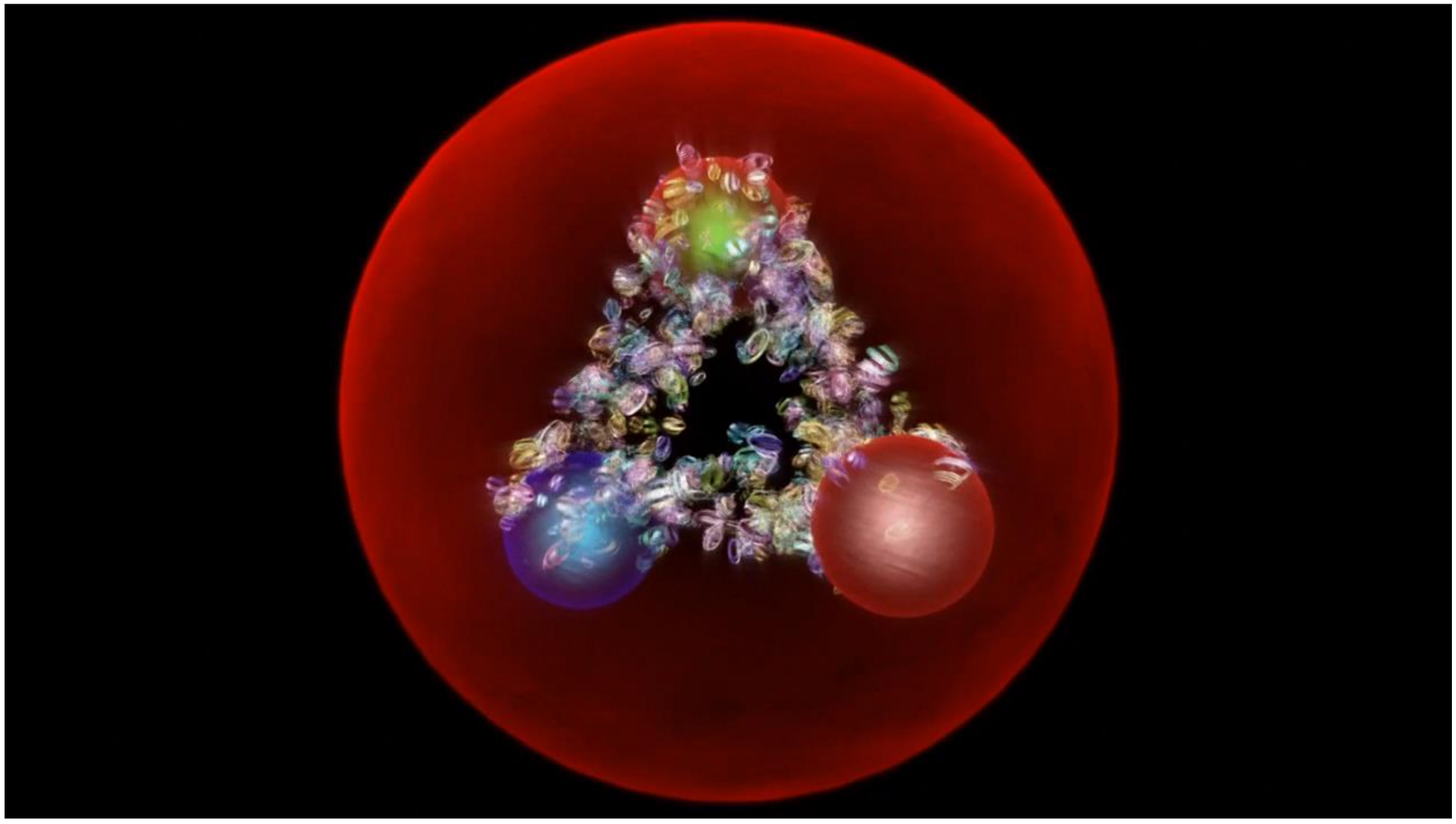
CERN: Communication, Education and Outreach

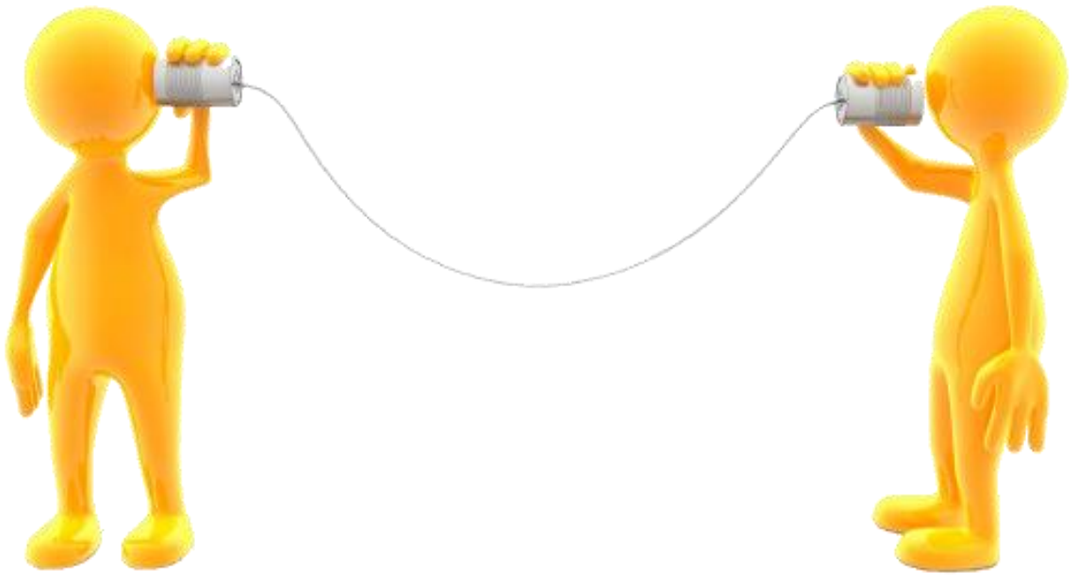


Rolf Landua

CERN

Head of Education and Public Outreach

1 - Why CERN communicates



Not so obvious

Obvious

Publish scientific results

Communicate with:

- scientific community
- media
- decision makers

Engage the general public with CERN:

For what did we use your tax money?

Strengthen the image of science

Inspire the next generation

Communication within (scientific) community

CERN Bulletin

Issue No. 24-25/2015 - Monday 8 June 2015
More articles at: http://bulletin.cern.ch

HIGH-ENERGY COMMUNICATION

On Wednesday at 10.40 a.m., the LHC operators declared "stable beams" after two years of technical stop and a few months of commissioning. It was an exciting day for all the teams involved, including those who worked on communicating the news to the public and the media on multiple platforms.

CERN @CERN — Following

The LHC experiments are back in business with record energy collisions of #13TeV: cern.ch/go/D7z6

You, CERN, CERN en français and 5 others

RETWEETS 815 FAVORITES 525

12:41 PM - 3 Jun 2015

CERN's most successful tweet on 3 June featured collision images from ALICE, ATLAS, CMS and LHCb and was shared 800 times by the Twitter audience.

Live blogging, social media posts, a live webcast, and a constant outpouring of photos and videos: Wednesday morning was a crazy time for the communication teams from CERN, the experiments and various institutes around the world. Even though the event started very early in the morning (the live CCC blog started at 7 a.m. and the live webcast at 8.20 a.m.), the public and the media tuned in to follow and generously cover the start of the LHC's physics run at an unprecedented energy of 13 TeV.

(Continued on page 2)

A word from the DG

STABLE BEAMS

Stable beams: two simple words that carry so much meaning at CERN. When LHC page one switched from "squeeze" to "stable beams" at 10.40 a.m. on Wednesday, 3 June, it triggered scenes of jubilation in control rooms around the CERN sites, as the LHC experiments started to record physics data for the first time in 27 months. This is what CERN is here for, and it's great to be back in business after such a long period of preparation for the next stage in the LHC adventure.

(Continued on page 2)

In this issue

NEWS

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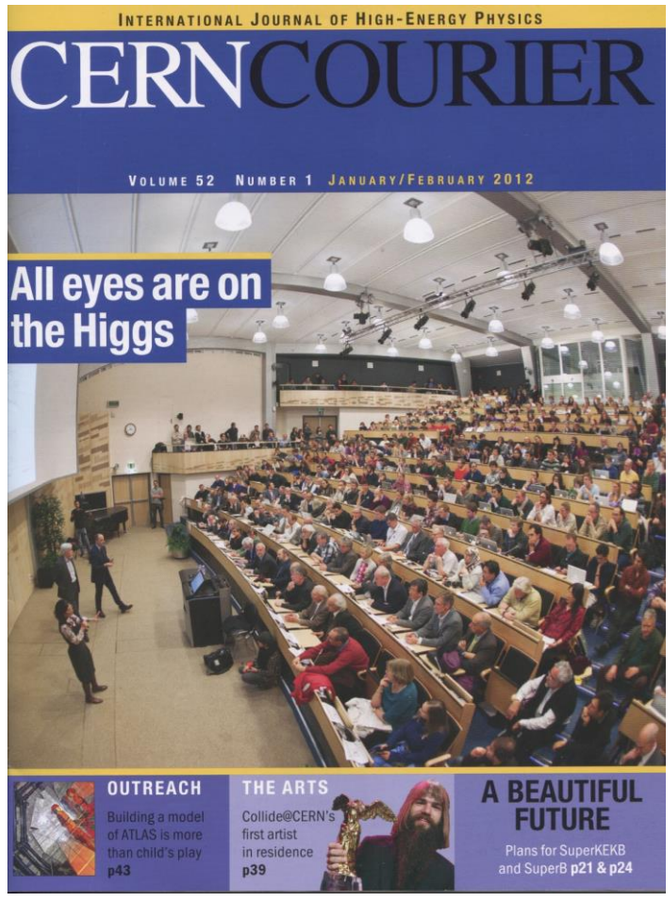


INTERNATIONAL JOURNAL OF HIGH-ENERGY PHYSICS

CERN COURIER

VOLUME 52 NUMBER 1 JANUARY/FEBRUARY 2012

All eyes are on the Higgs

OUTREACH
Building a model of ATLAS is more than child's play
p43

THE ARTS
Collide@CERN's first artist in residence
p39

A BEAUTIFUL FUTURE
Plans for SuperKEKB and SuperB p21 & p24

Annual Report 2013

CERN
1211 Geneva 23, Switzerland
http://www.cern.ch

The CERN Annual Report is published as a single volume that aims to present the activity of the Laboratory in a non-technical style.

CERN, the European Organization for Nuclear Research, operates the world's leading laboratory for particle physics. Its business is fundamental physics, finding out what the Universe is made of and how it works. Founded in 1954, CERN has become a prime example of international collaboration, with 21 Member States as of January 2014. Additional nations from around the globe also contribute to and participate in the research programmes.

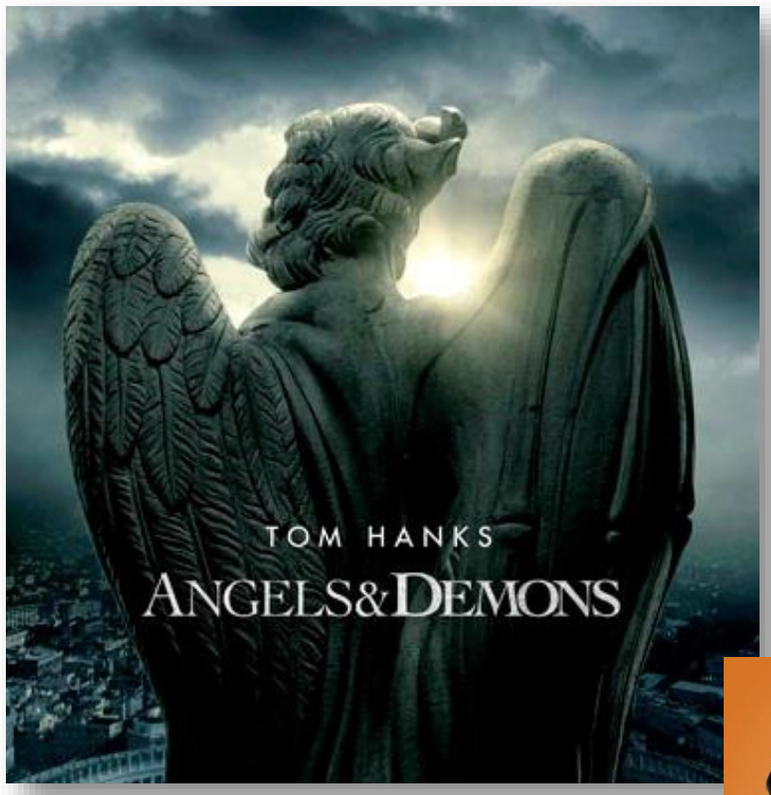
CERN community

Scientific community

Member states

Communication through media

Newspapers & Journals



Movies

Arts

Television & Radio

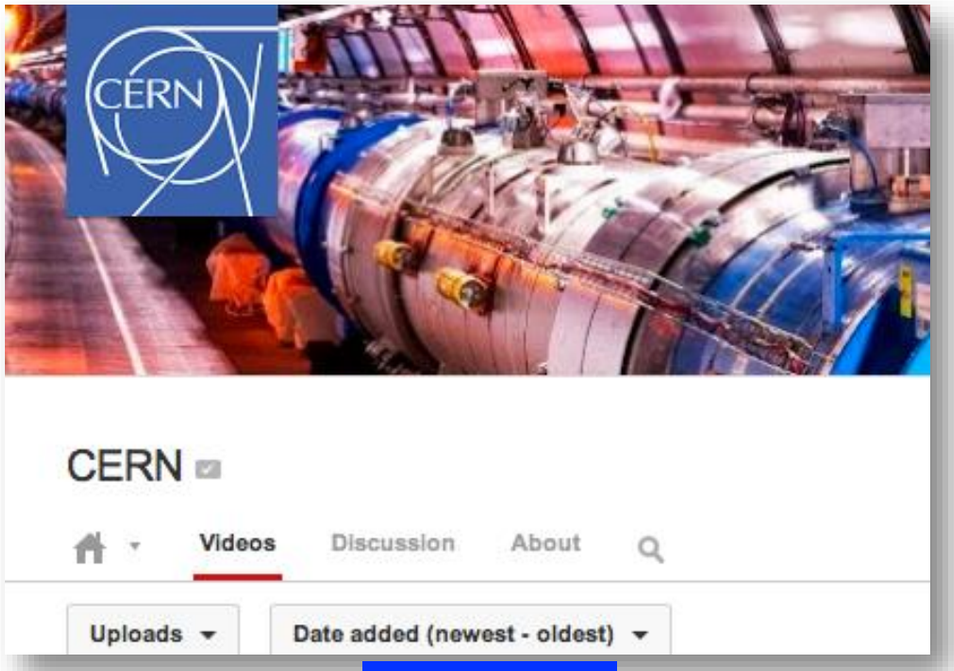
More than 1000 journalists per year at CERN

Gather support from decision makers

VIP visits

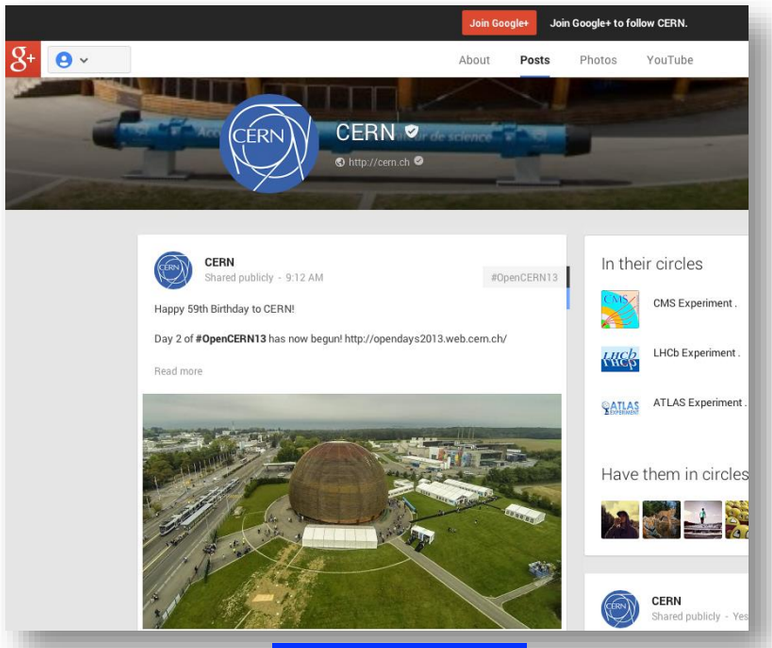
Communicate through web and social media

Facebook 422K Likes



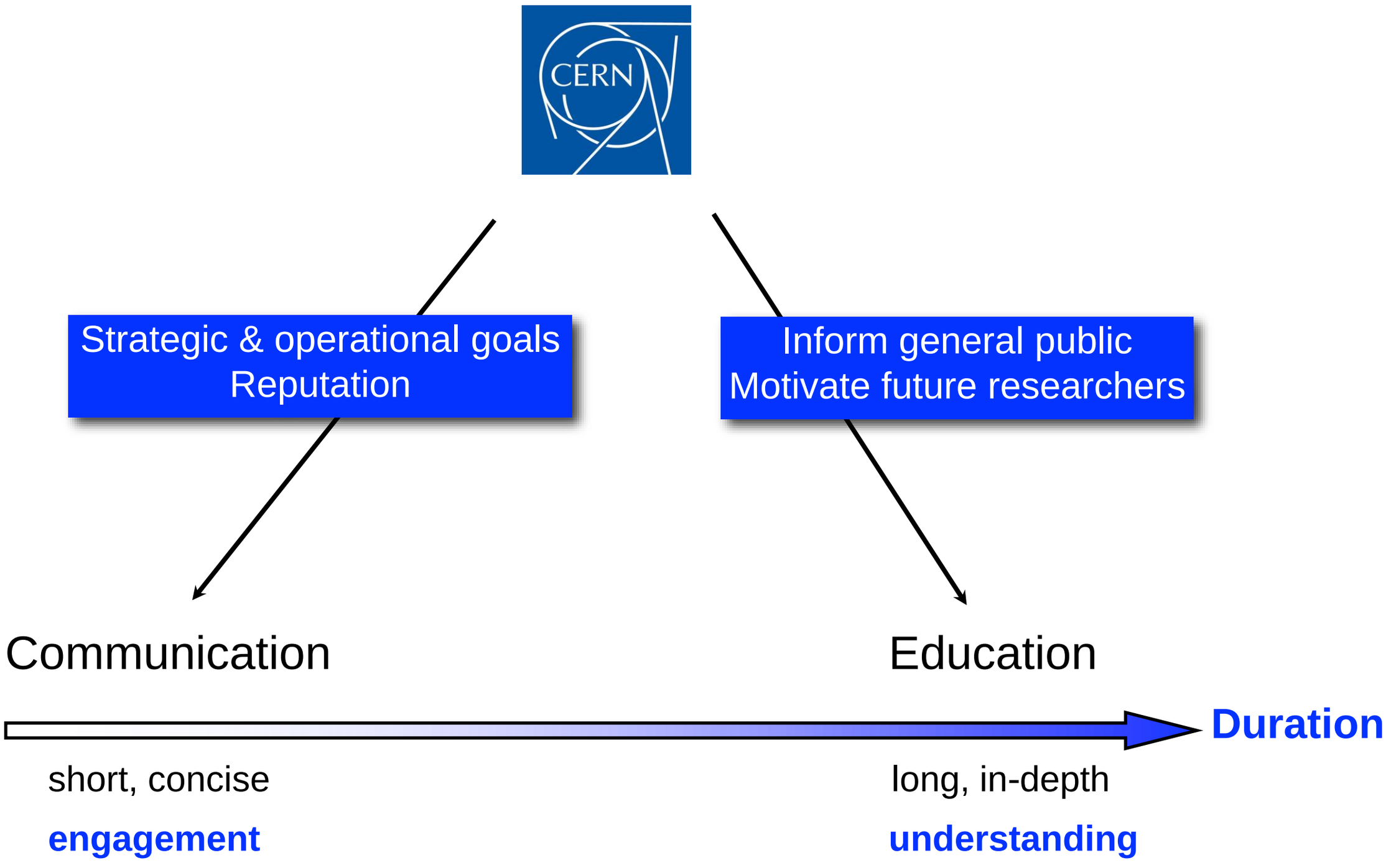
YouTube 50 K subscriptions

Twitter 1.2 million followers



Google+ 182 K followers

Communication vs Education



2 - CERN: Education and Outreach

a

Guided tours
Exhibitions at CERN

b

Traveling exhibitions

Special events
(fairs, science museums)

General public

Local
International

Teachers

Schools

Teacher programmes
Teaching resources

c

Student Lab
Virtual visits

What is your first goal ?

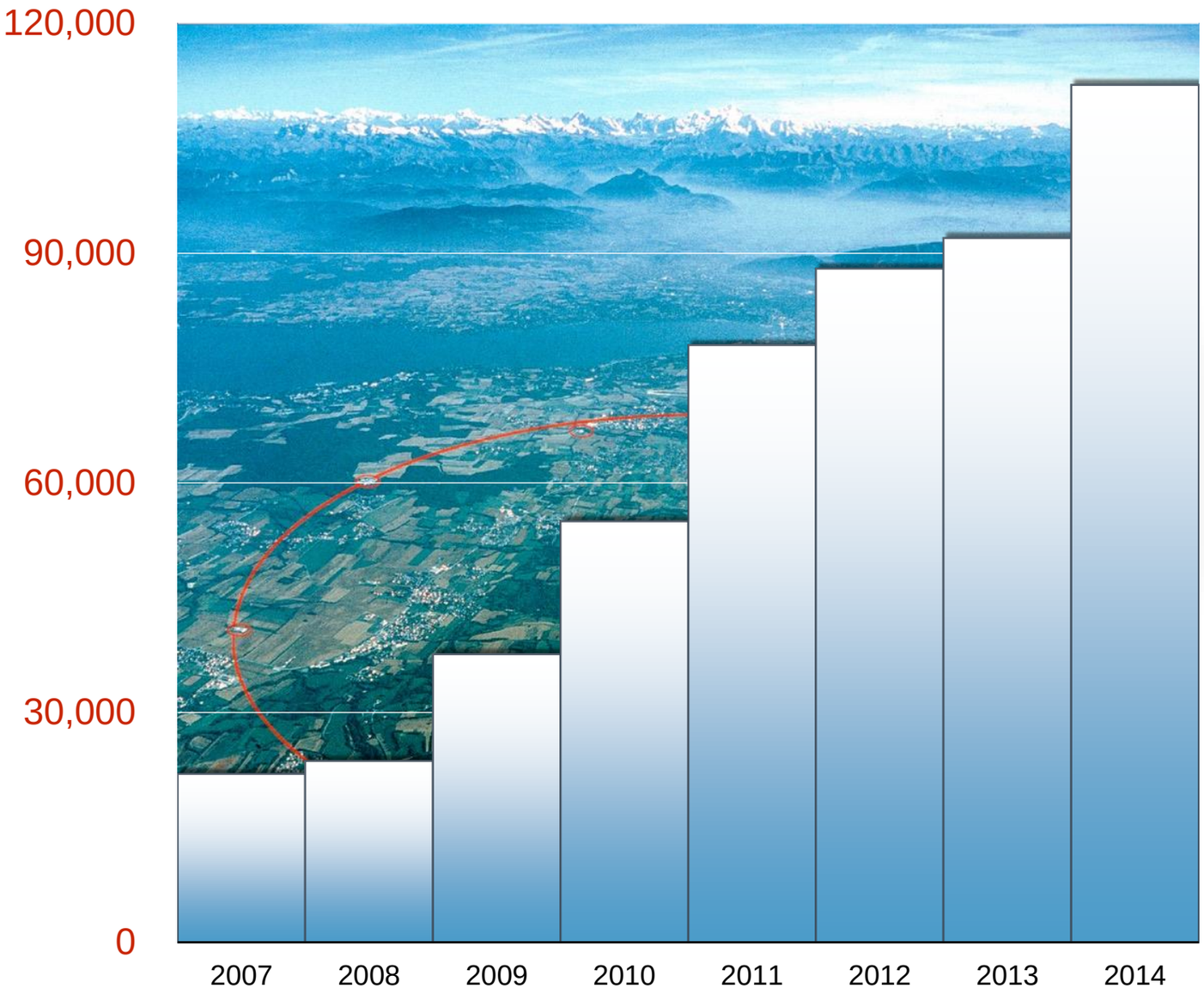
Guided tours & Exhibitions

Guided tours
Exhibitions at CERN

Wonder - Surprise - Amazement

CERN guided tours

Experience the CERN atmosphere and see ‘science in action’



112,000 visitors (2014)

Huge public demand
> 300,000 visit requests/yr

1/2 day visits = Intro talk + 2 visit points

Volunteer guides (staff, fellows, experiments)

40% school classes (of which 70% > 600 km)

MAIN VISIT POINTS:

Synchrocyclotron
SM18 Magnet test facility
Data centre
CERN Control Centre
ATLAS Visitor Centre
Low Energy Ion Ring (LEIR)
Antimatter Decelerator (AD)
AMS Control Centre

Visit points - Synchrocyclotron

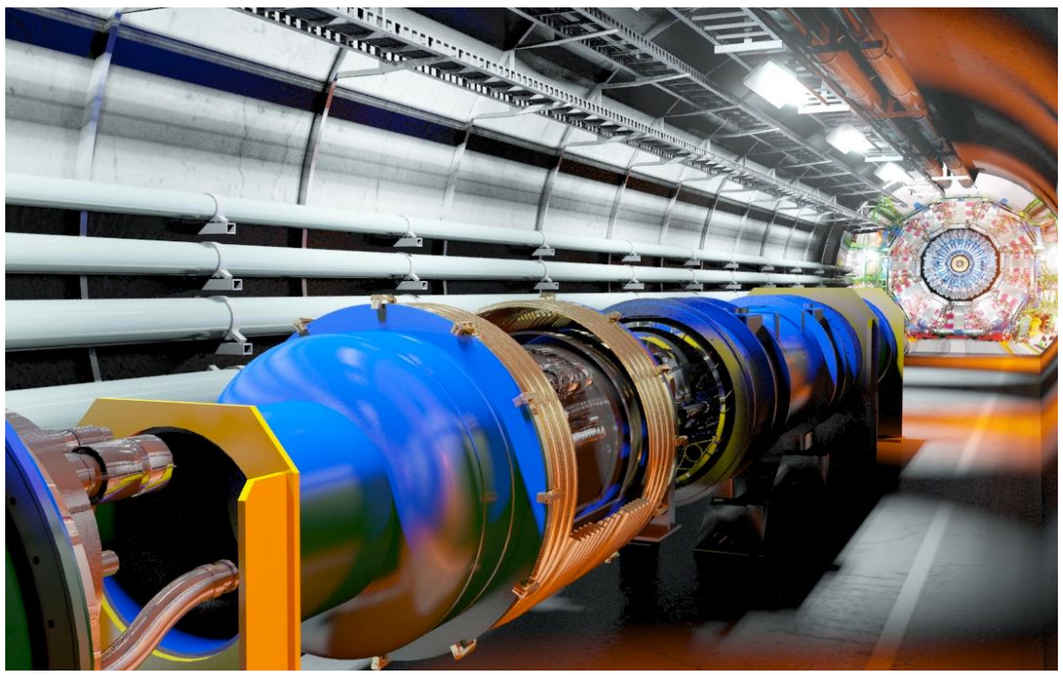
12 minute video and projection mapping on SC History and Discoveries of CERN

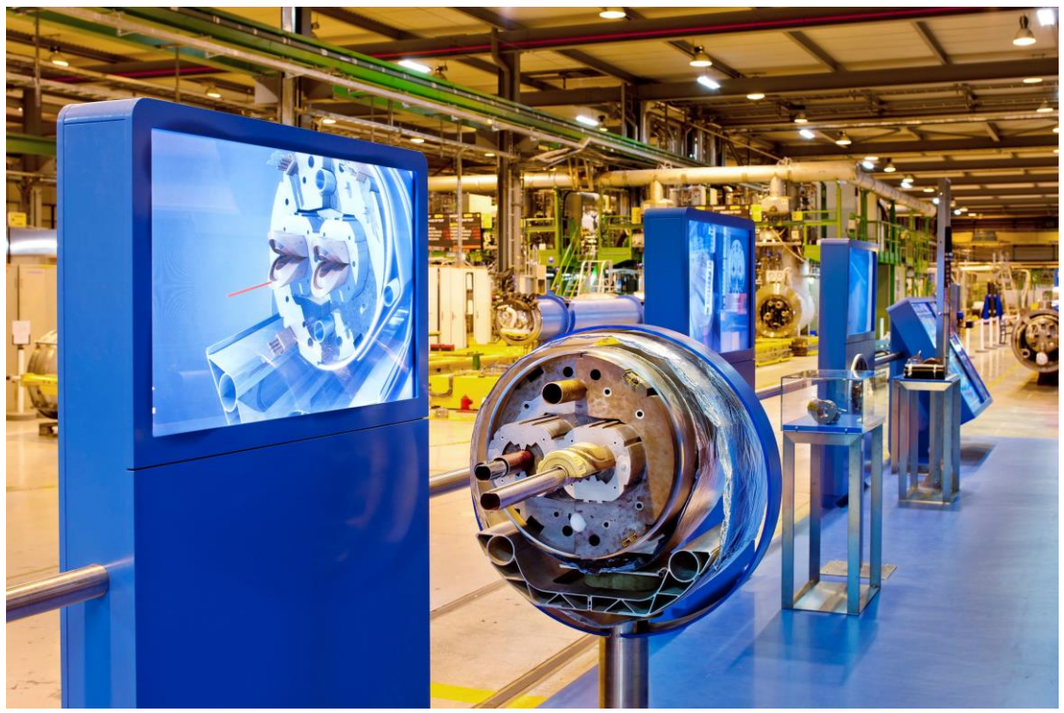
a Visit point - Data centre

a Visit point - Data centre

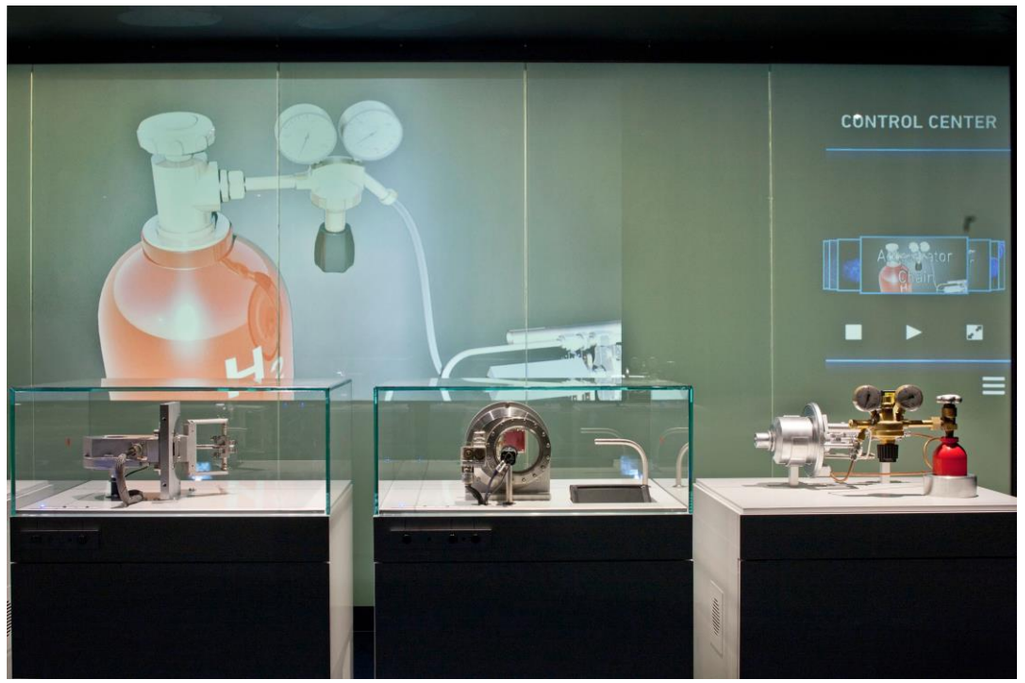
Other popular visit points

SM18 magnet test facility - LHC model

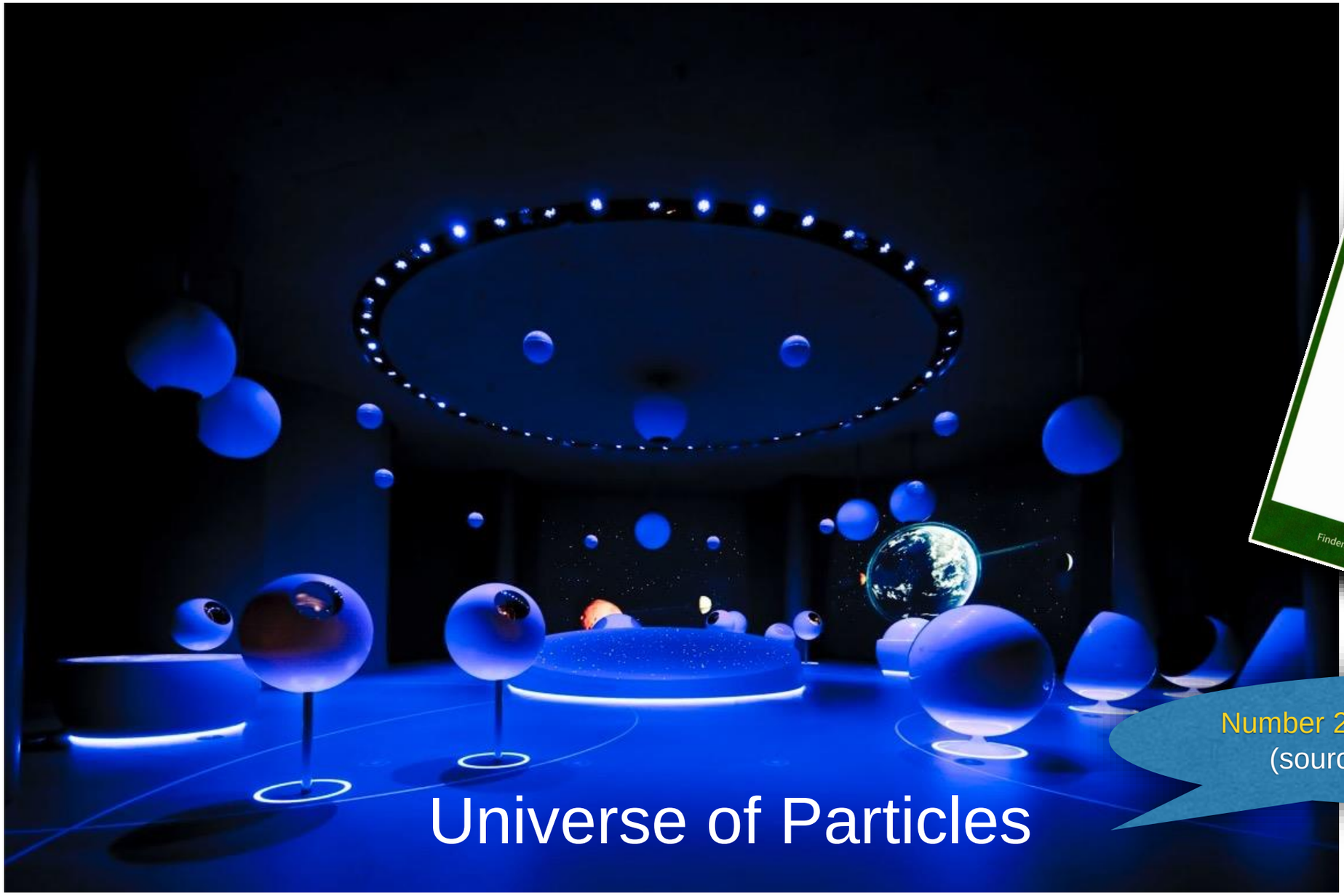




Control Centre



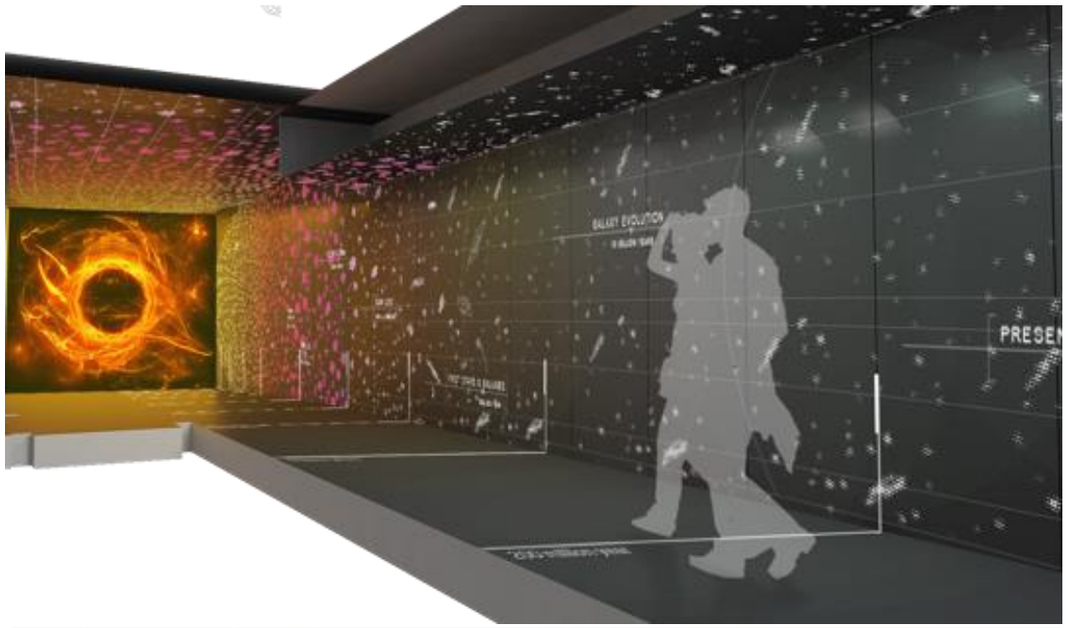
CERN exhibitions: Universe of Particles



Number 2 attraction of Geneva region
(source: Geneva tourist office)

Interactive • Immersive • Inspiring
65,000 visitors per year (since July 2010)

CERN exhibitions: Microcosm 2015



CERN People • Inspiration • Games • Authentic pieces

Opens (again) July 2015

Traveling exhibitions and local events

Local presence: good neighbourhood relations

International: support in member states (or future MS)

Traveling exhibitions

Special events
(fairs, science museums)

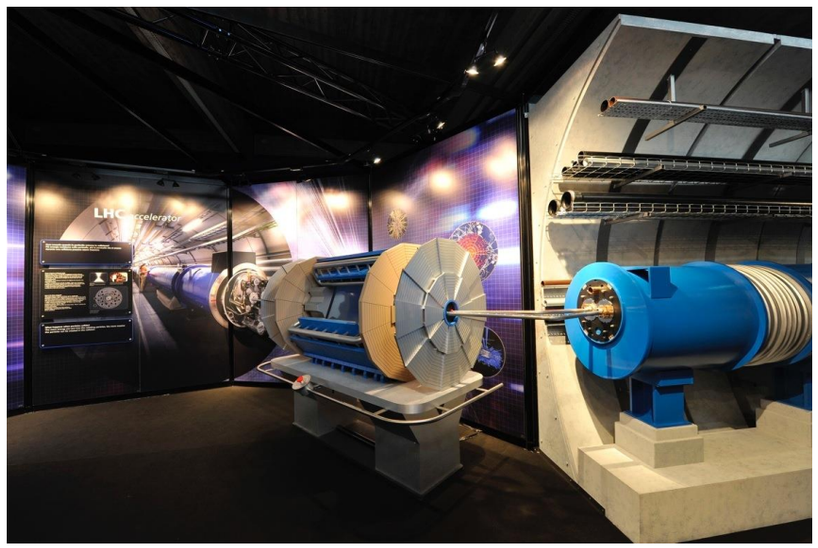
Teachers

General public

Local
International

Schools

Traveling exhibition “Accelerating Science”



Large exhibition (450 m^2)

5 main themes:

Cosmology, Particle Physics, Mysteries of the Universe,
LHC accelerator & experiments, Applications in daily life

Interactive LHC tunnel

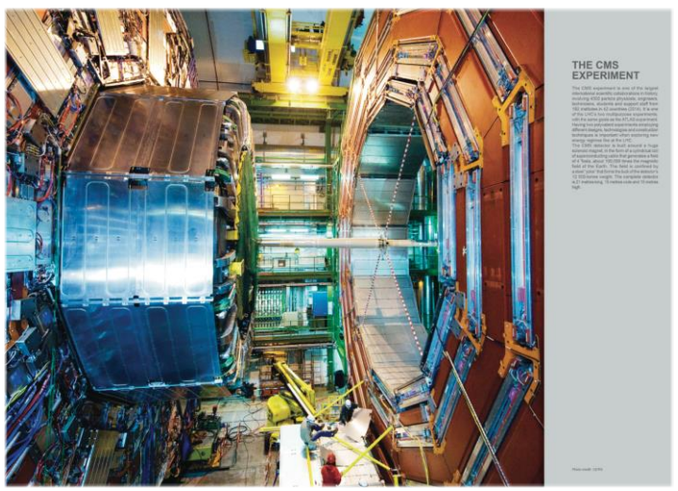
Interact with the Higgs field; kick protons and collide them

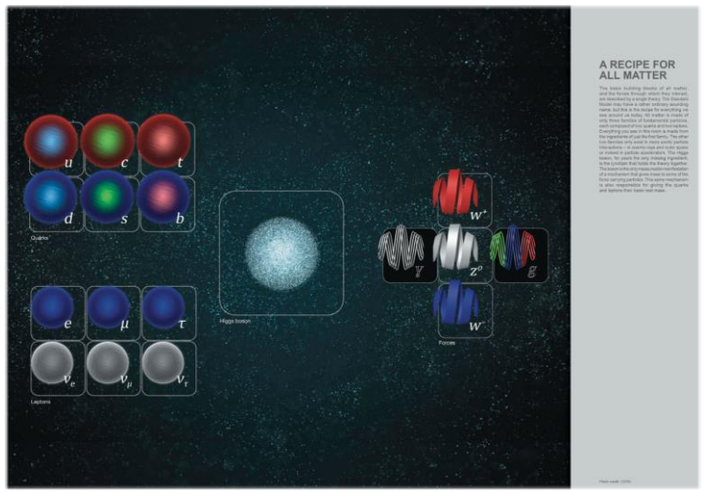
Traveling exhibition “CERN images”

“CERN in images” -
Small exhibition (100 m²)

20 posters
CERN, LHC, Experiments
Physics goals

Easy to move
“Do it Yourself” possible





Local events: Open Days

CERN OPENDAYS

Our Universe is Yours

Notre Univers est le vôtre

28, 29 September 2013

2013 70,000 visitors in 2 days

2008 70,000 visitors

2004 40,000 visitors

Local events: Globe of Science

CERN & Society

Ground floor: Exhibition
Universe of Particles

First floor: Multi-purpose area
Special events with industry/society
Conferences
Film festival
VIP events, receptions
Lectures
Workshops

~ 20,000-30,000 users per year
~ 150-200 events per year

CERN Teacher Programmes

Teachers

General public

Local
International

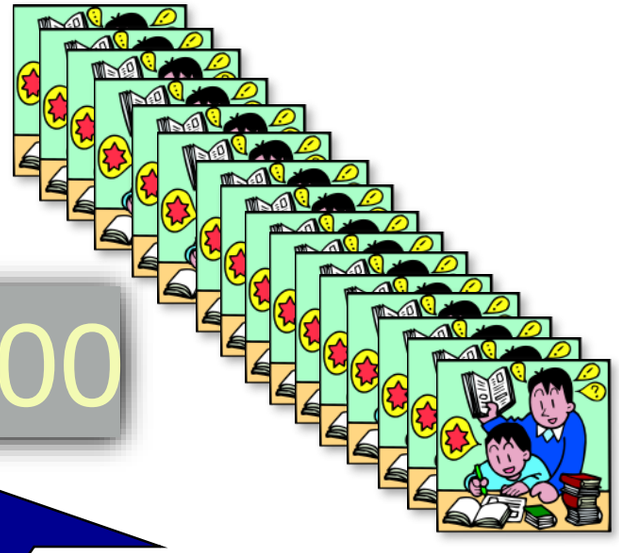
Schools

Teacher programmes
Teaching resources

Student Lab
Virtual visits

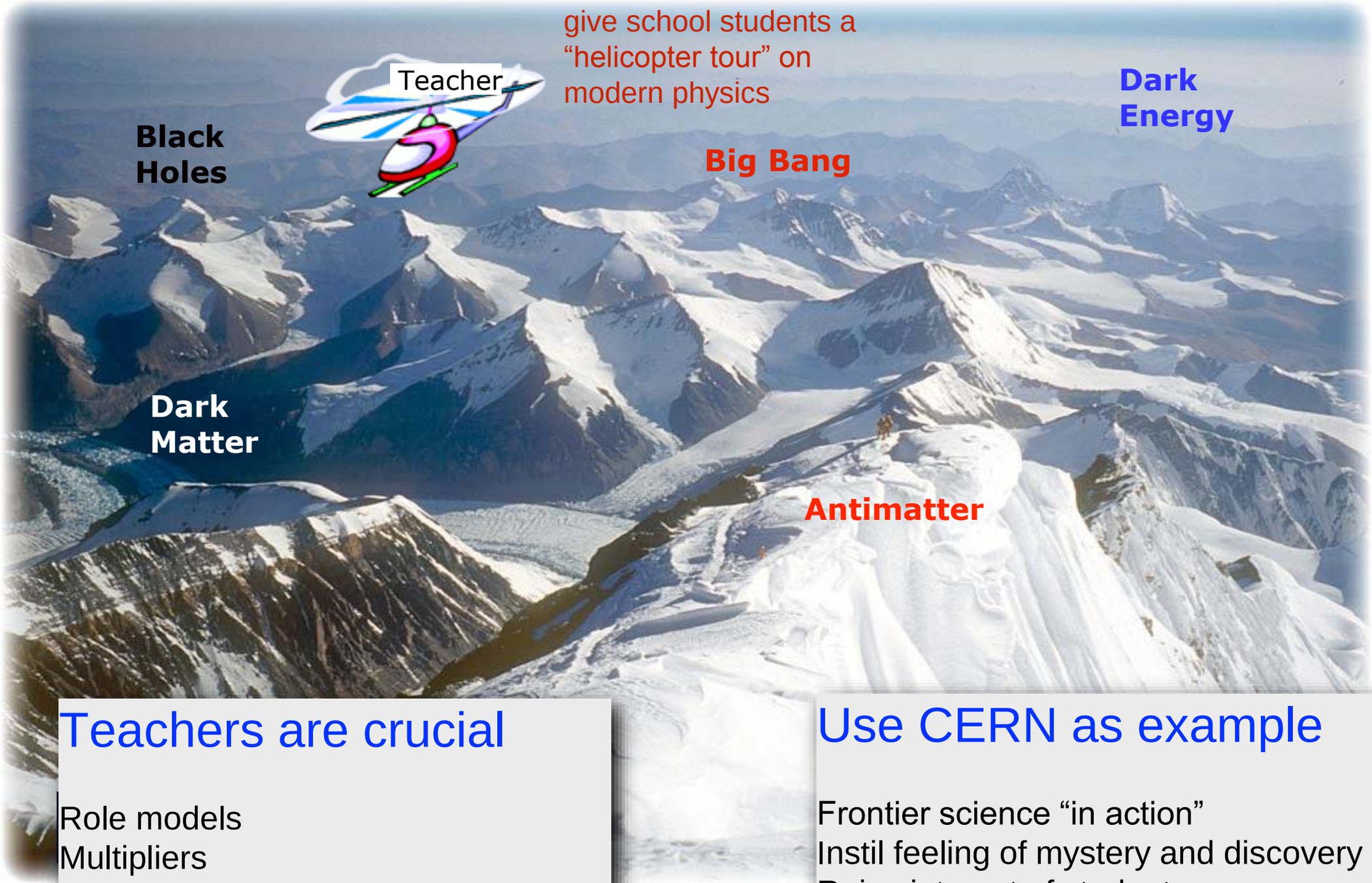
Why teachers ?

x 1000



CERN = Science in Action

CERN Teacher Programmes



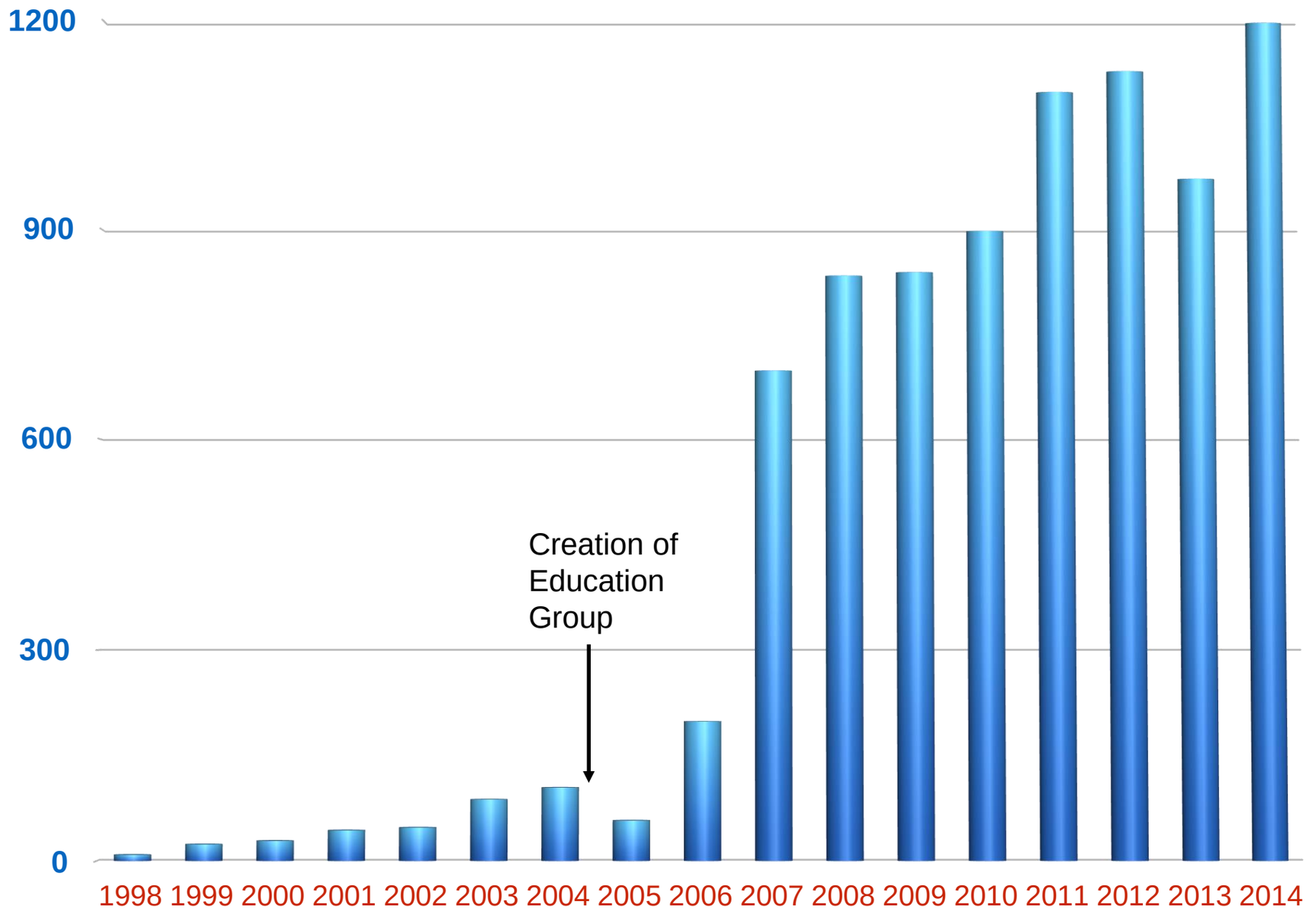
Teachers are crucial

Role models
Multipliers
Bring modern science to schools

Use CERN as example

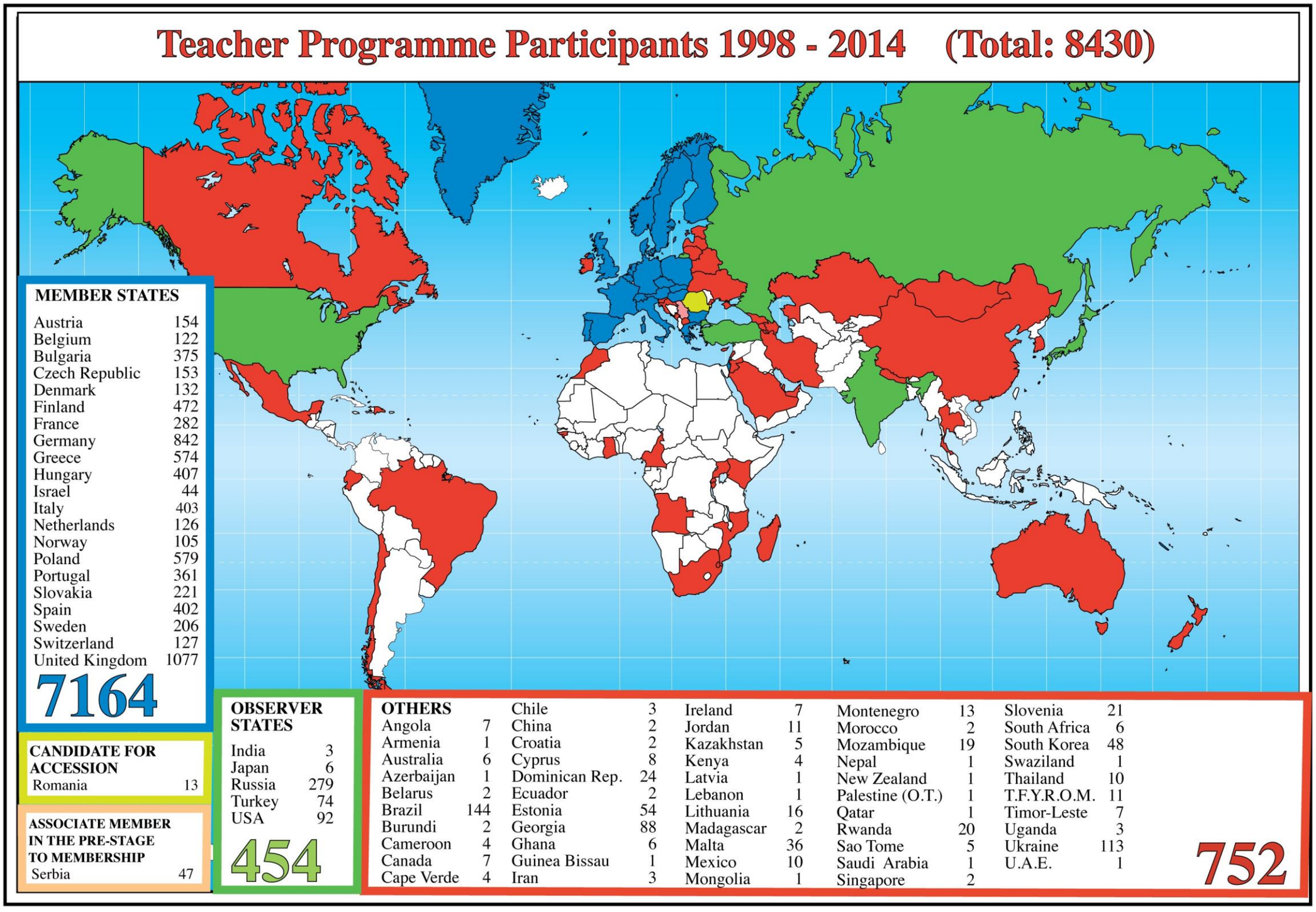
Frontier science “in action”
Instil feeling of mystery and discovery
Raise interest of students

Evolution of number of teachers at CERN (1998-2014)

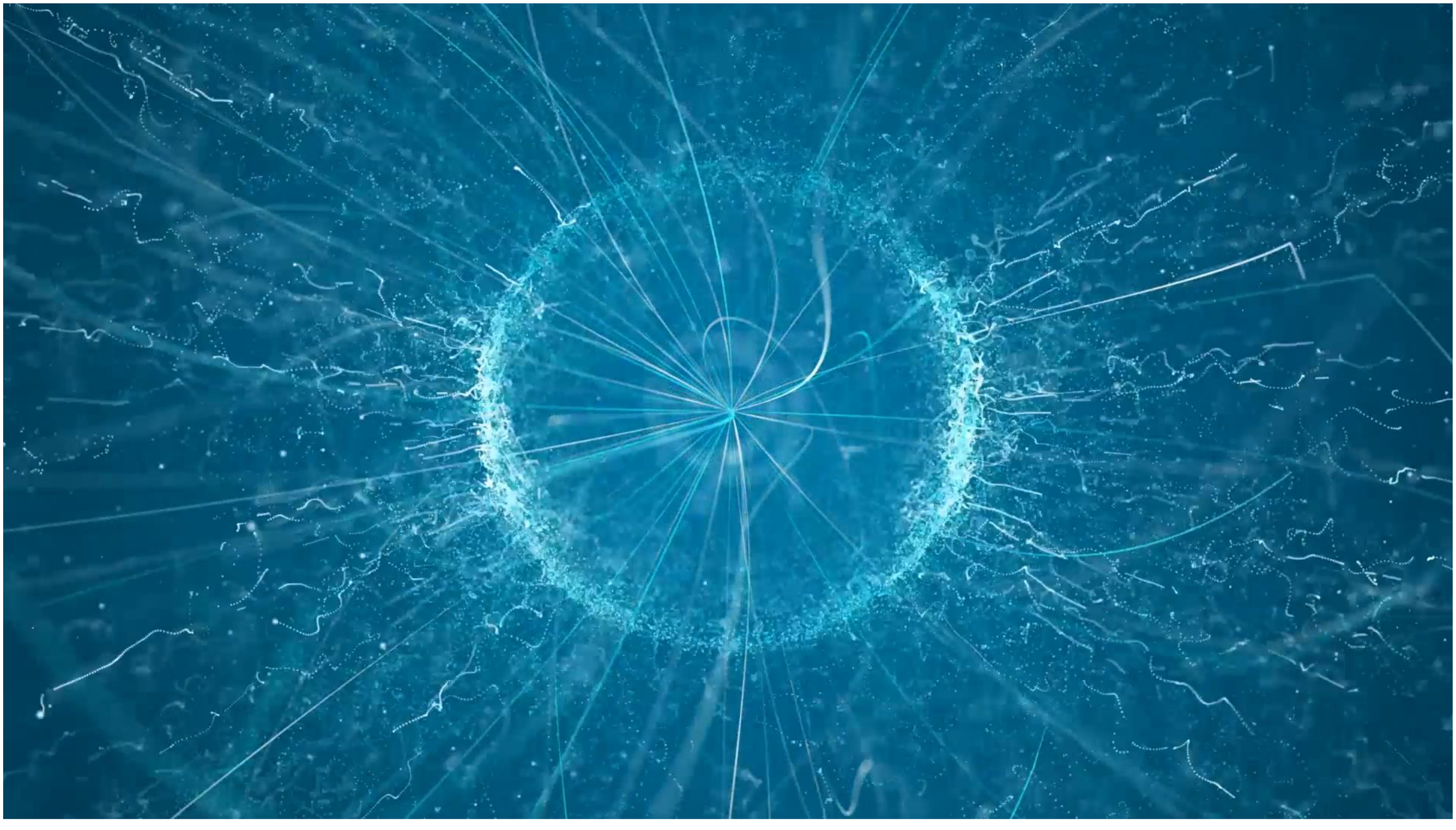


2014: 1200 teachers in 37 one-week programmes plus one 3-week programme

Total number of teachers at CERN (1998-2014)



Teaching resources: Animations



http://cern60.web.cern.ch/en/exhibitions/animations-1

S’cool Lab: Hands-on modern physics

Fundamental experiments and modern detector technologies

for high school students (1/2 day programme at CERN)

S’cool lab fact sheet

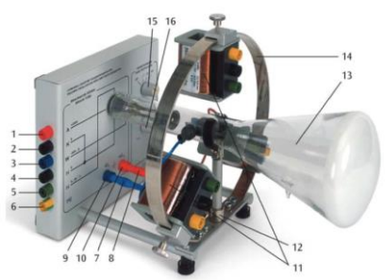
1/2 day of experiments

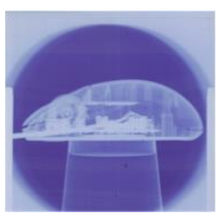
30 students

2 supervisors + teacher

Up to 3 different experiments

Classics	Detectors	Technologies
Planck constant	Cloud chamber	Superconductivity
Rutherford	Pixel detector	Particle trap
Franck-Hertz	Scintillators	X-ray unit
Electron tube	Cerenkov counter	PET technology
Hall effect		Radiation detection
Charge-mass ratio		



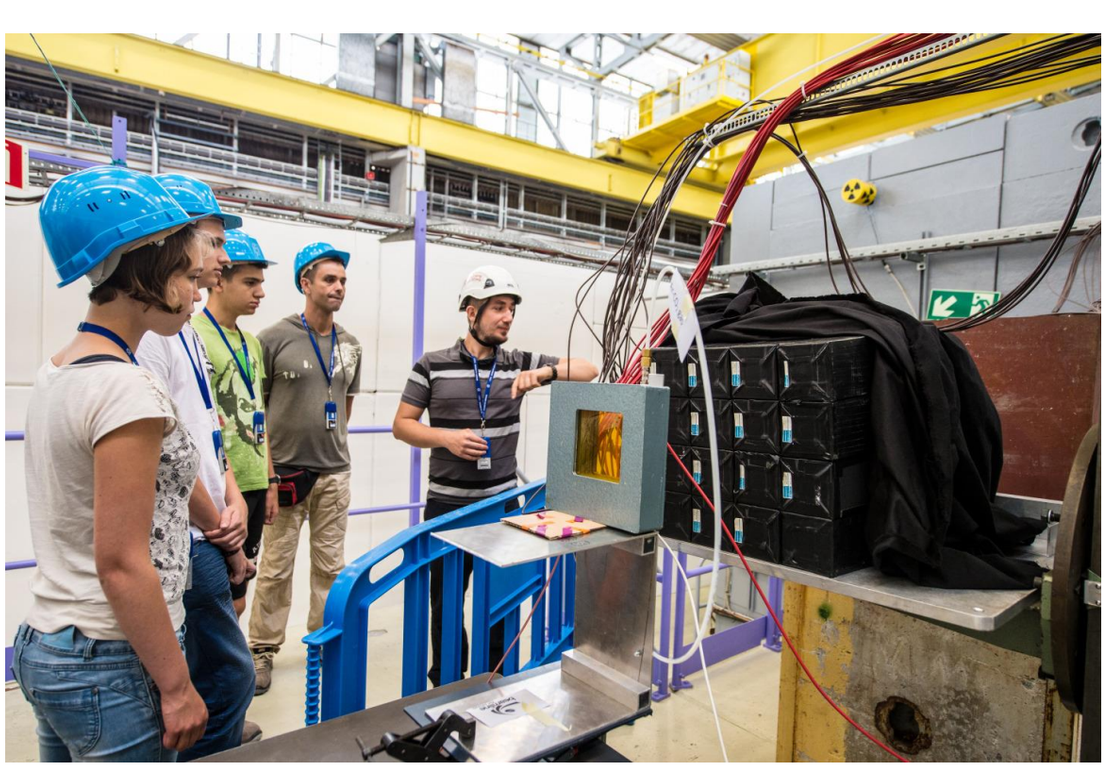


“Beam Line for Schools”

School student teams propose and conduct a **real** CERN experiment

BEAM LINE FOR SCHOOLS: BEYOND EXPECTATIONS

Out of 292 proposals for CERN's first ever "Beam line for Schools" contest, two teams of high-school students – Odysseus' Comrades from Varvakios Pilot School in Athens, Greece and Dominicuscollege from Dominicus College in Nijmegen in the Netherlands – were selected to spend 10 days conducting their proposed experiments at the fully equipped T9 beam line on CERN's Meyrin site. Dedicated CERN staff and users from across the departments have put in a huge effort to ensure the success of the project.



“BL4S” 2014

2 winning teams (GR, NL)

10 days of experimental work

“BL4S” 2015

2 winning teams (SA, IT)

Experiment in September

Virtual school visits

Video chats with schools

100-200 / year (increasing)

- Professional: Polycom/Tandberg
- Skype, EVO, Google+
- Excellent feedback

Google + ‘hangouts’

From ATLAS, CMS, CCC

- Questions and Answers
- Talking to ‘real’ LHC physicists !

Summary

CERN makes a large effort to communicate to its stakeholders

the general public, decision makers, media, scientists, teachers and schools

Education and Outreach programmes are very important
“indirect” means of communication

education = return on investment (education ministries); positive perception by general publi

CERN visit and exhibition programme

- guided tours (100,000+ visitors)
- six state-of-the art exhibitions
- several traveling exhibitions

CERN contributes to bringing modern physics to schools

- teacher programmes (1000+ teachers/year)
- teaching resources
- animations, graphics, interactive games