

Welcome!



What's CERN ?



CERN: founded in 1954: 12 European States

“Science for Peace”

Today: 22 Member States

~ 2300 staff

~ 1400 other paid personnel

~ 12500 scientific users

Budget (2016) ~1000 MCHF

Member States: Austria, Belgium, Bulgaria, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Israel, Italy, Netherlands, Norway, Poland, Portugal, Romania, Slovak Republic, Spain, Sweden, Switzerland and United Kingdom

Associate Member States: Pakistan, Turkey

States in accession to Membership: Cyprus, Serbia

Applications for Membership or Associate Membership:

Brazil, Croatia, India, Lithuania, Russia, Slovenia, Ukraine

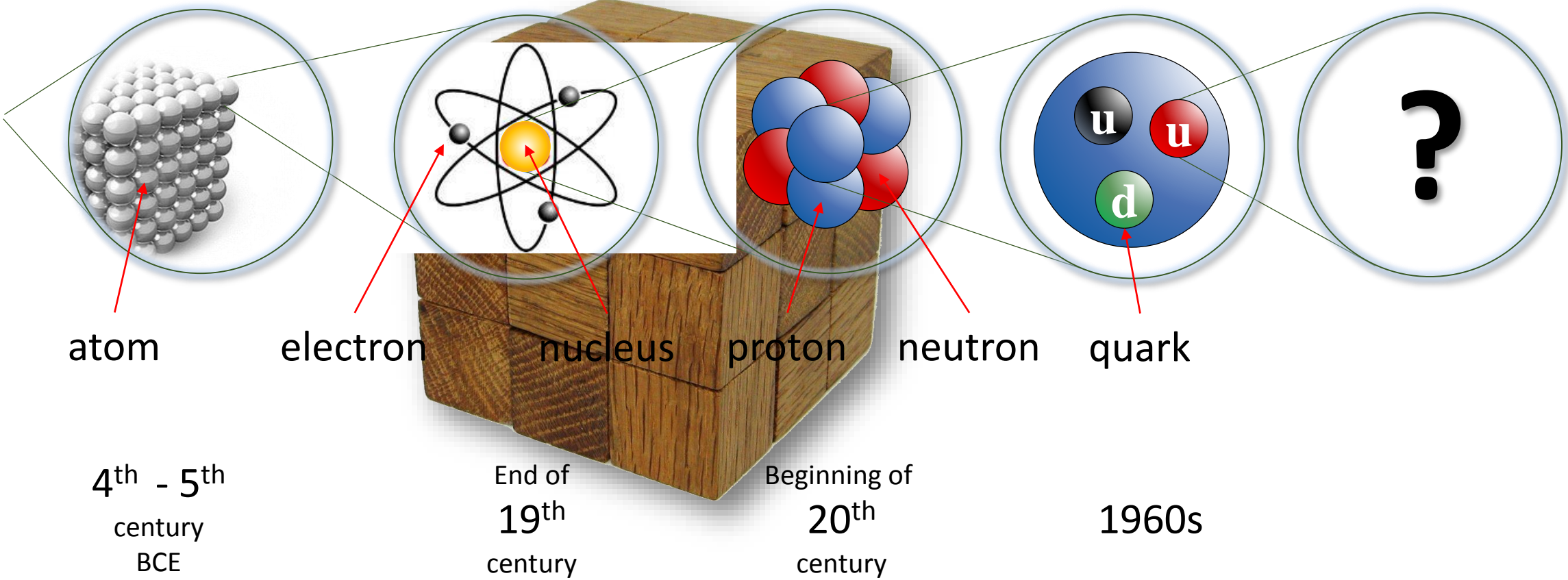
Observers to Council: India, Japan, Russia, United States of America; European Union, JINR and UNESCO



Fundamental research



What is the matter made of ?



Strækking Meddeiles

Images:
www.particlezoo.net

ORDINARY
MATTER

LEPTONS

QUARKS

ELE



POSITRON



ANTIPROTON



ANTINEUTRON



ANTIMUON



ANTITAU

MU

TAU



ANTI-UP
QUARK



ANTI-DOWN
QUARK



ANTI-STRANGE
QUARK



ANTI-CHARM
QUARK



ANTI-BOTTOM
QUARK



ANTI-TOP
QUARK

Strong force

Electro-magnetic force

Weak force

Gravity

4 forces

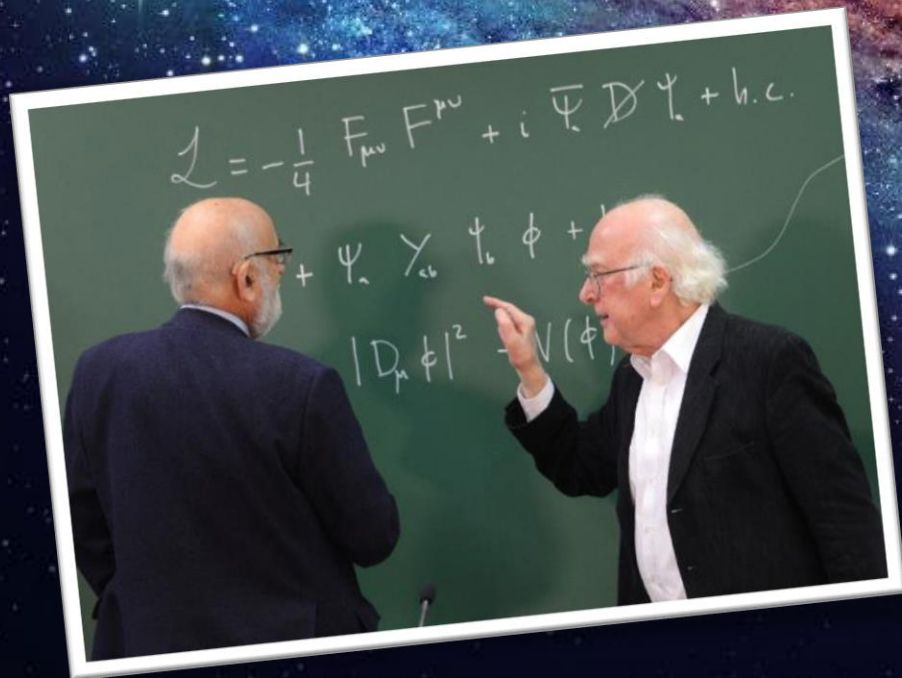
Answering questions...

Antimatter ?

Higgs ?

Dark matter ?

Quark-gluon plasma ?



Collaborate



Educate



CERN

How does it work?



Largest machine on Earth



LHC Accelerator

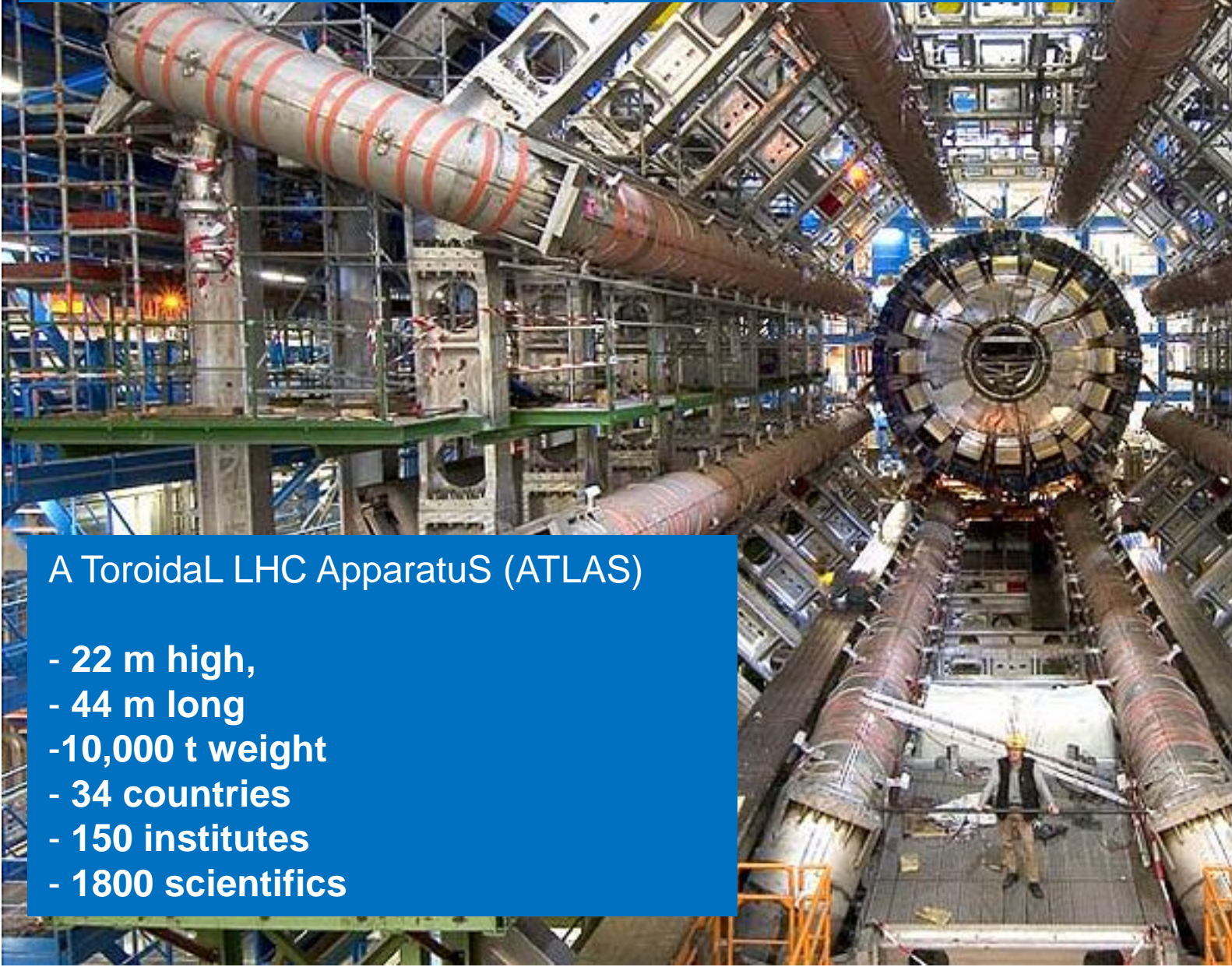


The most powerful magnets

The highest vacuum

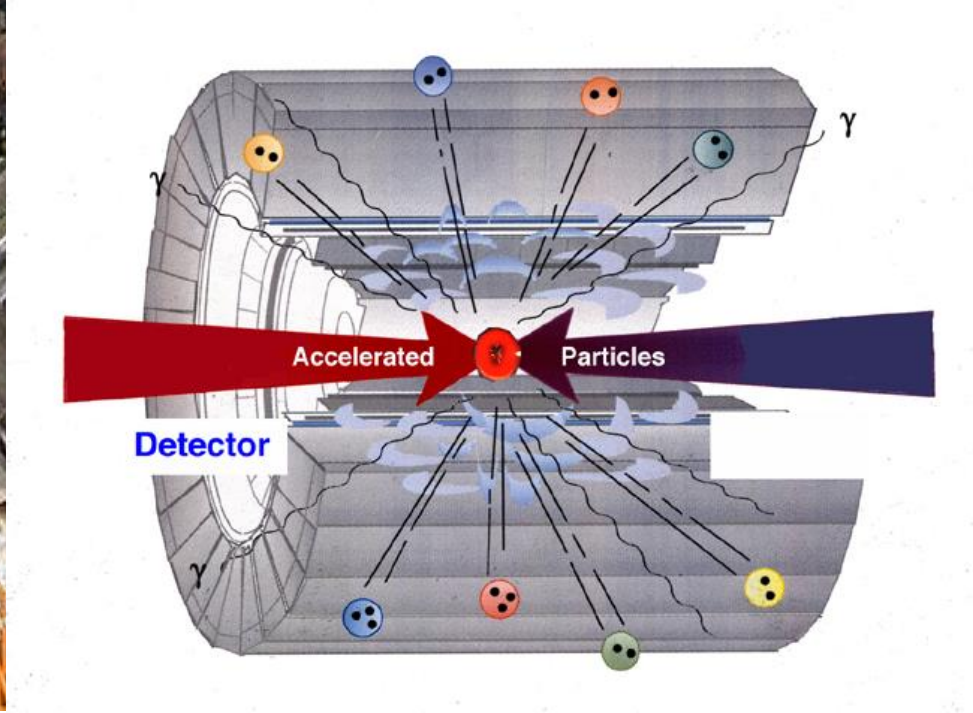
The coldest temperature

The largest detectors

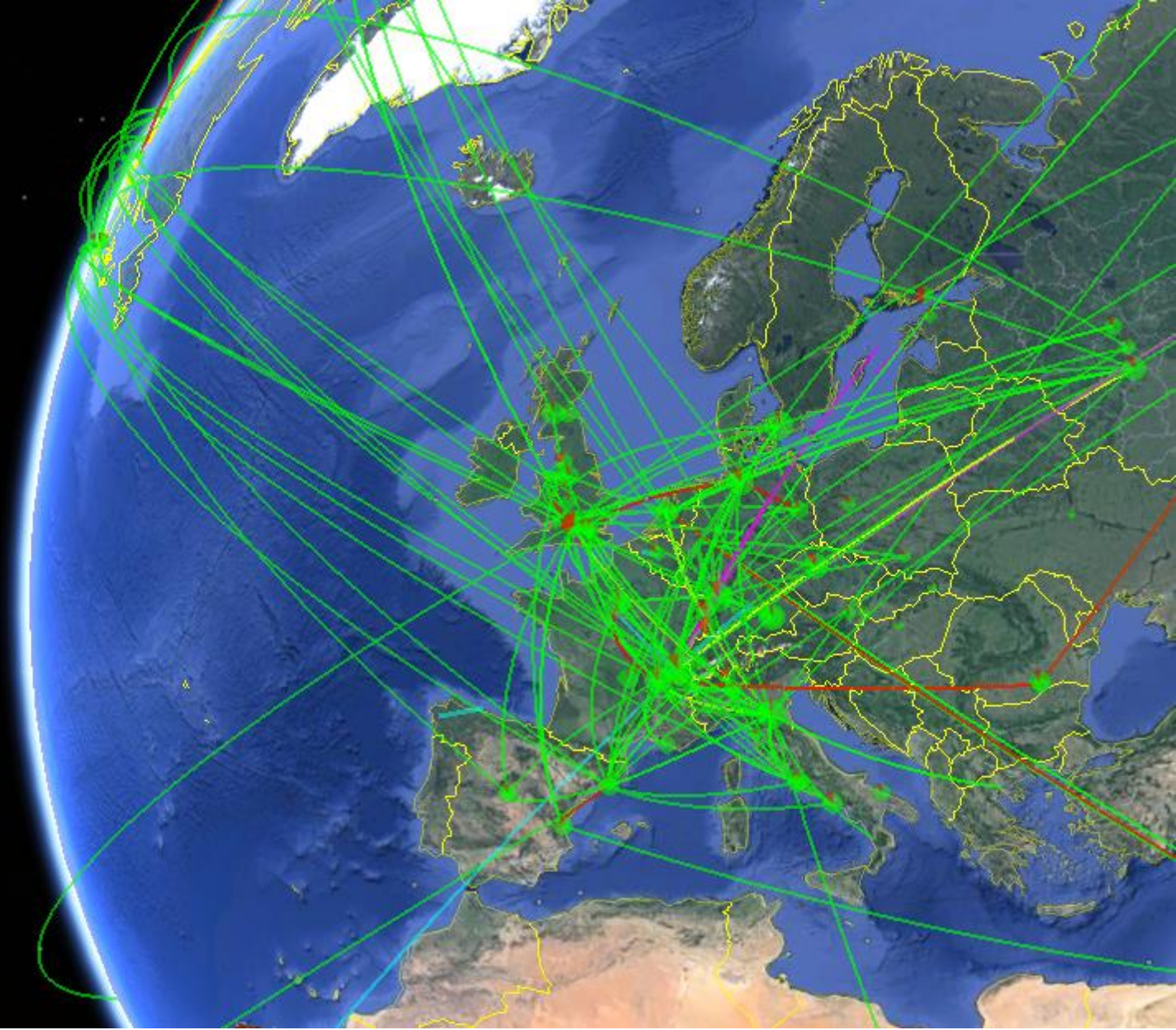


A Toroidal LHC Apparatus (ATLAS)

- 22 m high,
- 44 m long
- 10,000 t weight
- 34 countries
- 150 institutes
- 1800 scientifics

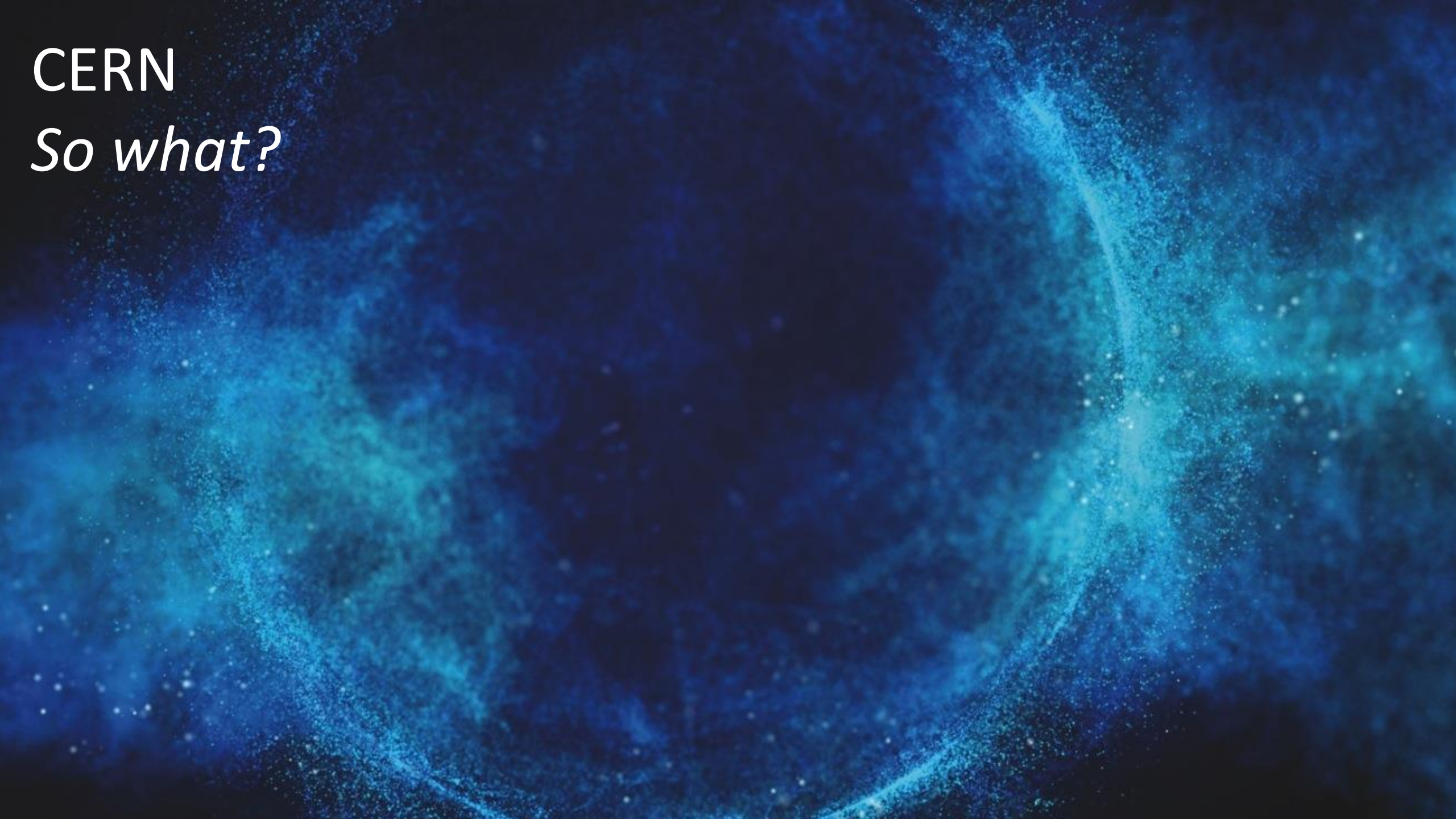


The
largest
computing
grid

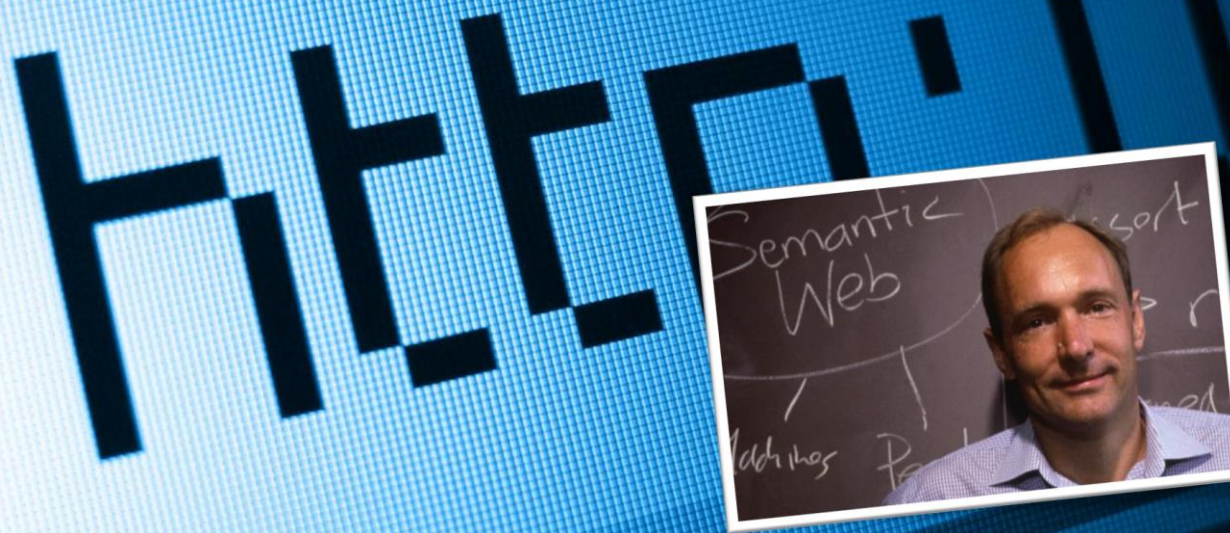


CERN

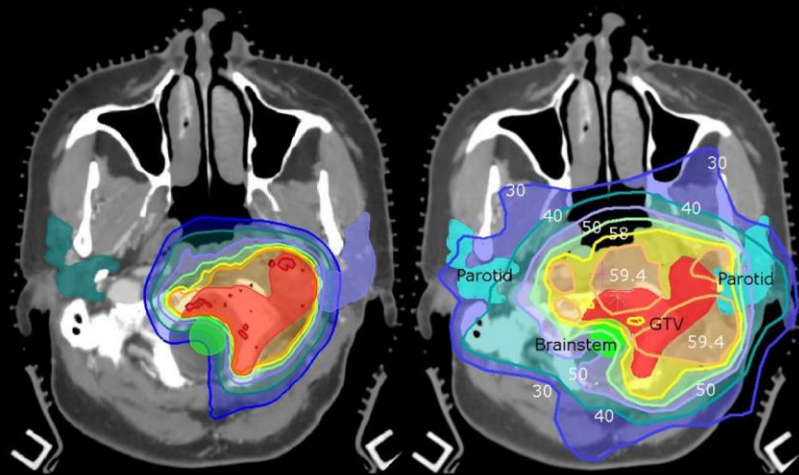
So what?



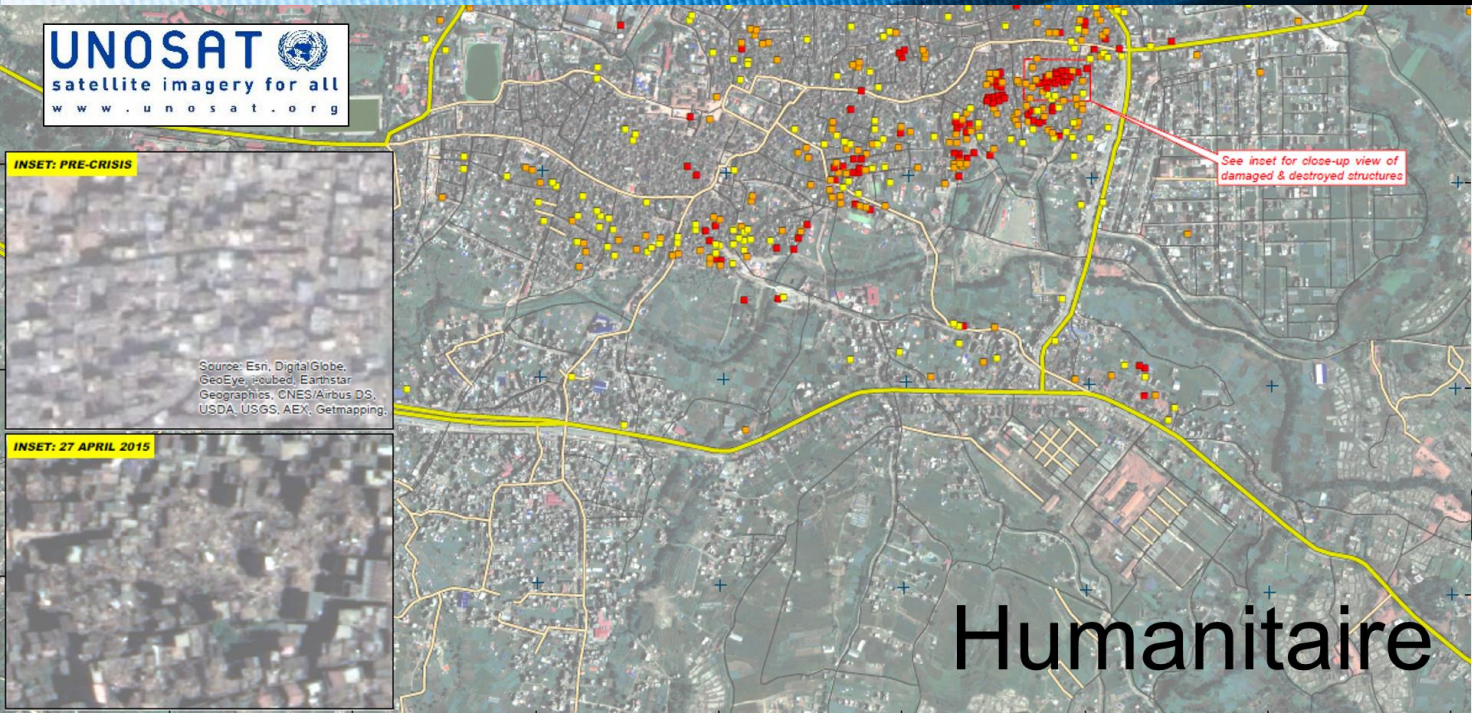
World Wide Web



Applications médicales



UNOSAT
satellite imagery for all
www.unosat.org



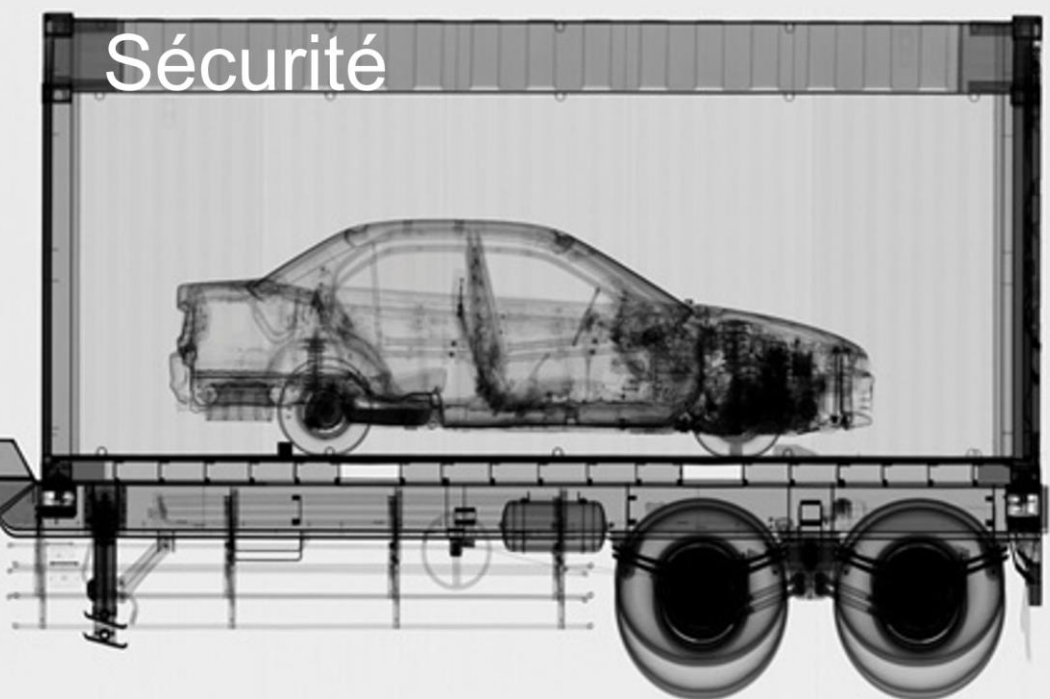
INSET: PRE-CRISIS

Source: Esri, DigitalGlobe, GeoEye, iacubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping,

INSET: 27 APRIL 2015

Humanitaire

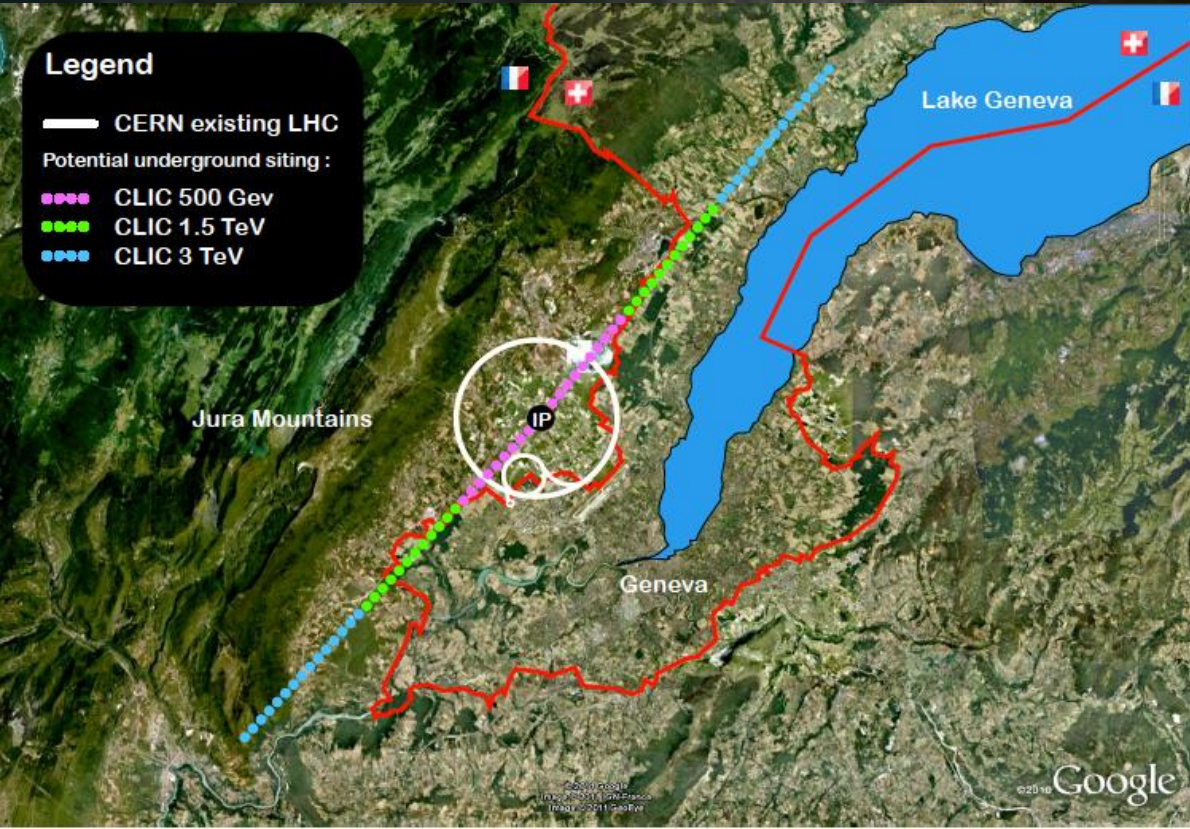
Sécurité



CERN

What's next?





International collaboration working on a concept of linear machine to collide e^-/e^+ up to several TeV

Designed to be built in stages

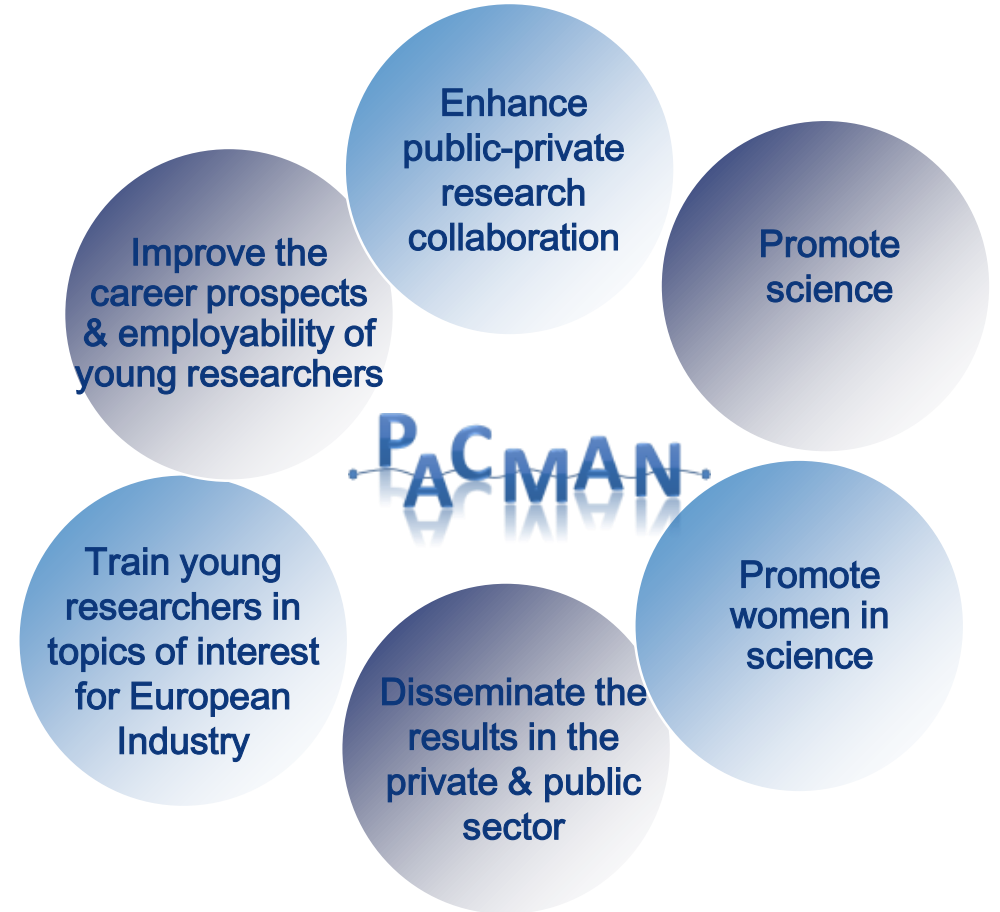
Feasibility demonstrated

Design under optimization

PACMAN



- Marie Curie program: EC funds (~ 2.6 M€)
 - Improve career perspectives of students
 - Make research careers more attractive
- PACMAN = Innovative Doctoral Program
 - Management at CERN
 - 10 students working towards a PhD
 - Secondment of at least 3 months in industry



PACMAN

Supervisory Board

CERN,
HEXAGON METROLOGY, ETALON, ELTOS, METROLAB, DMP, SIGMAPHI, NI
PISA univ., CRANFIELD, SANNIO univ., LAPP, ETHZ, IFIC, SYMME, Tech. Univ. of Liberec

Management team

WP0 Management
H. Mainaud Durand

WP5 Training
N. Catalan Lasheras

WP6 Diss & Outreach
M. Modena

Communication & admin. tasks
T. Portaluri

WP1 Metrology & Alignment
H. Mainaud Durand



WP2 Magnetic Measurements
S. Russenschuck



WP3 Precision mech. & nano-positioning
M. Modena



WP4 Microwave Technology
M. Wendt



Ambitious project to improve the precision of alignment of CLIC components

Solutions developed on individual & global test-setups

Tools & methods to be extrapolated on other projects

Some links...

Information : www.cern.ch
CERN TV : youtube.com/cern
Recrutment : www.cern.ch/jobs
CLIC project: <http://clic-study.web.cern.ch/>
PACMAN project: <http://pacman.web.cern.ch/>

Thank you very much

We wish you a very nice day at CERN!!!