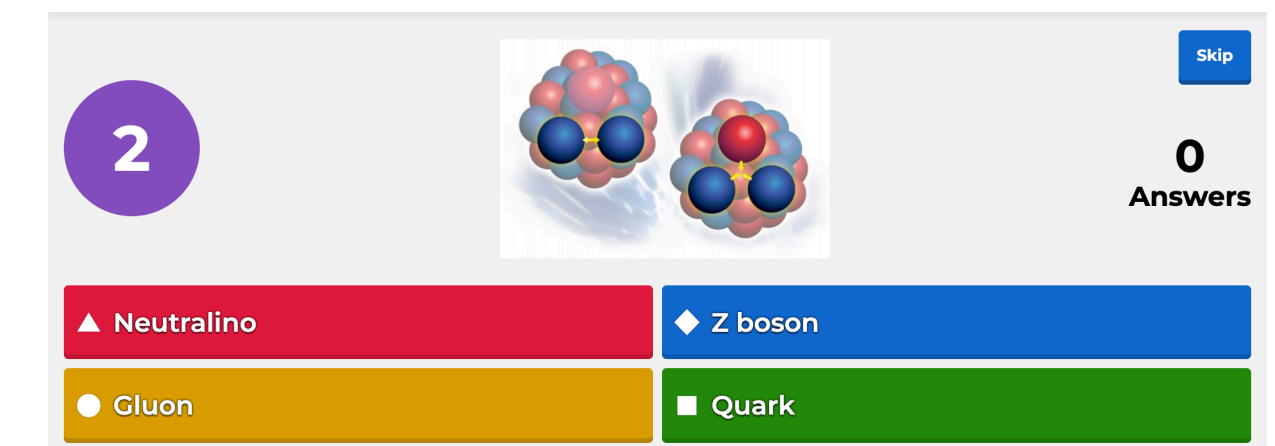
- **several editions** for different regions ([Africa](#), [UK](#)...)
- **~100k reads** per LHCb story
- Cited [English article](#) on front page that day, gathered **~200k reads worldwide**
- [Podcast episode](#) released with **~34k listens**

- ➔ 31 institutes participate at the [LHCb Masterclasses](#) 2025
- ➔ [International](#) and [national](#) (e.g. German) Masterclass programs
 - ➔ Using **Zoom webinars** and [Kahoot](#) for **interactive quizzes** for online options
 - ➔ [Interface](#) : two exercises
 - ➔ Combination of results, discussion and **short virtual visit** of LHCb (international)

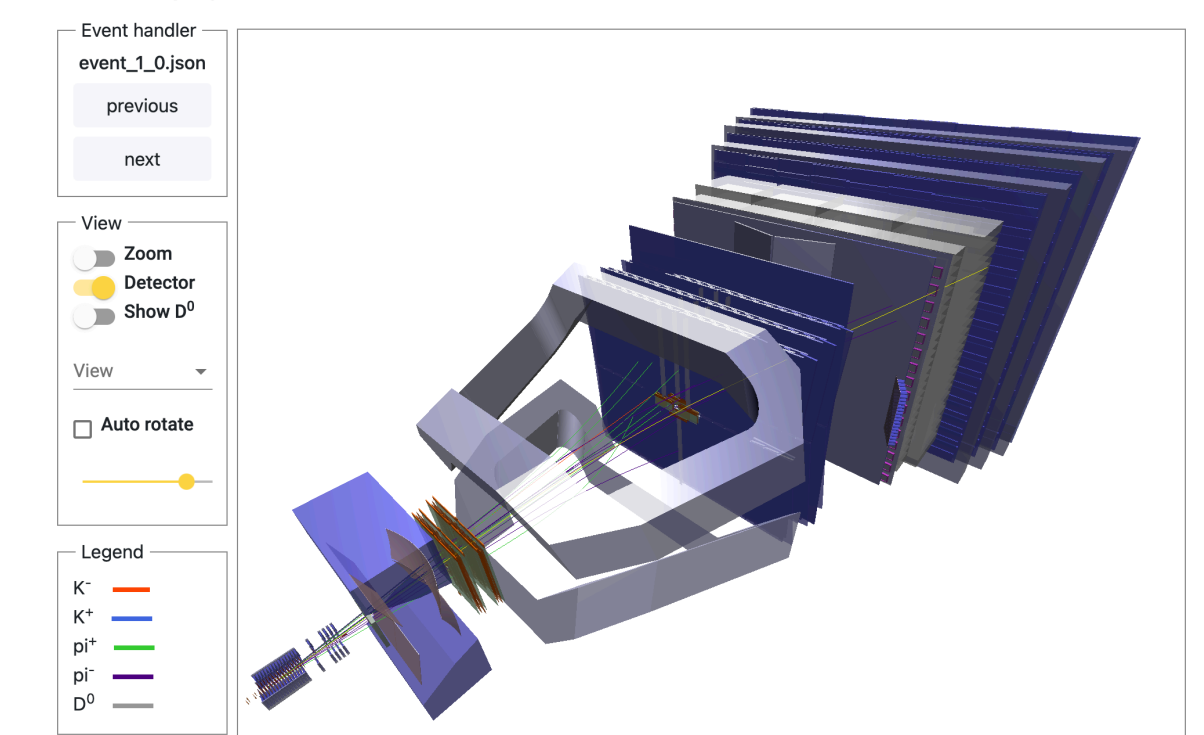
D⁰ lifetime Exercise



Which particle is the mediator of the strong force?

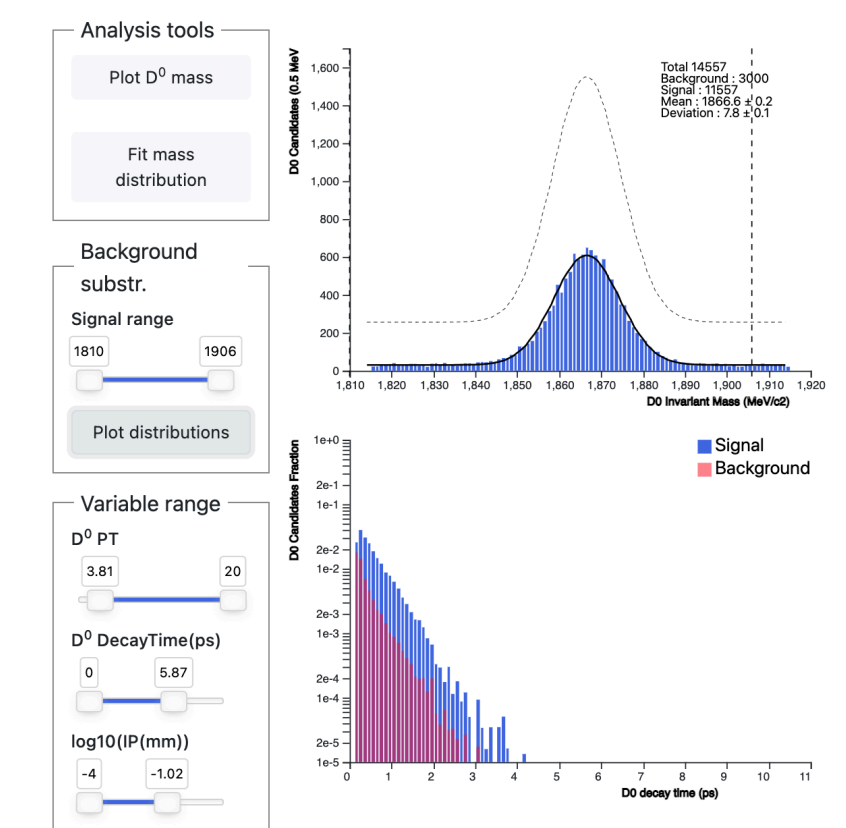


Event Display Exercise

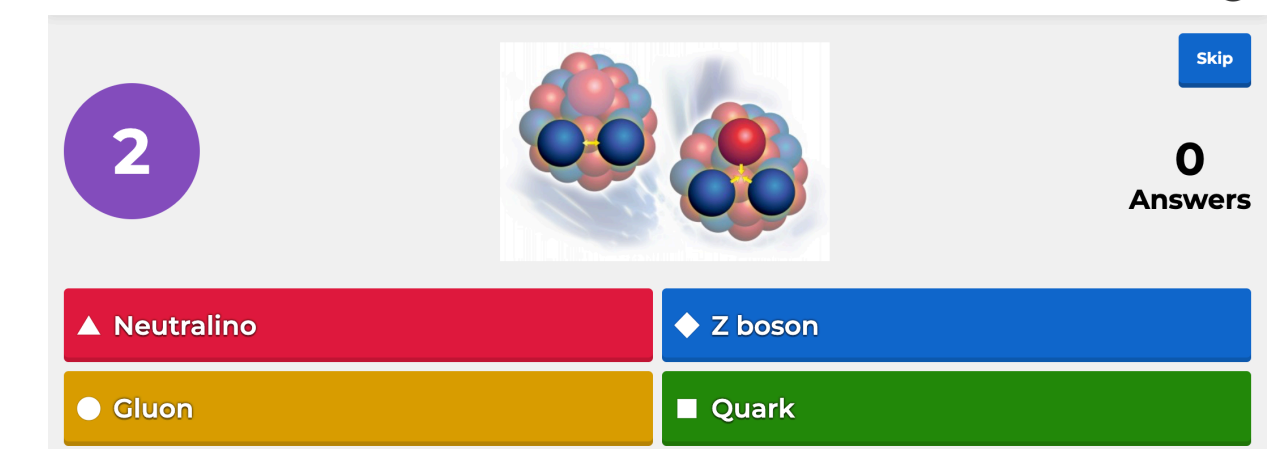


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 - ➔ [Interface](#) : two exercises
 - ➔ Combination of results, discussion and **short virtual visit** of LHCb (international)
- ➔ Challenges:
 - ➔ Online: **Groups** and **individual** students in one session
 - ➔ More coordination for virtual visits, access for them
- ➔ Remained with online options
 - ➔ Students from **more remote locations**
- ➔ Additional class for **Int. Day of Women and Girls in Science**

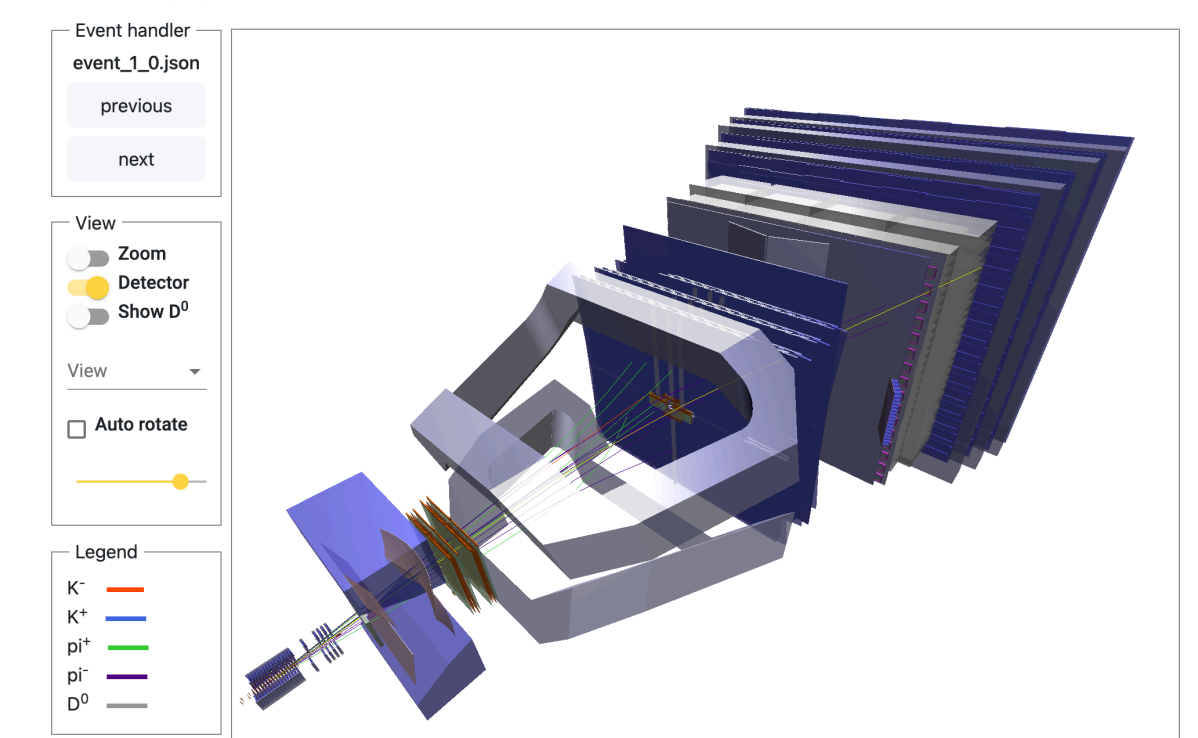
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Which particle is the mediator of the strong force?

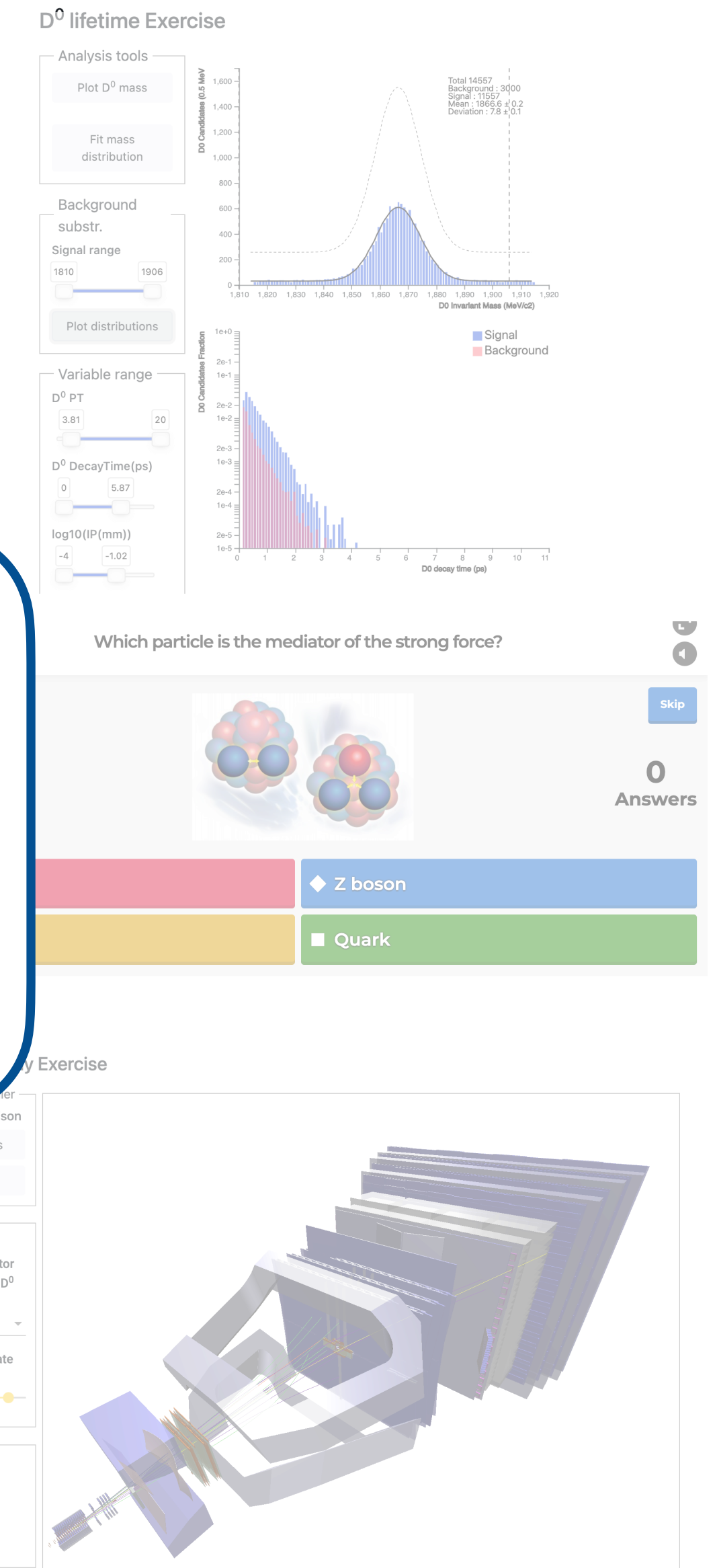


Event Display Exercise



- ➔ 31 institutes participate at the [LHCb Masterclasses](#) 2025
- ➔ [International](#) and [national](#) (e.g. German) Masterclass programs
 - ➔ Using **Zoom webinars** and [Kahoot](#) for **interactive quizzes** for online options
- ➔ [Interface](#) : two exercises
- ➔ Combination of real and virtual visits (international)
- ➔ Challenges:
 - ➔ Online: **Groups** and **workshops**
 - ➔ More coordination for virtual visits, access for them
- ➔ Remained with online options
 - ➔ Students from **more remote locations**
- ➔ Additional class for **Int. Day of Women and Girls in Science**

- ➔ Several institutes are currently **working on new exercises** e.g. for MVAs
 - ➔ First rounds are being performed
- ➔ Goal: for High School **interns** or as part of **university lab work** trainings



➔ Benefits of virtual tours:

- We can show the **full detector in its context**
- Reach larger groups especially **general public**
- Reach people in **remote areas**
- During **long shutdown** access to **details** that are normally inaccessible in person
- Offer VIP tours, provide videos, ...



VIRTUAL TOURS - OVERVIEW

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- During **long shutdown** access to **details** that are normally inaccessible in person
- Offer VIP tours, provide videos, ...

➔ So far **five official tours** (between 250-400 attendees)

➔ VIP tours, CERN alumni events, French video tour, tours of institutes,...

➔ **1h Zoom webinar** with one host, two underground guides (plus technical helpers or surface guides)



VIRTUAL TOURS - OVERVIEW

→ Benefits of virtual tours:

→ Usually six steps:

- Introduction to the visit, guides and Zoom features
- Introduction to physics studied at LHCb and overview over the detector
- Geographical context and LHC Point 8 surface
- Underground visit
- Control room and surface exhibition visit
- Q&A session

ides



VIRTUAL TOURS - OVERVIEW

→ Benefits of virtual tours:

→ Usually six steps:

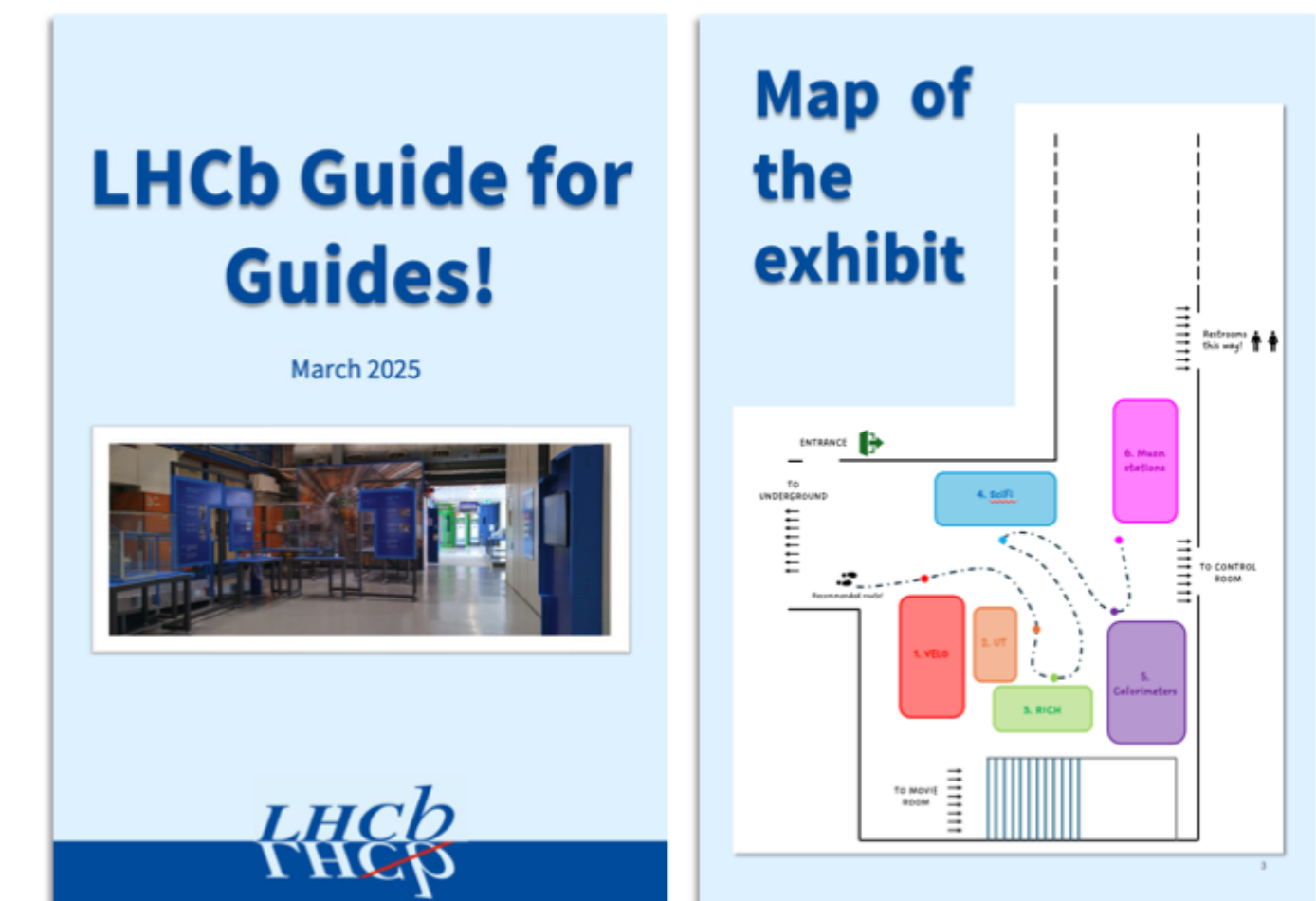
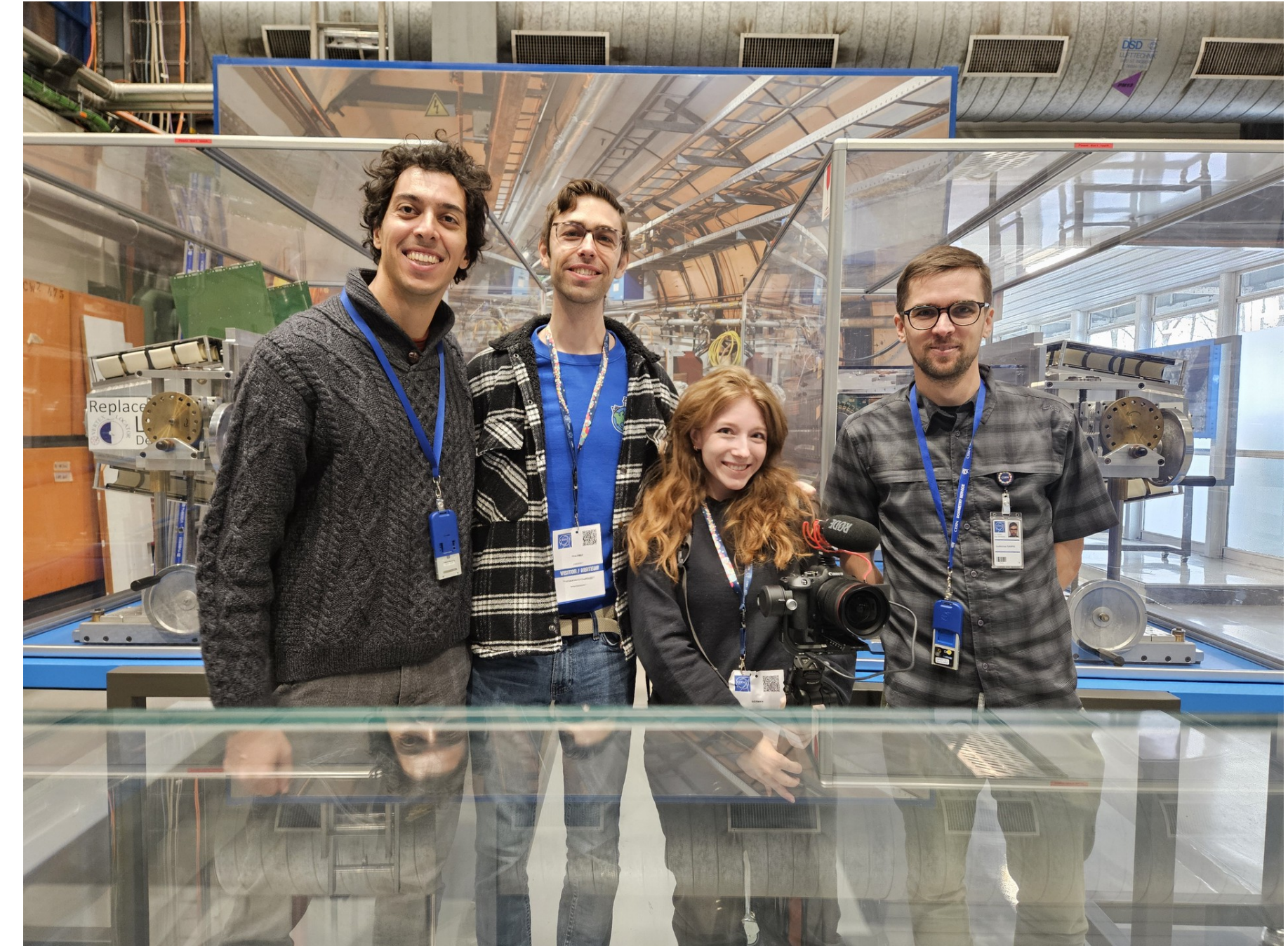
- Introduction to the visit, guides and Zoom features
- Introduction to physics studied at LHCb and overview over the detector
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Masterclasses

ides

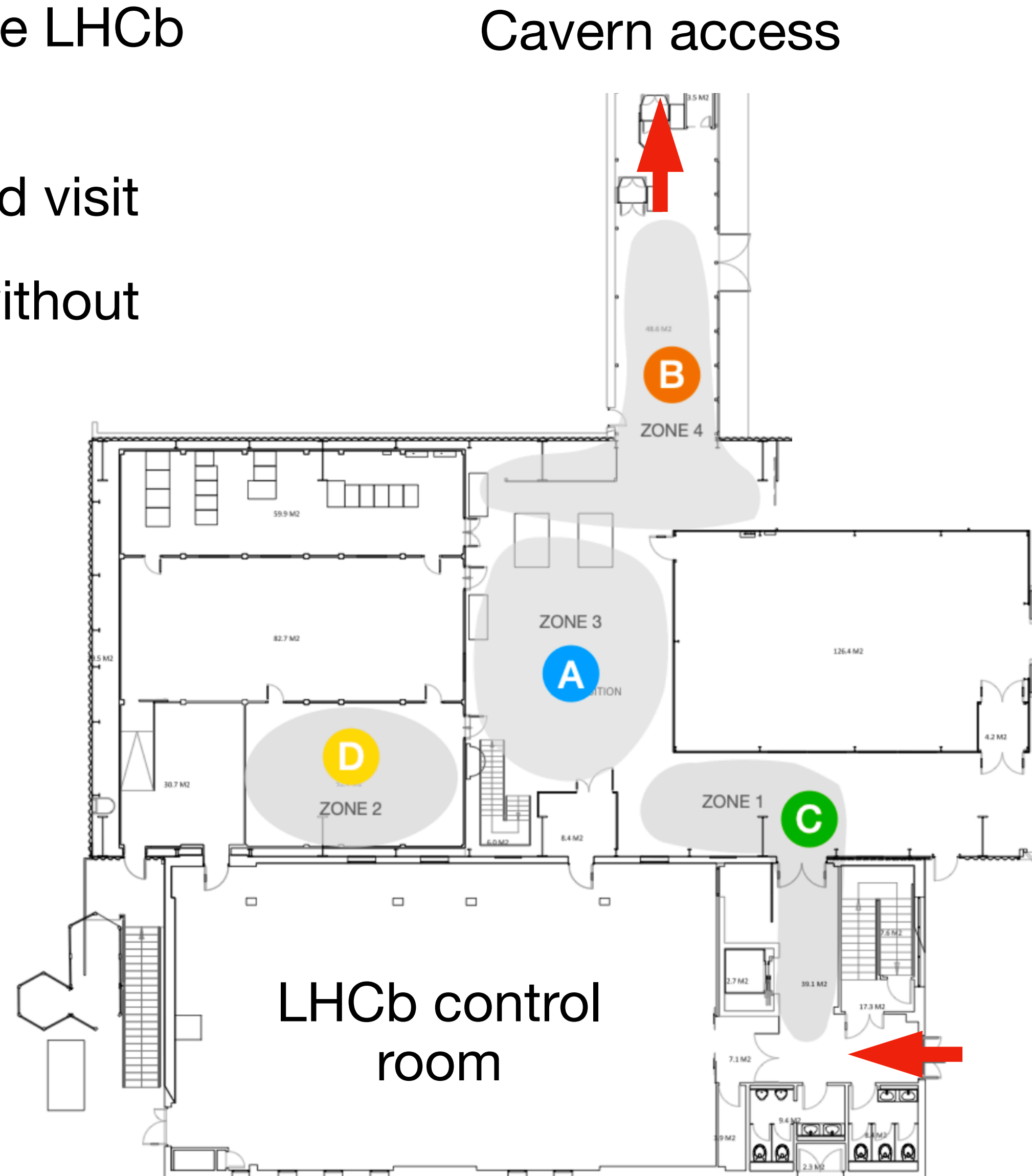


- ➔ A very **important part** of our communication and outreach strategy!
- ➔ Received many photographers, artists, influencers, and VIP visits from funding agencies, politicians, ...
- ➔ Additionally private, and school/ university / masterclass visits
- ➔ **337 underground guided visits** during EYETS + 2 (only Delphi)
- ➔ New exhibitions (especially the room) upgraded surface only visits
- ➔ Working on update the guide for guides



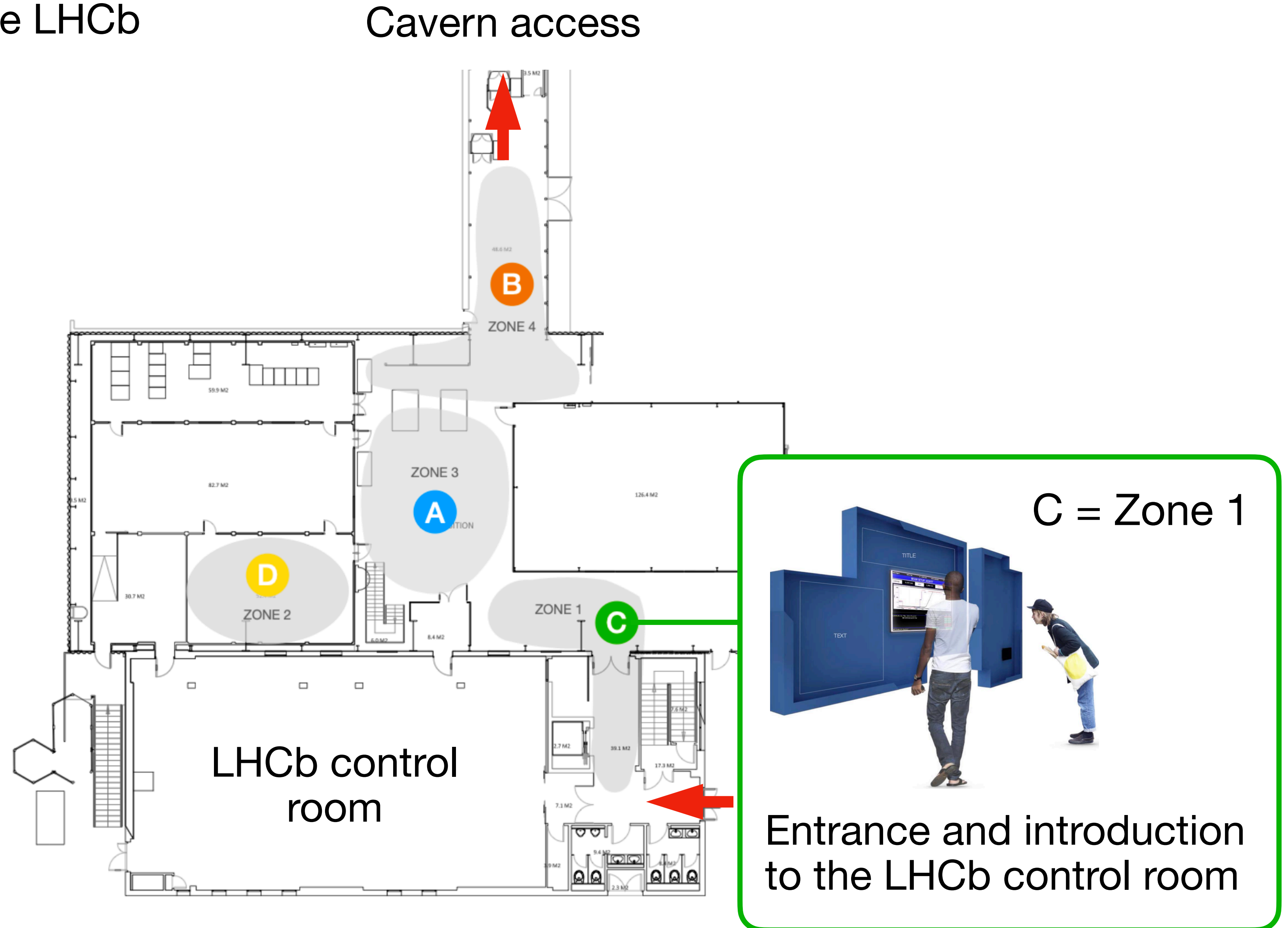
NEW EXHIBITION FOR IN-PERSON VISITS

- ➔ In 2020 redevelopment of the LHCb exhibition
- ➔ Four zones plus underground visit
- ➔ Pandemic allows upgrade without implications for visitors
- ➔ CERN founded



NEW EXHIBITION FOR IN-PERSON VISITS

- ➔ In 2020 redevelopment of the LHCb exhibition



NEW EXHIBITION FOR IN-PERSON VISITS

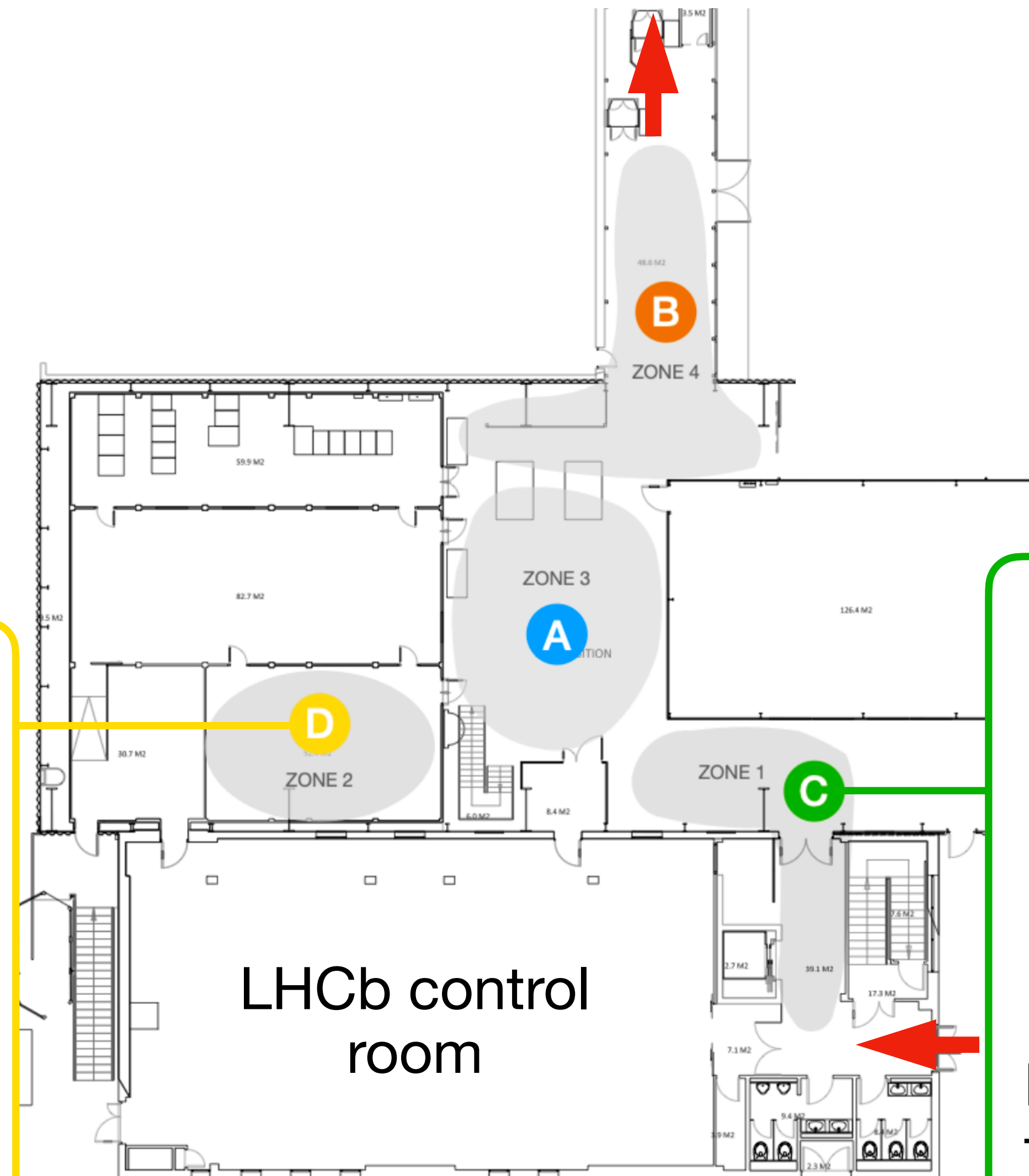
- ➔ In 2020 redevelopment of the LHCb exhibition

Cavern access


D = Zone 2



Multimedia experience



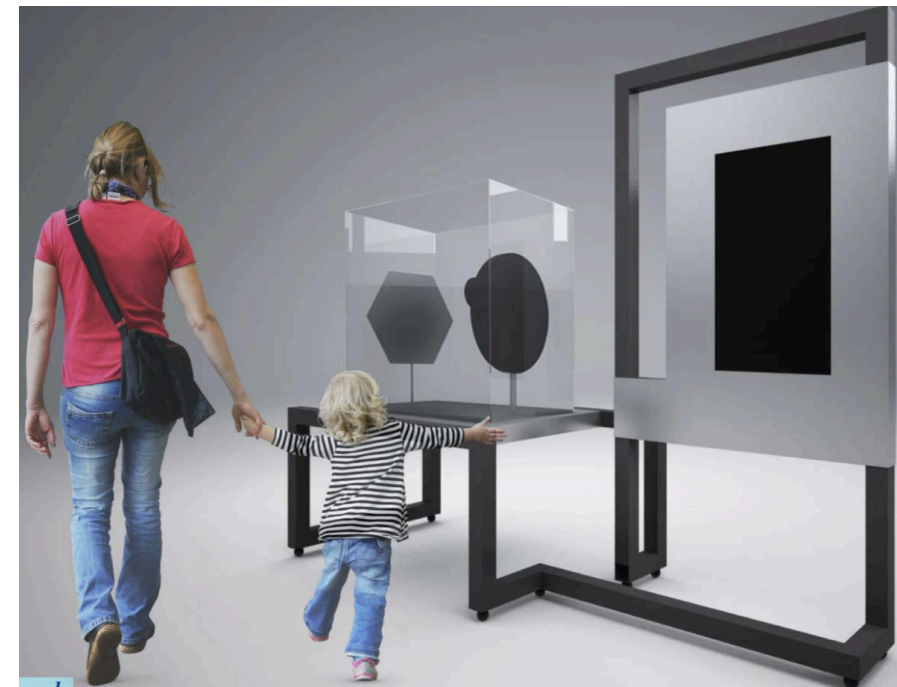
C = Zone 1



Entrance and introduction to the LHCb control room

NEW EXHIBITION FOR IN-PERSON VISITS

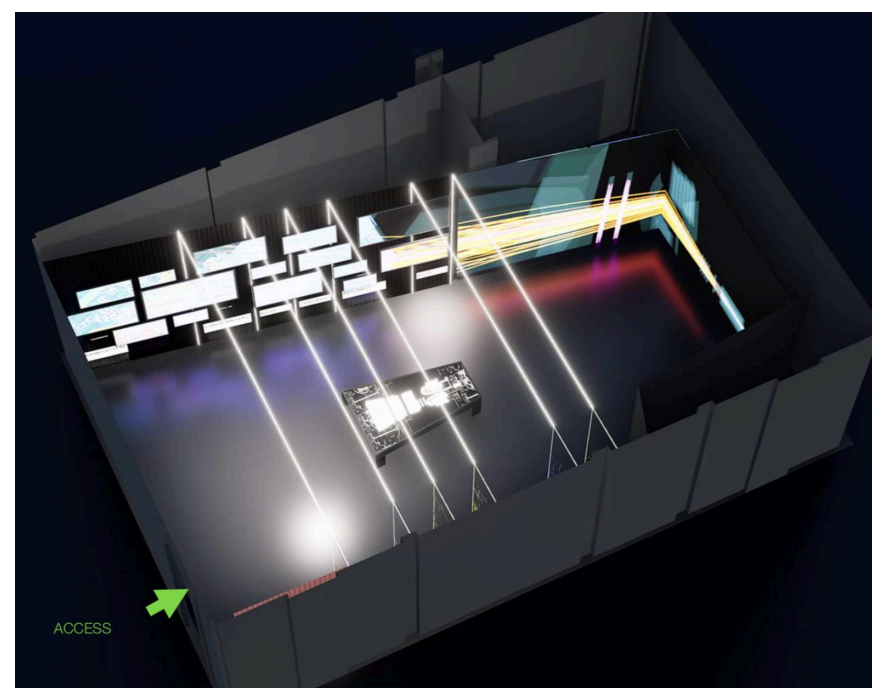
➔ In 2020 redevelopment of the LHCb exhibition



A = Zone 3

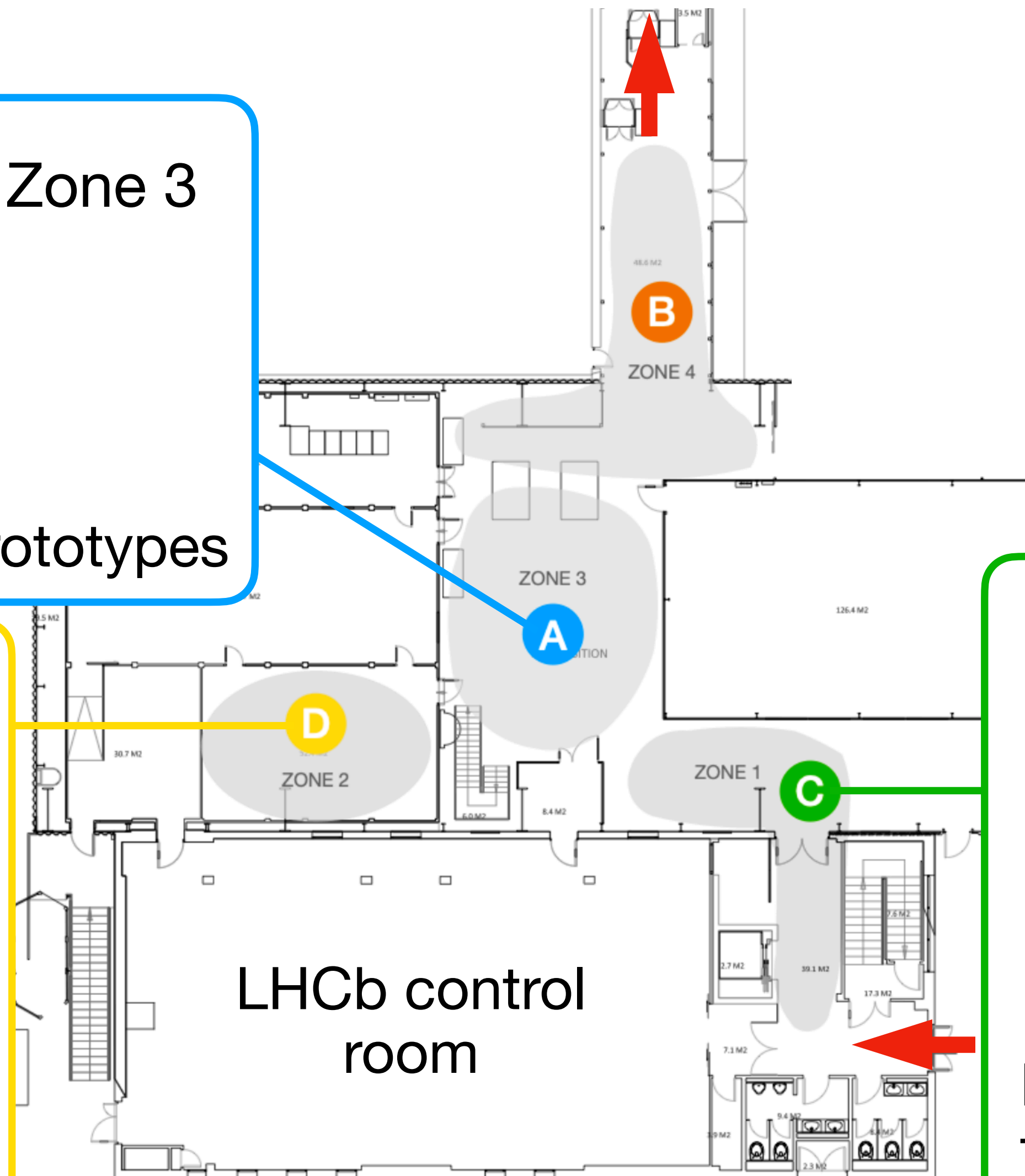
Display of detector parts and prototypes

D = Zone 2



Multimedia experience

Cavern access



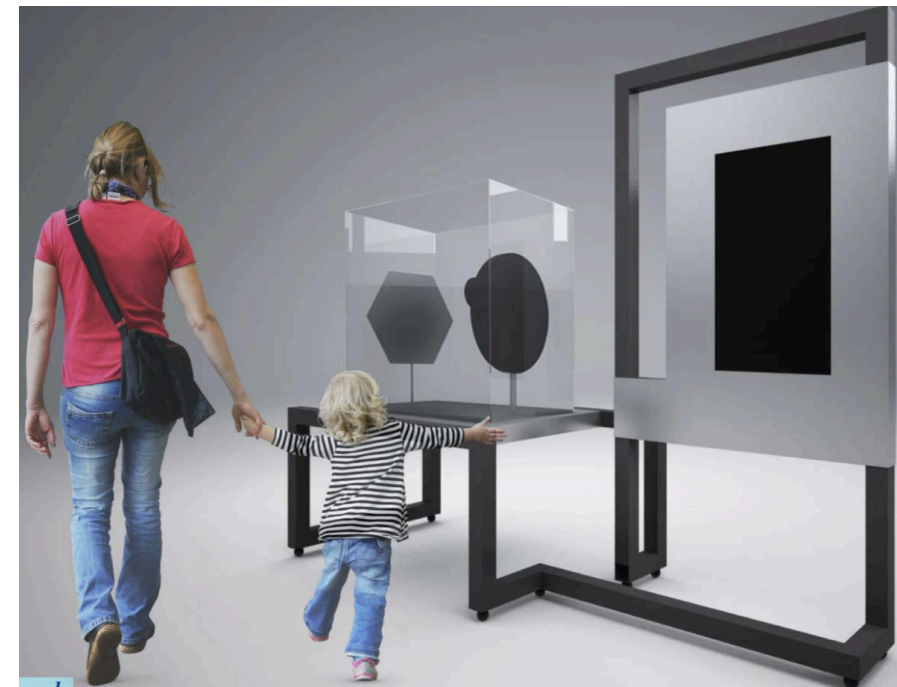
C = Zone 1



Entrance and introduction to the LHCb control room

NEW EXHIBITION FOR IN-PERSON VISITS

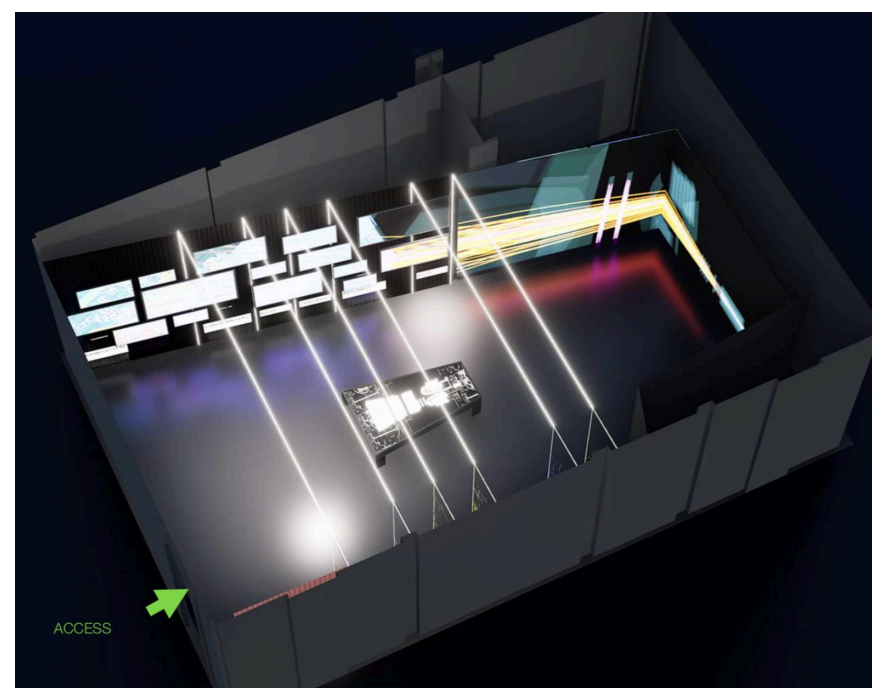
→ In 2020 redevelopment of the LHCb exhibition



A = Zone 3

Display of detector parts and prototypes

D = Zone 2



Multimedia experience

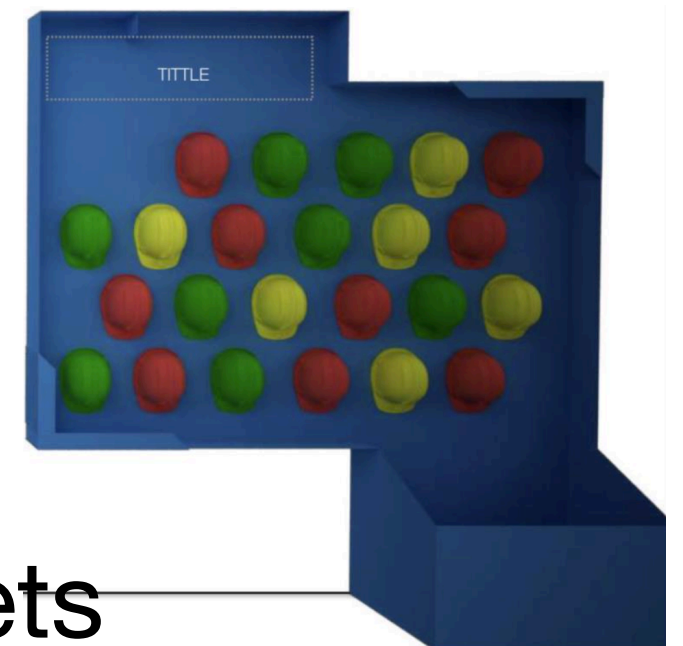
Cavern access



Towards the pit

- Model of the cavern
- Display panels & helmets

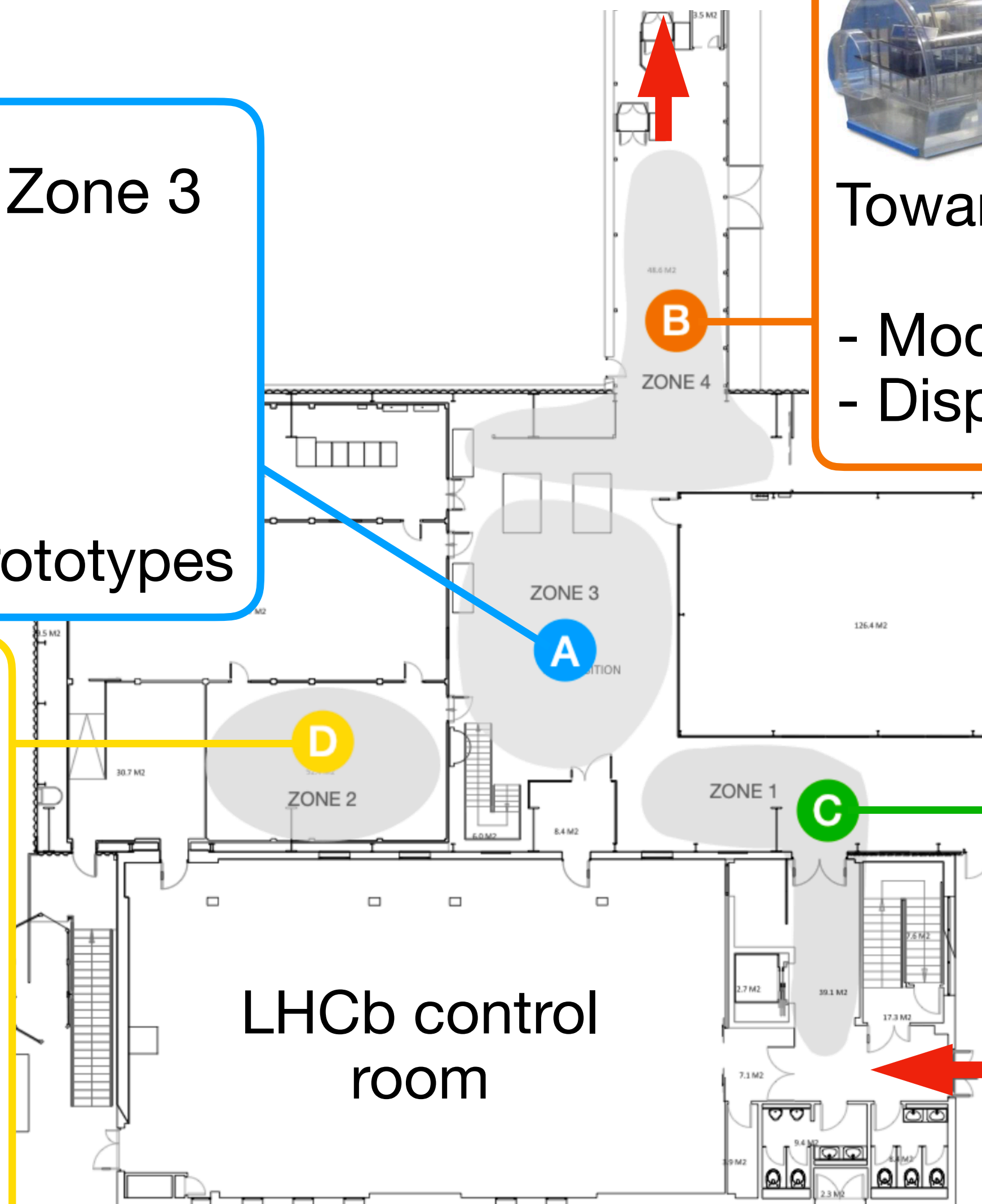
B = Zone 4



C = Zone 1



Entrance and introduction to the LHCb control room



NEW EXHIBITION - MULTIMEDIA ROOM

- ➔ New multimedia room was finished end of 2021
- ➔ Goal is to provide an immersive and interactive experience



- ➔ Firm INDISSOLUBLE (worked at CERN on Microcosm and ALICE exhibition)

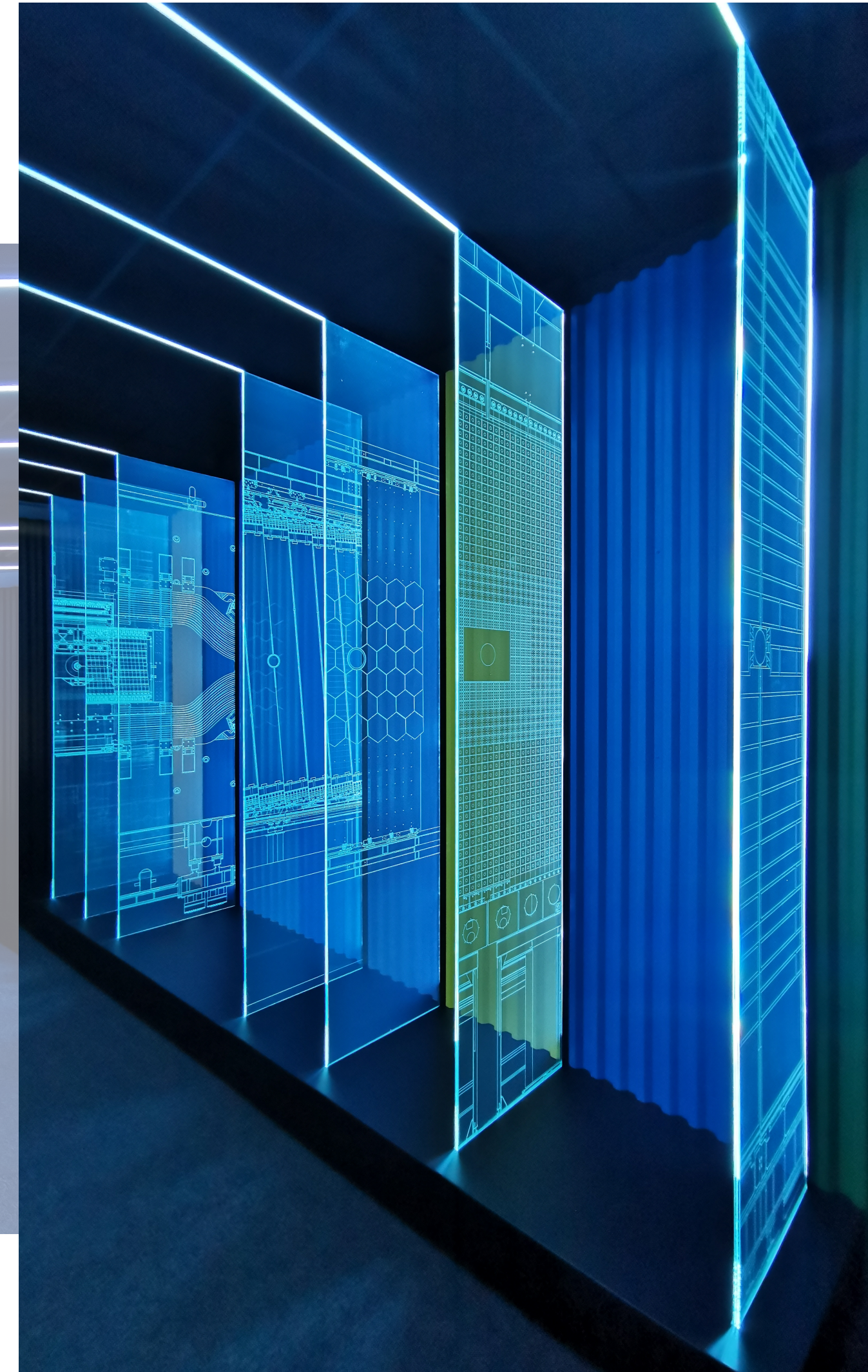
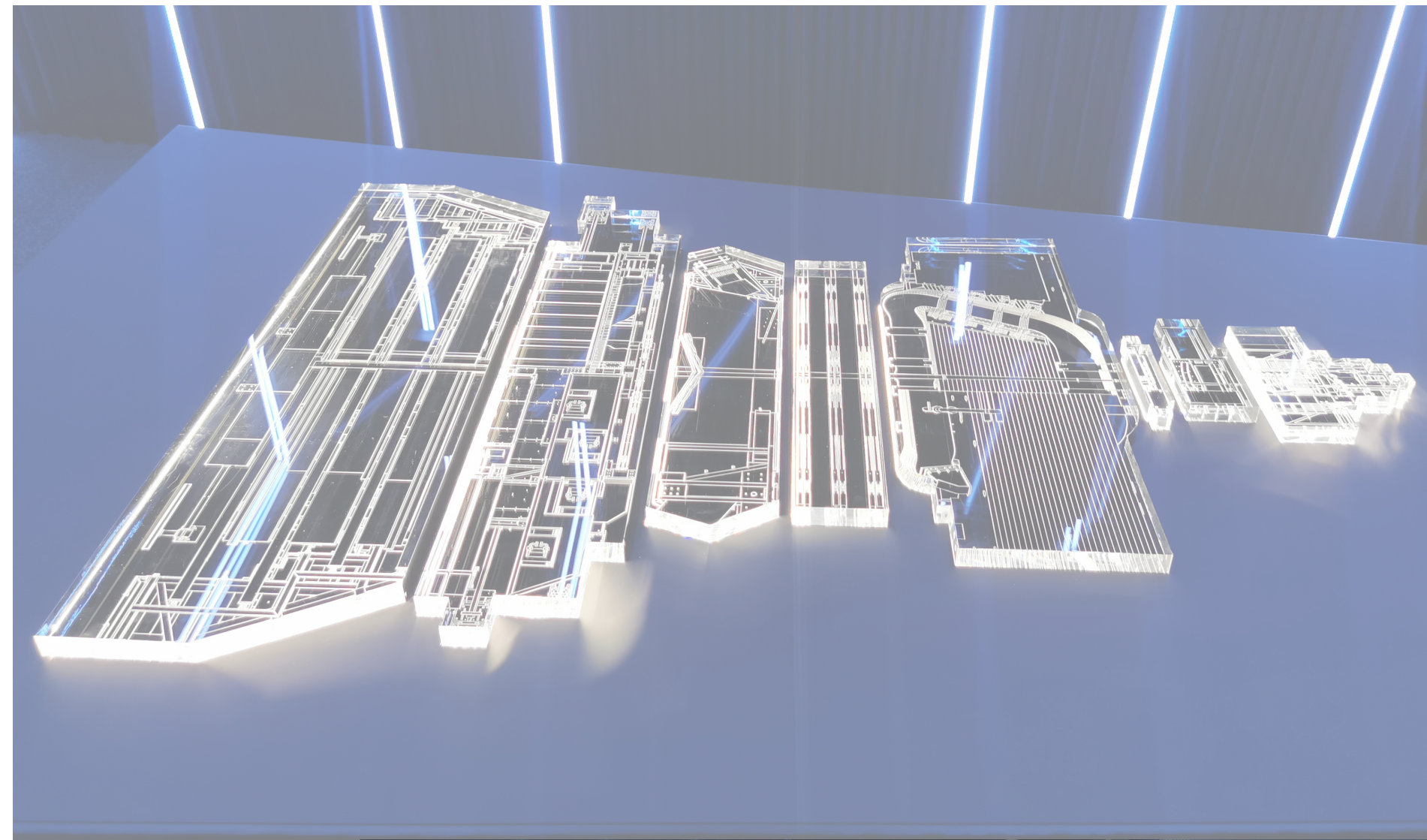
NEW EXHIBITION - MULTIMEDIA ROOM

➔ Three main elements: a flat detector model



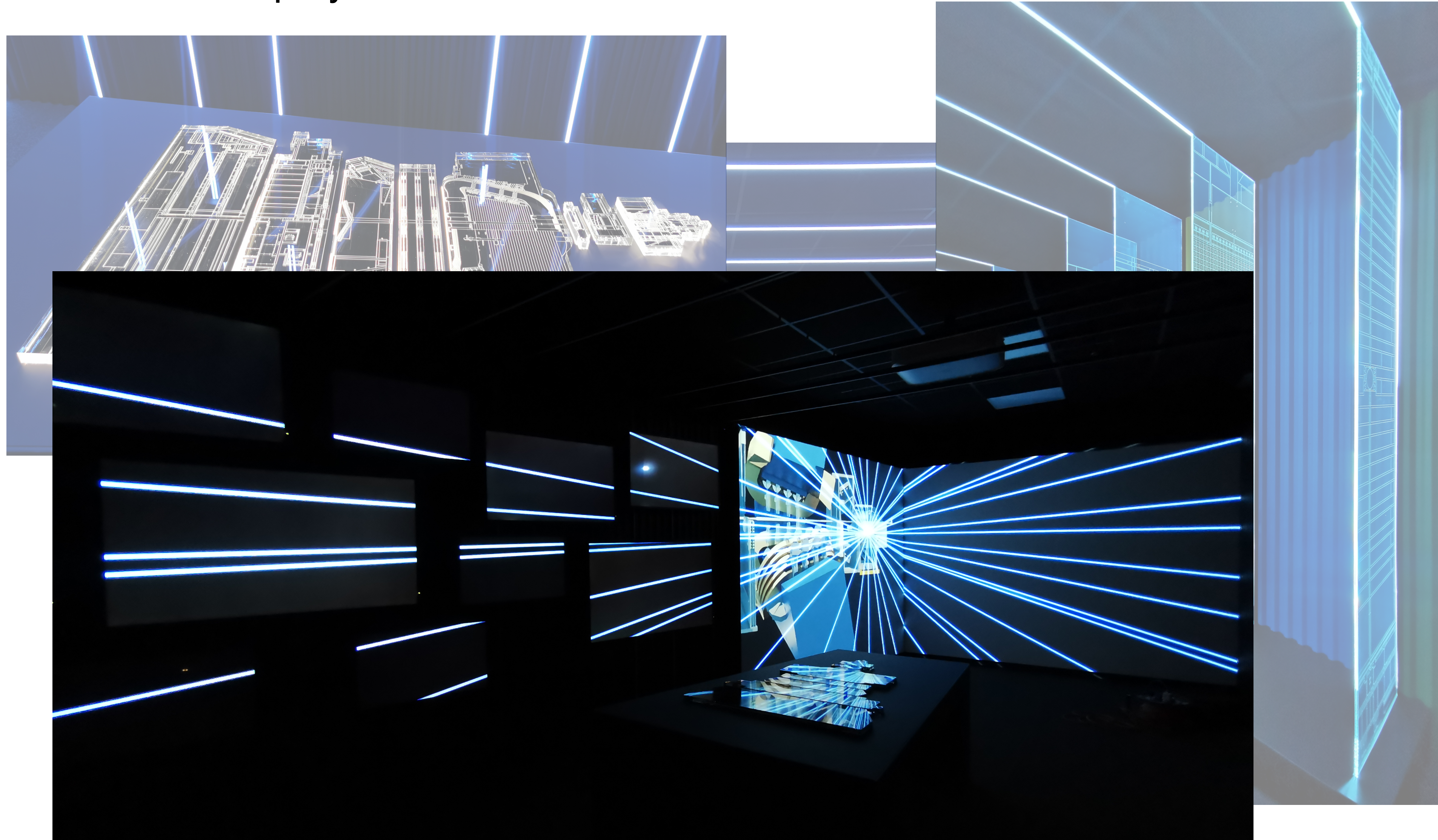
NEW EXHIBITION - MULTIMEDIA ROOM

➔ Three main elements: panels with subdetectors



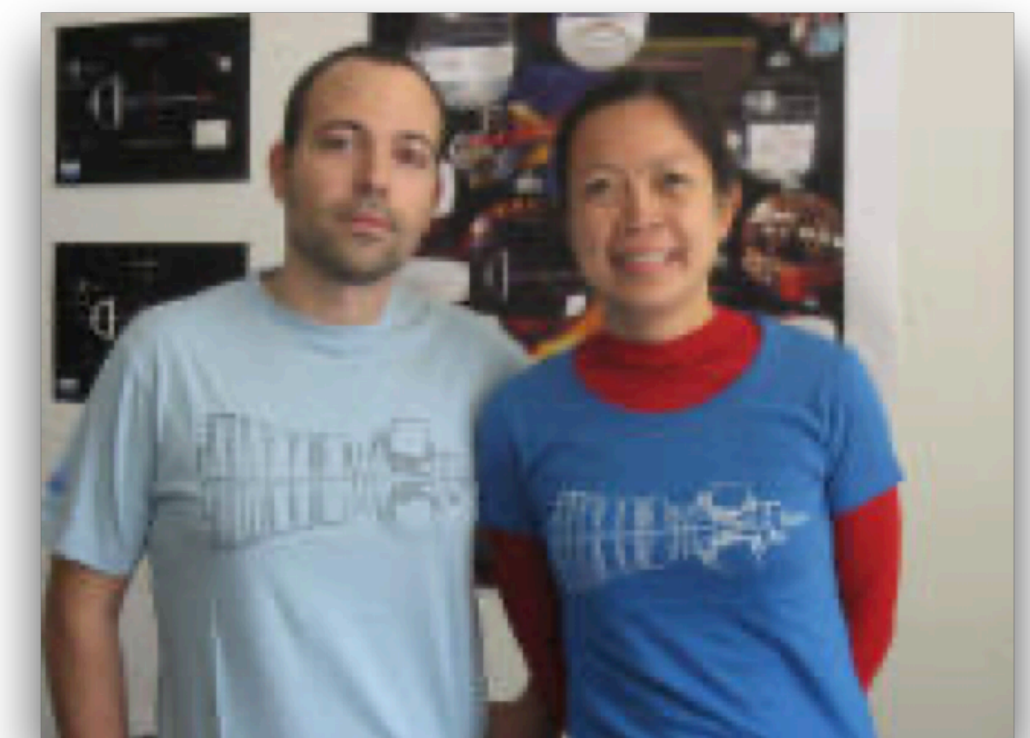
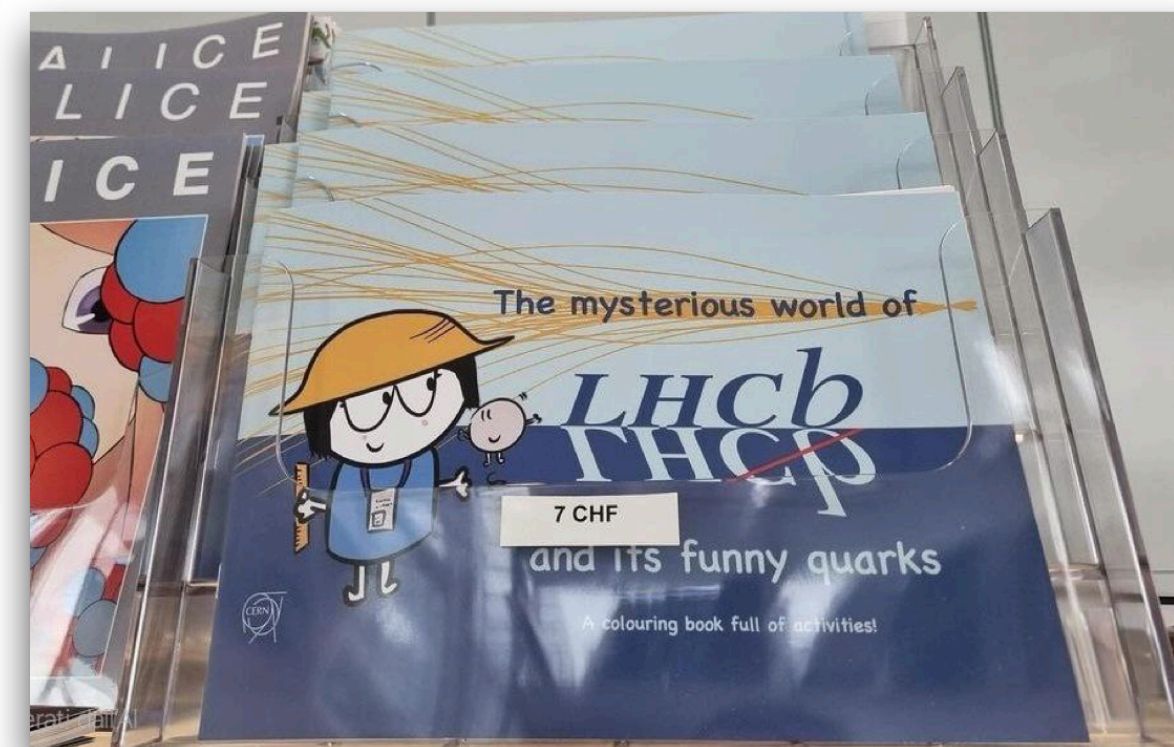
NEW EXHIBITION - MULTIMEDIA ROOM

➡ Three main elements: displays with animations



MERCHANDISING

- ➔ Developed a lot of new products and reinstated favourites both LHCb and CERN
- ➔ Collect feedbacks from collaboration
- ➔ For Science Gateway follow cern rules (CERN graphic design team, suppliers)
- ➔ We worked on designs for books, mugs, tote bag, bottle, swim towel, kids exercise book, ...



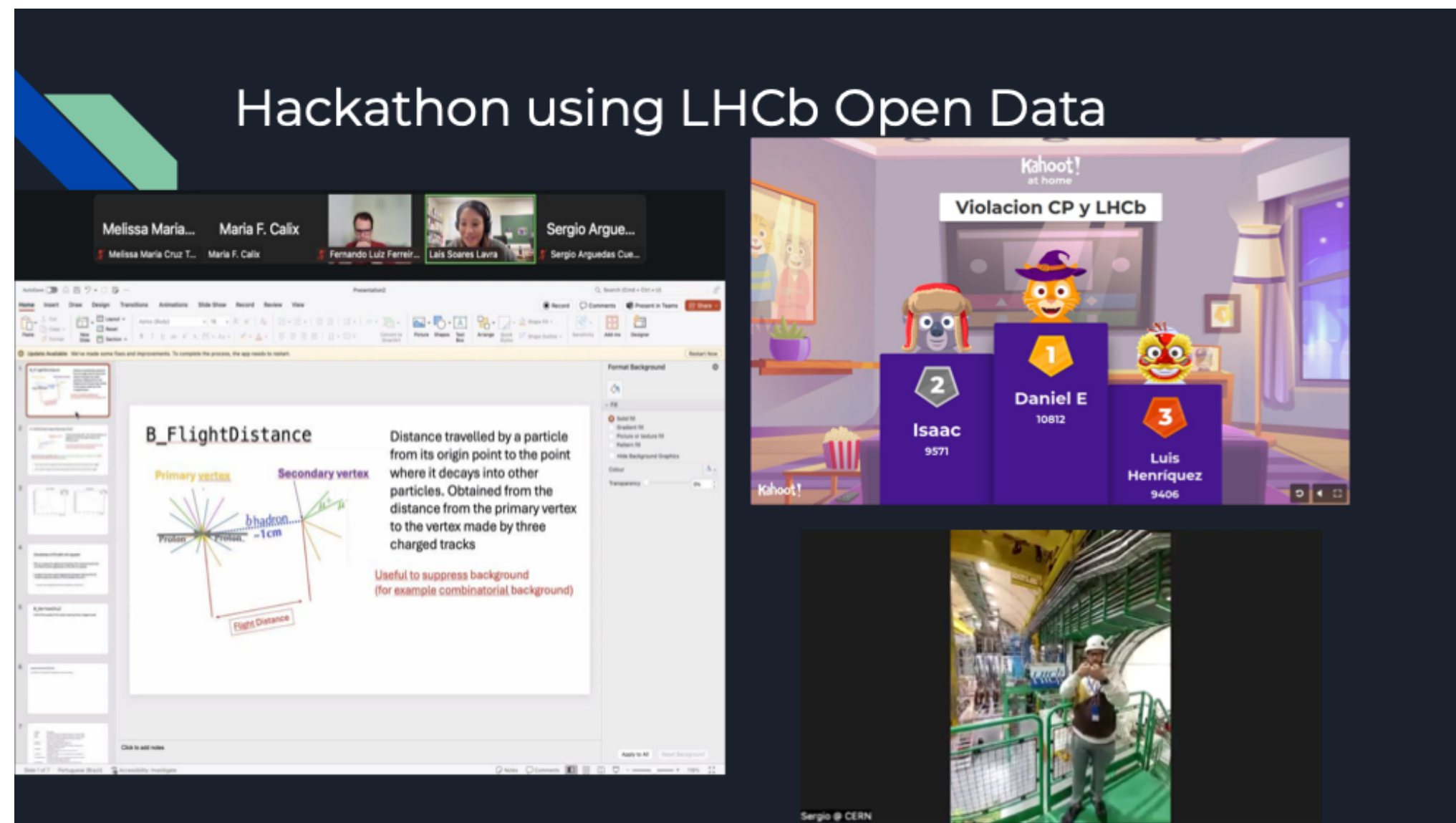
- ➔ Spotlight sessions during the **every LHCb week**
- ➔ **Updating** on outreach efforts
- ➔ **Spotlighting individual and national projects** from collaborators

Promoting women in science

Nuria Valls Canudas - CERN
114th LHCb week - Outreach spotlight
05/12/24

#100tífiques

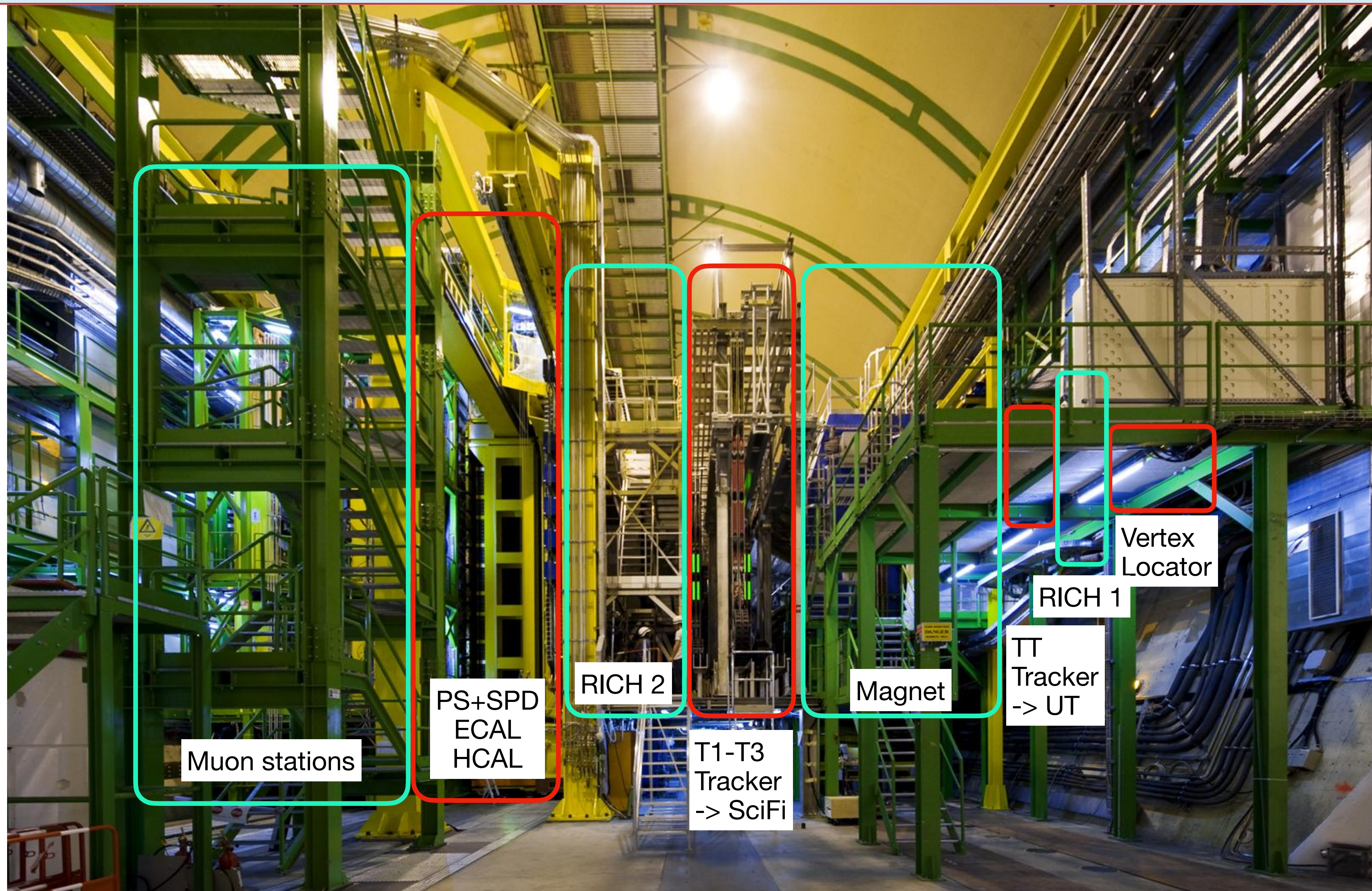
cent – cien
catalan spanish



- ➔ **New tools** developed during COVID still used like videos, online media..
- ➔ **Many new ideas** for the social media posts
- ➔ **Virtual and in-person visits** are in use
- ➔ **New exhibition** obtains great feedback
- ➔ **New merchandise** has been developed and is released
- ➔ **Spotlight sessions** during LHCb weeks for improved exchange and visibility

BackUp

LHCb UNDERGROUND



LHCb UNDERGROUND

