CERN-Teacher Programmes

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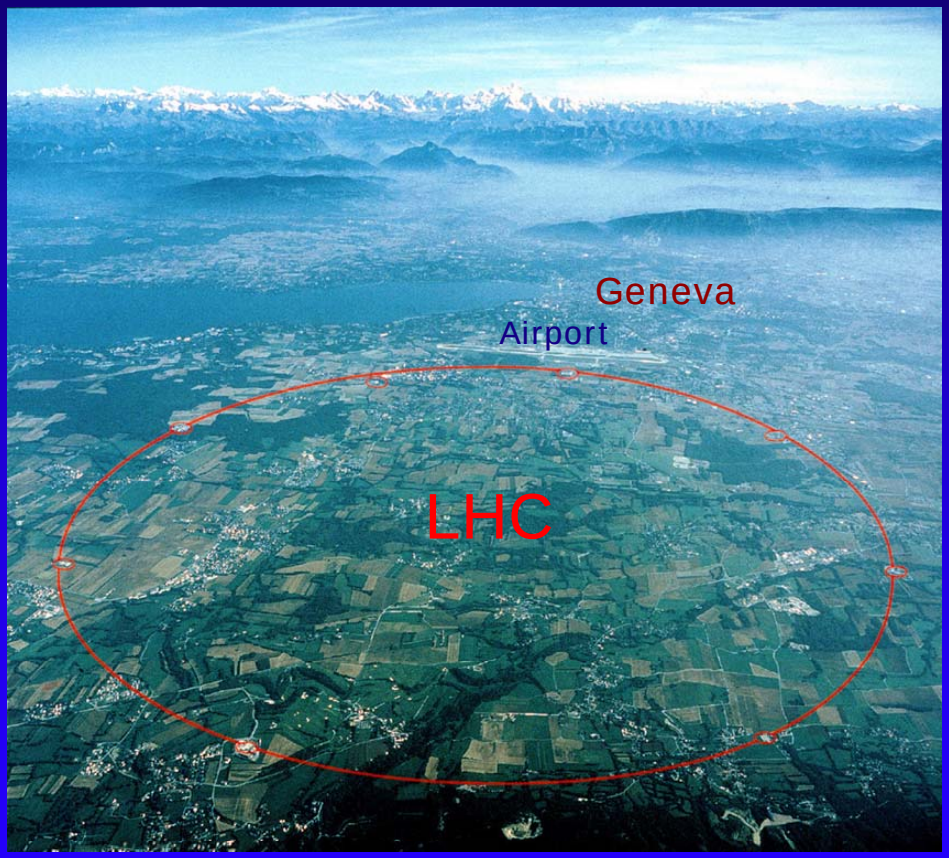
What is CERN ?

CERN is the largest science laboratory in the world
CERN has built the largest particle accelerator in history - the LHC
The LHC will produce particles that existed only shortly after the Big Bang



Who works at CERN ?

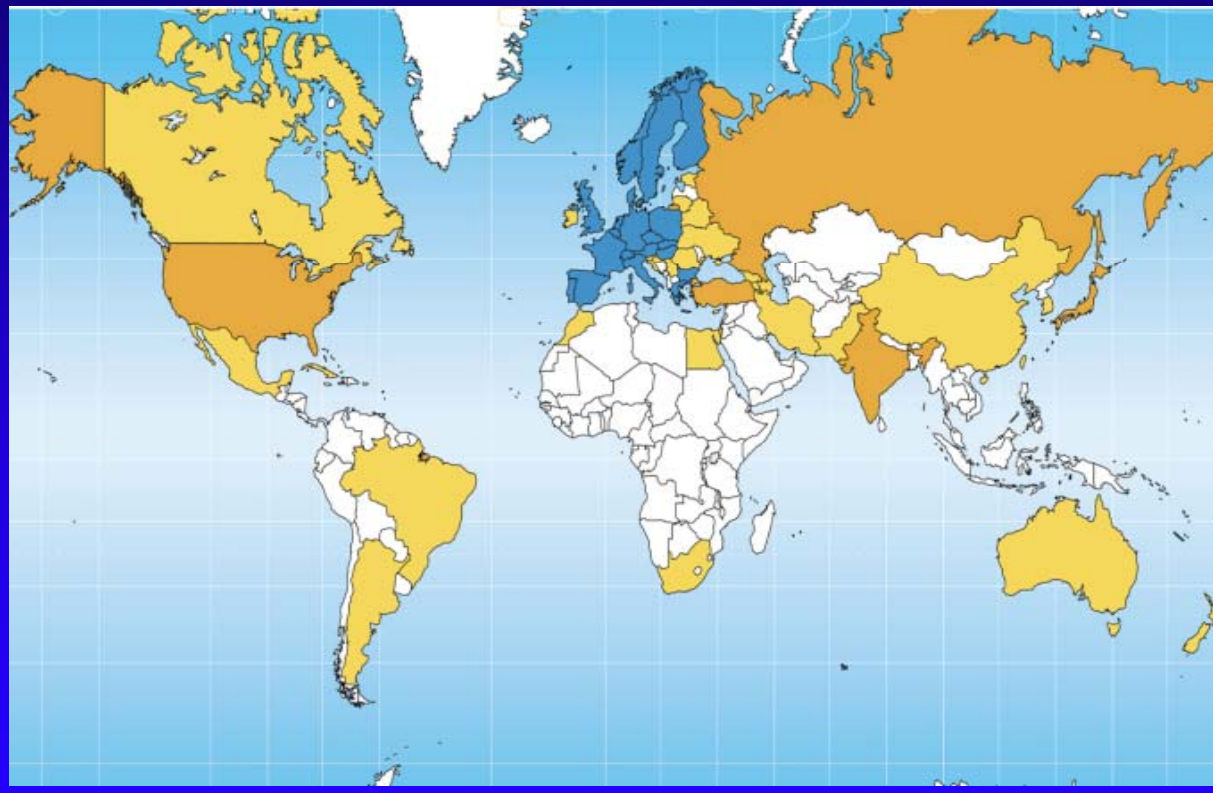
Scientists from 85 countries

2600 CERN Staff

+ 350 fellows +associates

7150 Visiting physicists

70 % from member states
25 % from observer states
5 % from other states



CERN has a broad range of communication activities

400-600 media visits per year (TV, newspapers, radio)

Visitor programme (60,000 visit request - 25,000 accepted - 50 % schools)

Permanent and temporary exhibitions (Microcosm, soon: 'Globe')

Open day (2004: 30,000 visitors)

Public webpages

Live webcasts

New: The Education Group

CERN teacher courses

Creation and provision of teaching resources

Video-"Chats" :

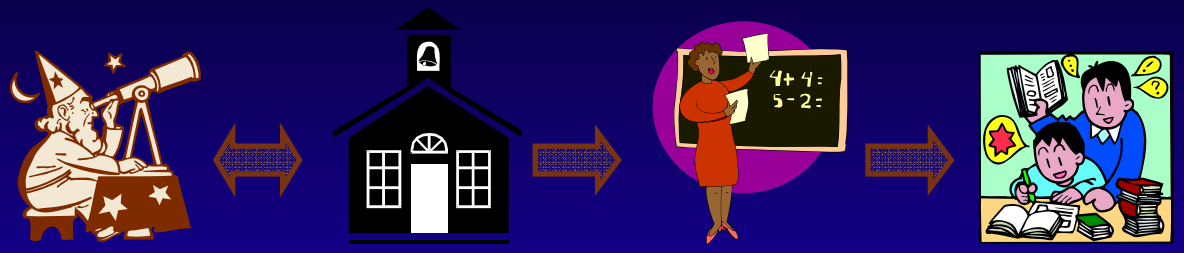
virtual meetings betwen CERN scientists and school classes

Web-Lectures (teacher courses, colloquia, seminars, etc)

Science In School Journal

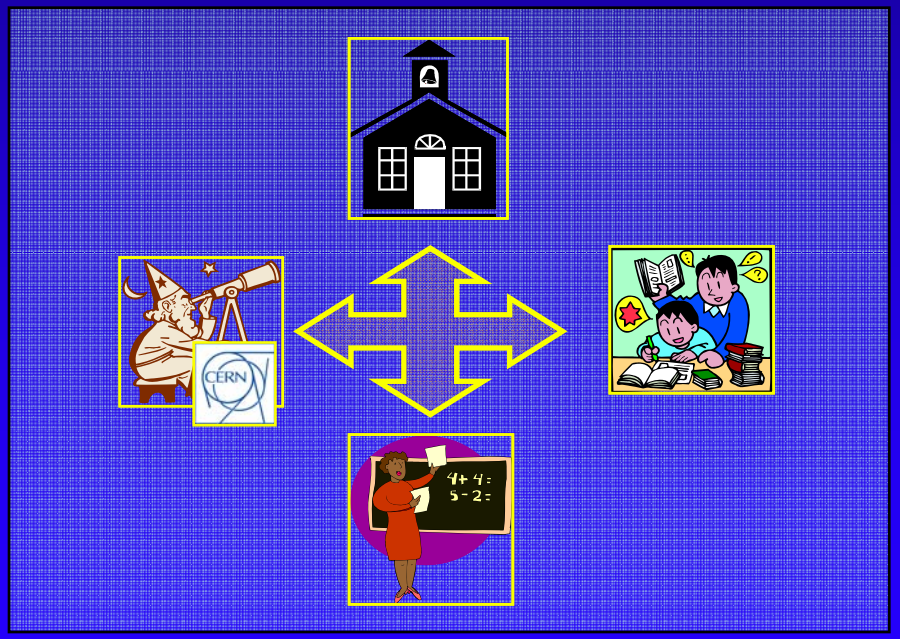
Bring modern research closer to schools

OLD



Research University School Teacher Students

NEW



What are we trying to achieve?

1: **RAISE INTEREST** OF STUDENTS IN MODERN SCIENCE -

Motivate them to continue scientific education at school
Help them to better understand the physical world
(Scientific literacy)

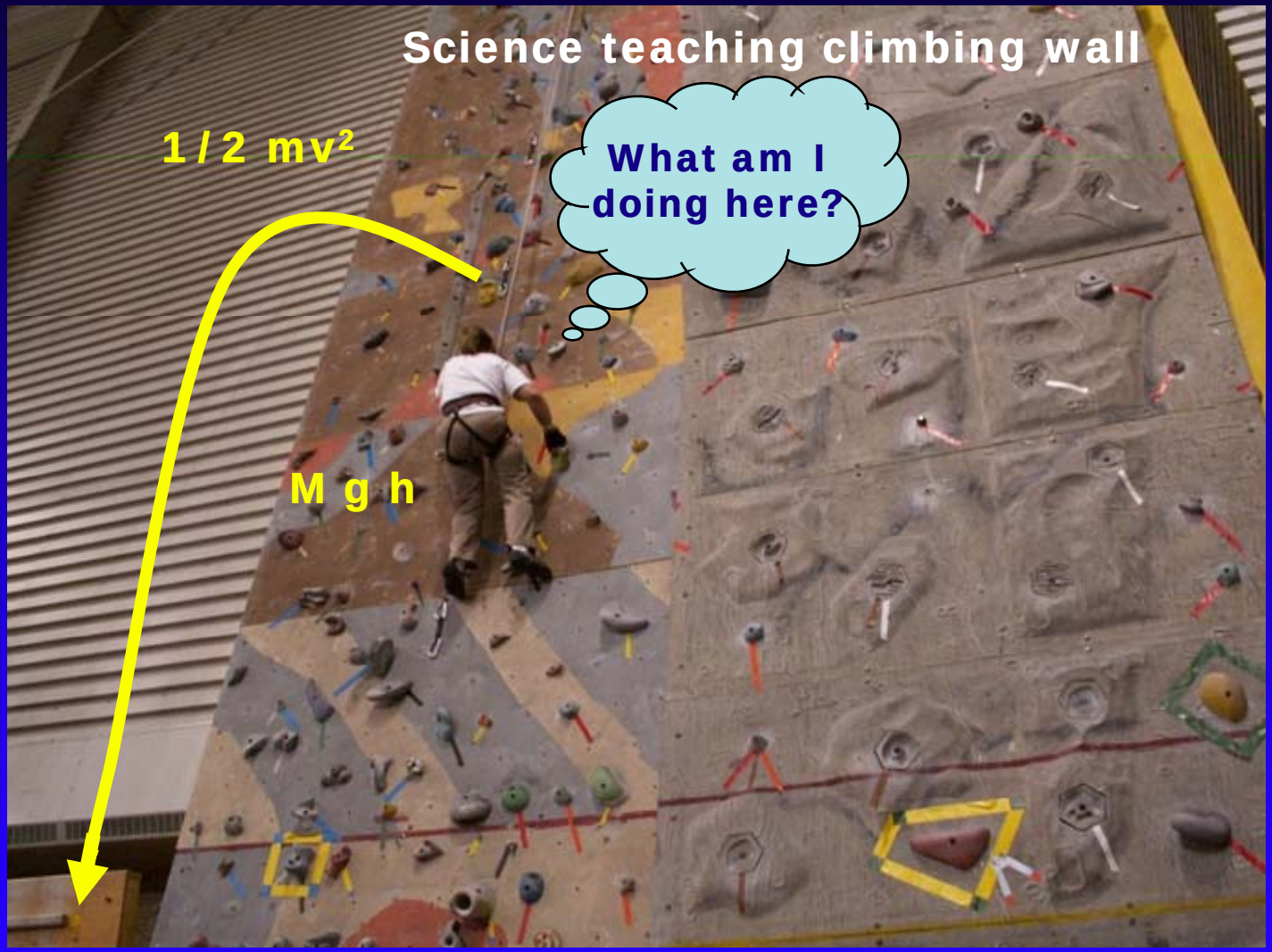
2: INSTIL A **FEELING OF MYSTERY AND DISCOVERY** POTENTIAL

Motivate them to take up physics at universities
(Future generation of researchers)

IT'S ... ALIVE !

How researchers view science

How school students view science



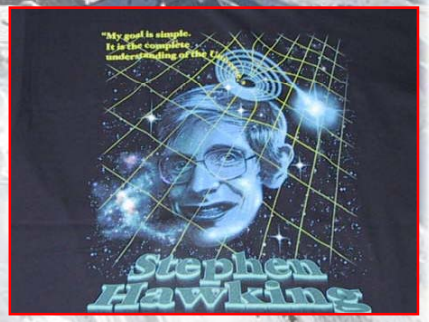
Take students on a sight-seeing tour …

The origin ….

Universe

Dark Matter

Antimatter



Black holes
Big Bang

180,000 copies per month

CERN teaching materials (web-based) can be used within existing syllabus

Goal: Link modern physics to school curriculum

Target

Topic	<12 yr	13-16	>16 yr	University
Mechanics	Inquiry Based learning	Mystery; Discovery potential	Discovery Potential; Model description	
Electro-magnetism				
Optics				
Thermo-dynamics				

CERN Teacher Programmes

International teacher school (3 weeks)

Fully funded by CERN for MS participants (programme, travel, accommodation)
Participants from US, Asia, South America (HELEN) funded externally
In English
In-depth overview, practical workshops, lesson plan development
International network of alumni teachers - still in touch after 5 years and more

National schools (1 week)

1-week programme for physics teachers from member states (free of charge)
External funding of travel, accommodation
In their mother tongue (speakers from the national community at CERN)
Enable networks between teachers inside country
Encourage contacts with national physics community

Content of CERN Teacher Schools

Lectures:

Particle Physics
Cosmology
Accelerators (LHC)
Detectors
Applications (IT, Medicine)

Guided tours:

LHC experiments
Antimatter factory (AD)
CLIC
Microcosm exhibition

Activities:

Interactive teacher lab
Educational Resources
Games, Quiz
Lesson reviews (Q+A)

Detailed programme depends on the duration of the school:
normally: 1 week

(International programme in Summer: 3 weeks)

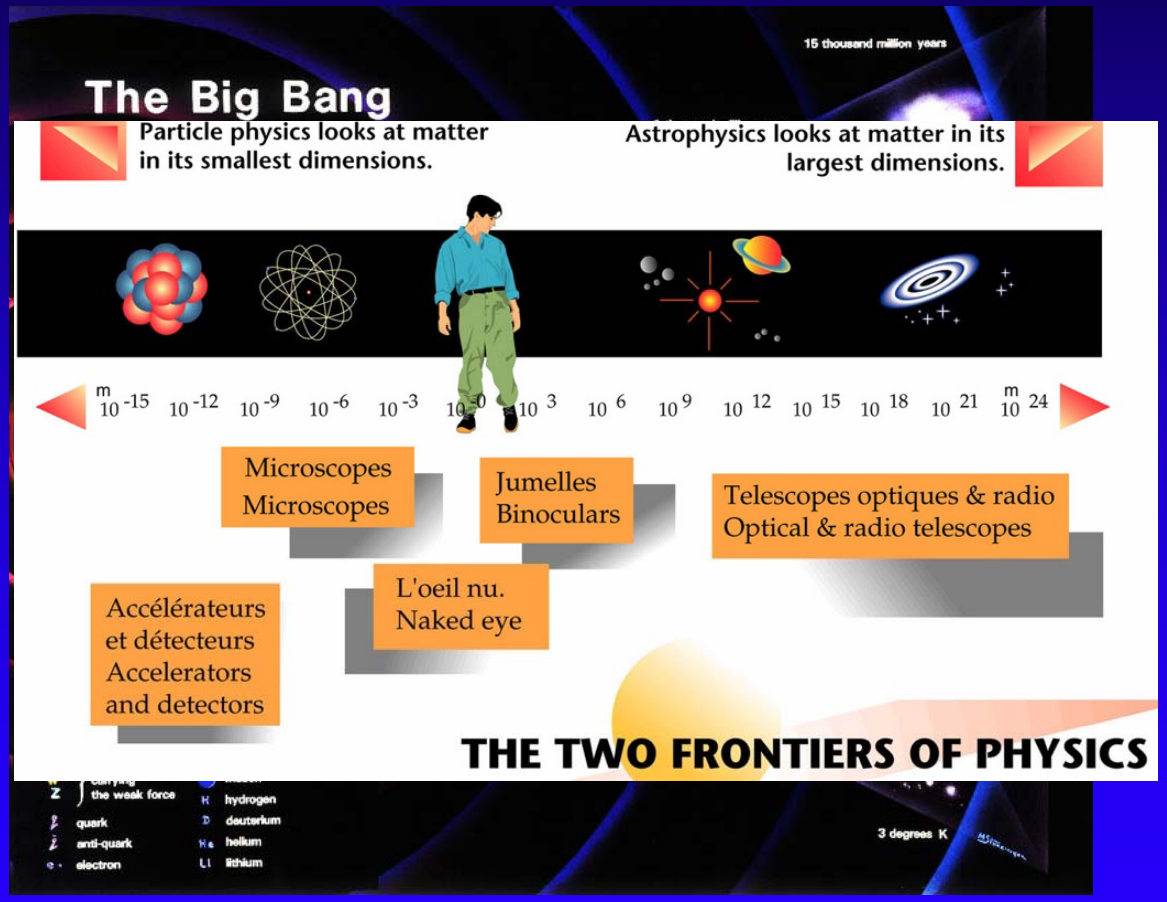
Overview 2007: 19 CERN Teacher Schools

Participants from	Language	Number	Date
Europe, World (HST,3 wk)	English	43	2 - 21/ 7 / 2007
Europe (PhT, 3 d)	English	50	March 2007
UK (Science Learning Centres, 3d)	English	48	10 - 13 / 4 / 2007
Poland (2 schools)	Polish	83	April, May 2007
Slovak Republic	Slovak	44	22 - 28 / 4 / 2007
Finland (4 schools)	Finnish	62	April, June 2007
Germany (3 schools)	German	120	June, Sep, Oct 2007
Spain (Catalonia)	Spanish	40	22 - 28 / 7 / 2007
Hungary	Hungarian	40	19 - 25 / 8 / 2007
Portugal	Portugese	40	9 - 15 / 9 / 2007
Denmark	*Danish*	*30*	*Oct 2007*
France	*French*	*30*	*Nov 2007*
Norway	*Norwegian*	*40*	*Nov 2007*

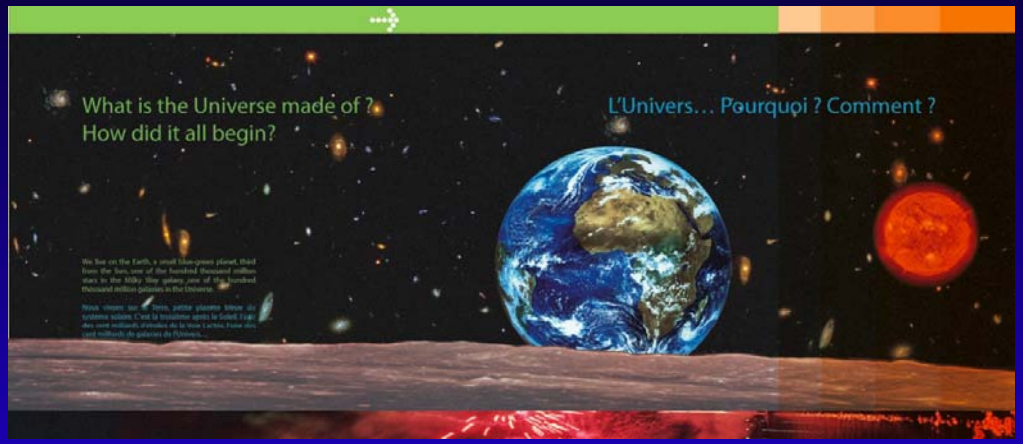
670 teachers

Educational Resources (1)

Graphics, Video clips

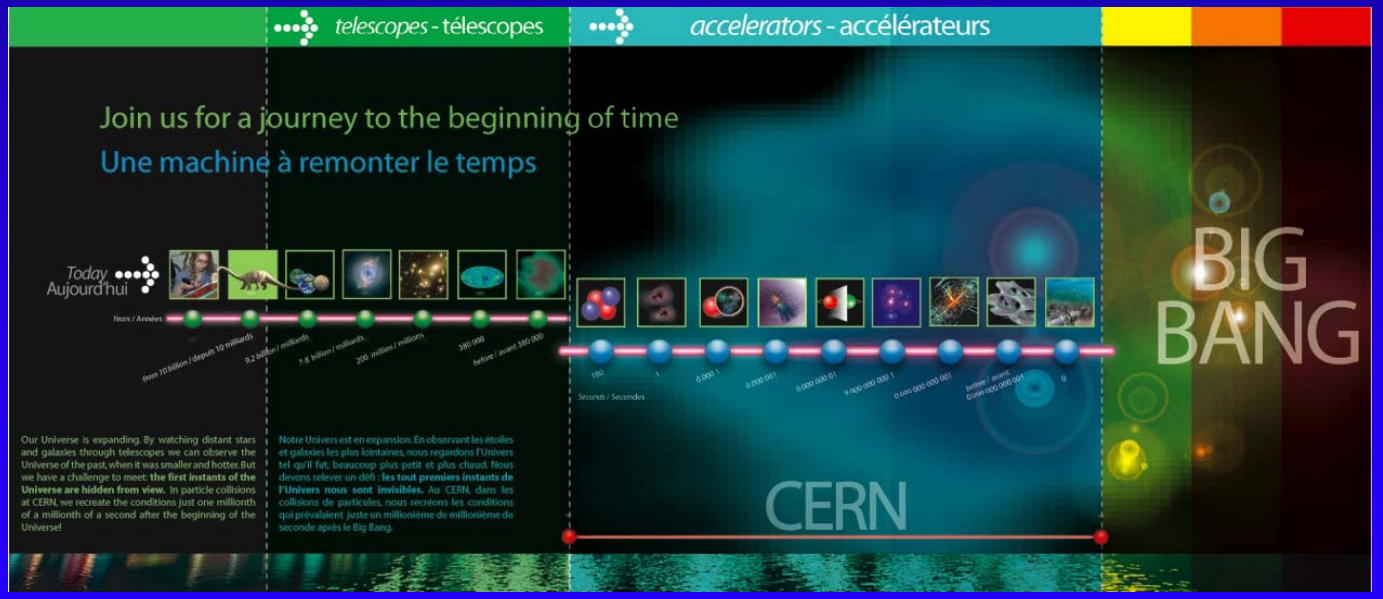


Evolution of the Universe



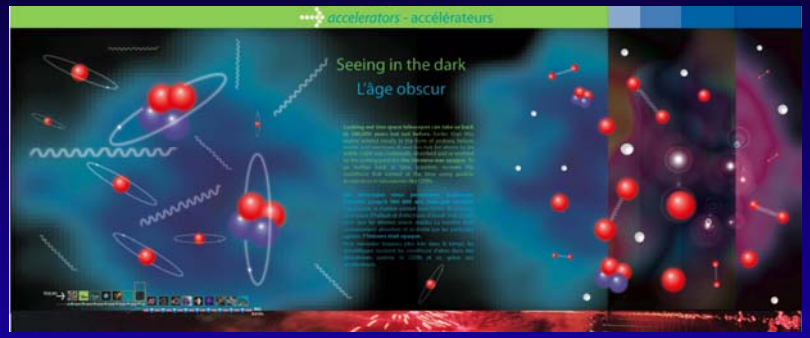
17 posters

Key concepts of
the evolution of matter



Evolution of the Universe (2)

Evolution of the Universe (3)



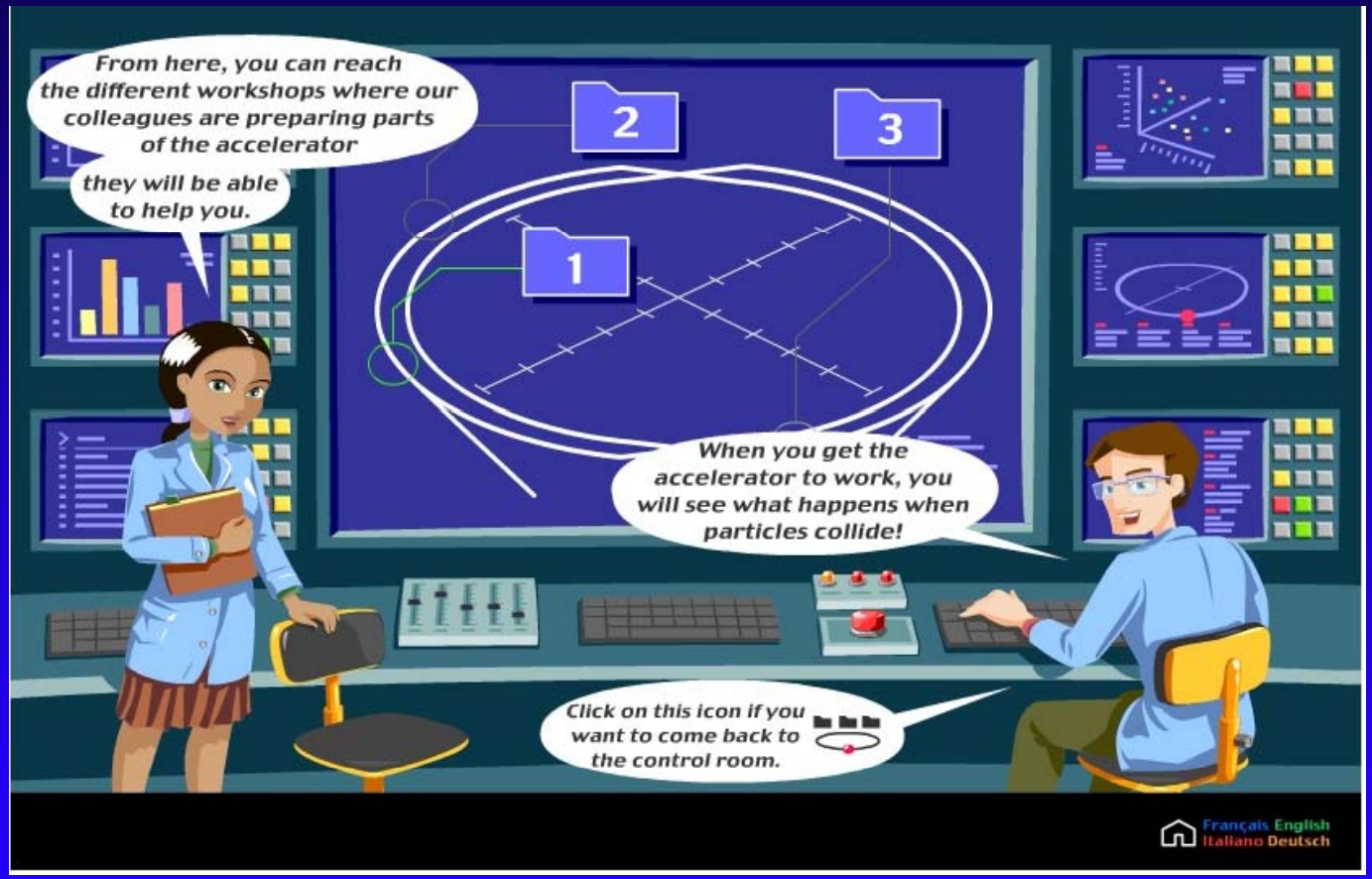
Educational Resources (2)

Video clips

QuickTime™ and a
H.264 decompressor
are needed to see this picture.

Educational Resources (3)

Games



microcosm.web.cern.ch/microcosm/LHCGame/LHCGame.html

Educational Resources (4)

Topical websites (e.g. Antimatter)

livefromcern.web.cern.ch/livefromcern/antimatter

Educational Resources Development

Teacher in residence	2-3 months grants Joint development of educational resources
Teachers lab	Particle physics experiments for school classes
Web-Site	Distribution of material Feedback