

The background of the slide is a complex, abstract network diagram. It consists of numerous nodes, represented by small circles, connected by thin, grey lines. Some nodes are larger and more prominent, such as a large white circle with a black outline at the bottom center and several others in the upper left. The lines form a dense, interconnected web that spans the entire width of the slide, with some lines curving and looping back on themselves. The overall aesthetic is technical and modern, suggesting a focus on data, networks, or complex systems.

Introduction for summer students

2016



CERN: A UNIQUE
ENVIRONMENT IN WHICH
TO PUSH TECHNOLOGIES
TO THEIR LIMITS

What is CERN?

European Organization for Nuclear Research

~ 2300 staff
~ 1050 other paid personnel
~ 11000 users
Budget ~1100 MCHF

Founded in 1954

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

Candidate for accession: Romania

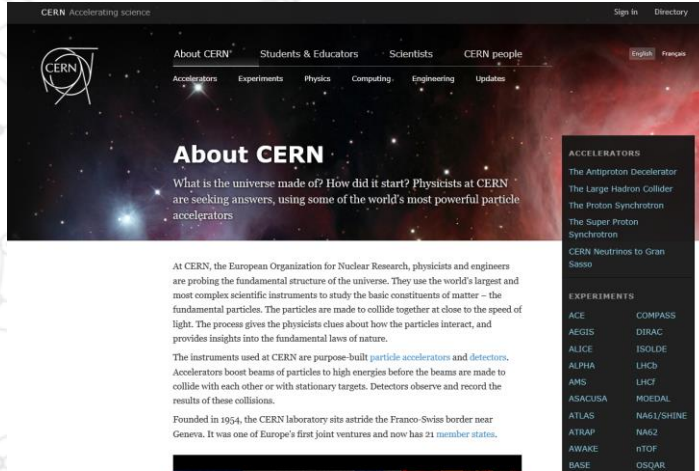
Associate Members in the Pre-Stage to Membership: Cyprus, Serbia,

Associate Members: Pakistan, Turkey

Observers to Council: India, Japan, Russia, United States of America, the European Commission, Joint Institute for Nuclear Research and UNESCO



CERN Structure



<http://home.cern>

<http://home.cern/about>

Beams Information Technology

Site Management and Buildings

Human Resources  Engineering Technology

Theoretical physics

Site Management and Buildings

Experimental physics

Industry, Procurement and Knowledge Transfer

CERN Accelerating science Sign in Directory

IT Information Technology Department

[about us](#) [services](#) [service status board](#) [for IT members](#) [help](#)

CERN Data Centre
Facts & figures, photos, access and visits.

Computer Security
Computing Rules, advice, training and security services.

Getting Started
How to set up your computing environment.

Health & Safety
Risks and recommendations for the IT environment.

Help
Service Desk by phone, by e-mail and the online FAQ.

Projects
[WLCG](#), [openlab](#), [EU projects](#) and more.

Services
IT services, resources and information.

What's On
Meetings, conferences, newsletters, colloquia, training and more.

SERVICE LEVEL STATUS

- Up Services for physics
- Up Worldwide LCG
- Up Networking
- Up Infrastructure
- Up Windows Services
- Up Mail and Web
- Up Databases

quick tools

everyday
[Account Management](#)
[Desktop & laptop hardware](#)
[Mac](#)
[Linux](#)
[Windows \(NICE\)](#)
[Printing Services](#)

conferencing
[Audio-conferencing](#)
[Vidyo](#)
[Room booking](#)
[Meetings \(InDico\)](#)

connectivity
[eduroam](#)
[Visitor laptop registration](#)
[Network portal](#)
[Wireless](#)
[e-mail](#)
[Telephones](#)
[Remote connection](#)

monitoring
[IT Service Status Board](#)
[Service Level Status](#)
[Lemon](#)
[Network](#)
[LHCOPN](#)

NEWS
SEE ALSO [IT NEWS FOR EXPERIMENTS](#).

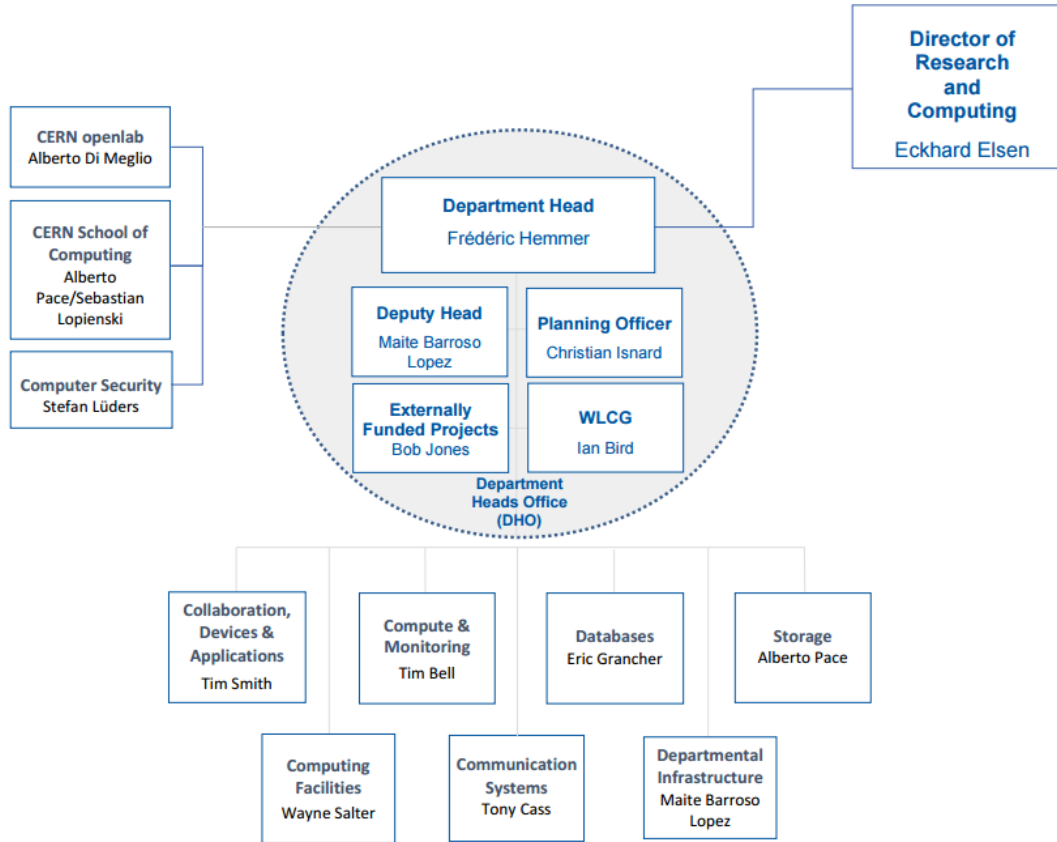
[CERN switches to Comic Sans style | 1 Apr 2014](#)

[Mac OS X 10.9.2 fixes critical SSL bug | 26 Feb 2014](#)

[Mac OS X 10.9.2 fixes critical](#)

<http://information-technology.web.cern.ch/>

IT Department Structure



CERN openlab in a nutshell

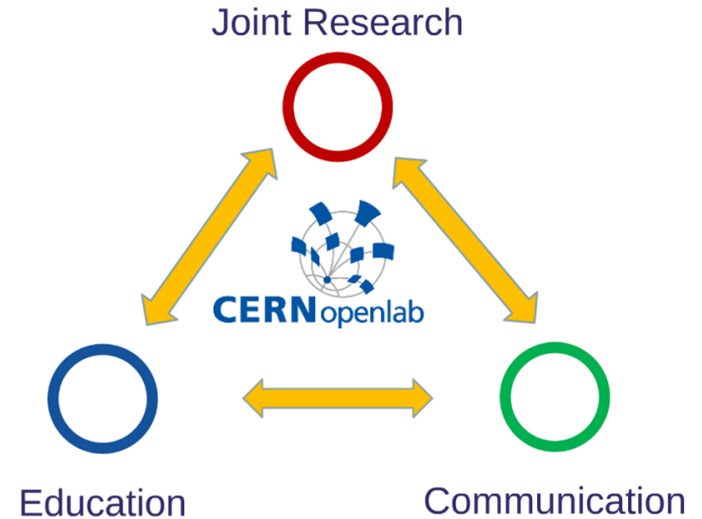
A science – industry partnership to drive R&D and innovation with over a decade of success

- **Evaluate** state-of-the-art technologies in a challenging environment and improve them

- **Test** in a research environment today what will be used in many business sectors tomorrow

- **Train** next generation of engineers/employees

- **Disseminate** results and outreach to new audiences



Partners



Contributors



Associates



ComTrade



Yandex

Research



Kazan
Federal
University



Newcastle
University



EMBL-EBI



Engagement of multi-disciplinary

CERN EXPERTS collaborating on joint projects

Association with the

WORLD'S LEADING INNOVATORS in the IT industry

DISSEMINATION OF RESULTS

as success stories to a wide range of audiences

CERN openlab Phase V

Recruitment channel for **HIGHLY SKILLED**

AND TRAINED young IT specialists

On-site **VISITS**

15 Years of Successful Collaboration

Set-up
2001

I
2003

II
2006

III
2009

IV
2012

V
2015

15 Years
Anniversary

2016



CERN openlab Collaboration Board 2016

The community



Logos of various industry and academic partners:

- intel
- ORACLE
- SIEMENS
- CISCO
- rackspace. the open cloud company
- SEAGATE
- IDT
- BROCADE
- Vandex
- ComTrade
- HUAWEI
- GSI
- EMBL-EBI
- Kazan Federal University
- Newcastle University
- innopolis university



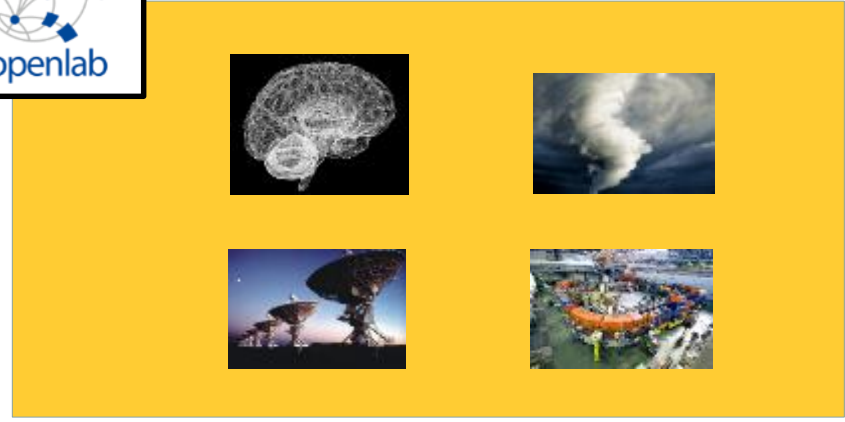
Logos of various research and funding organizations:

- EIROforum
- CERN
- ceesa
- European Molecular Biology Laboratory
- NEUTRONS FOR SCIENCE
- ESRF
- ES+
- European XFEL
- EUROfusion

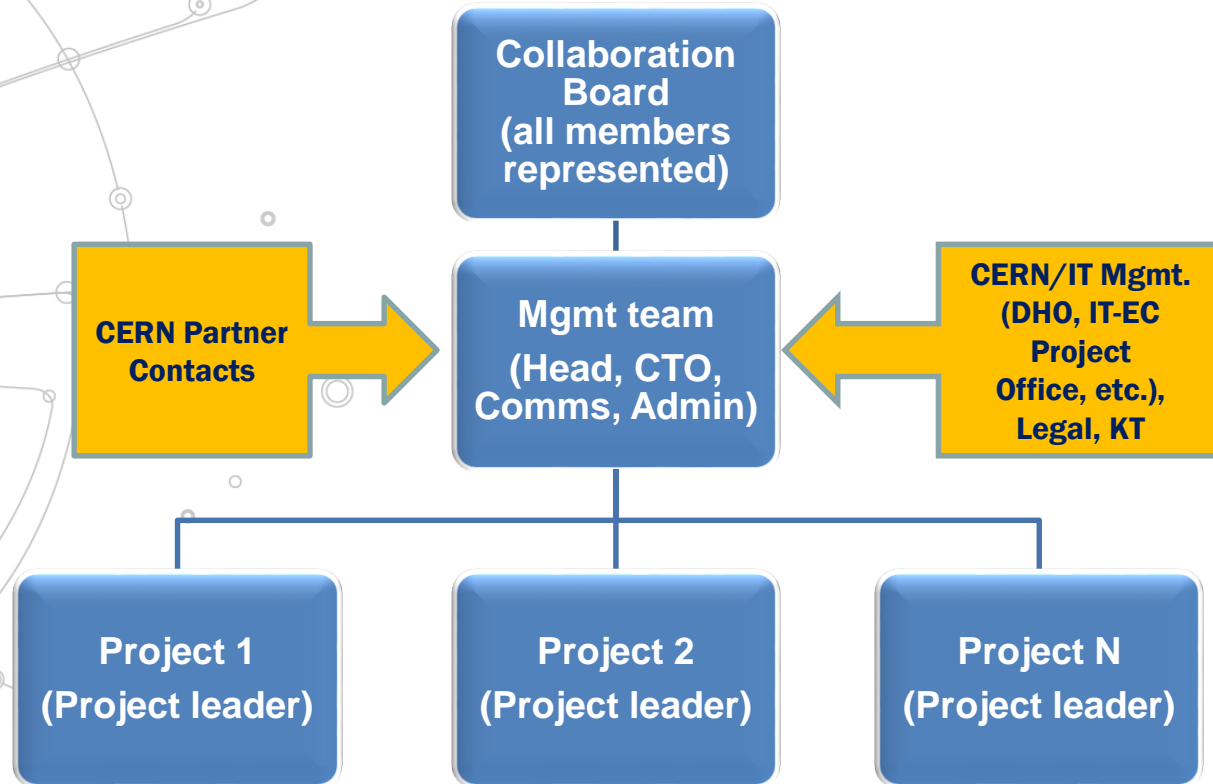



Logos of LHC computing and detector collaborations:

- WLCG Worldwide LHC Computing Grid
- IT
- EN
- CMS
- ALICE
- LHCb
- ATLAS



How do we manage it?



The Team

Maria Girone
CERN openlab
CTO



Kristina Gunne
CERN openlab
Admin/Finance Officer



Fons Rademakers
CERN openlab
CRO



Sotirios Pavlou
Junior Admin Officer



Maria-Athanasia Pachou
Junior Communication
Officer



Melissa Gaillard
IT Department
Communication Officer



Alberto Di Meglio
CERN openlab
Head



Andrew Purcell
CERN openlab
Communication Officer



The Technical Programme



Data acquisition and filtering
Collecting data



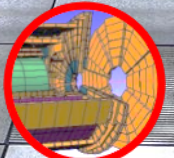
Networks and connectivity
Connecting resources



Data storage architectures
Storing and serving data



Compute management and provisioning (cloud)
Managing resources for processing



Computing platforms, data analysis, simulation
Improving processing and code efficiency

Medical applications



Data analytics/Machine Learning
Extracting information

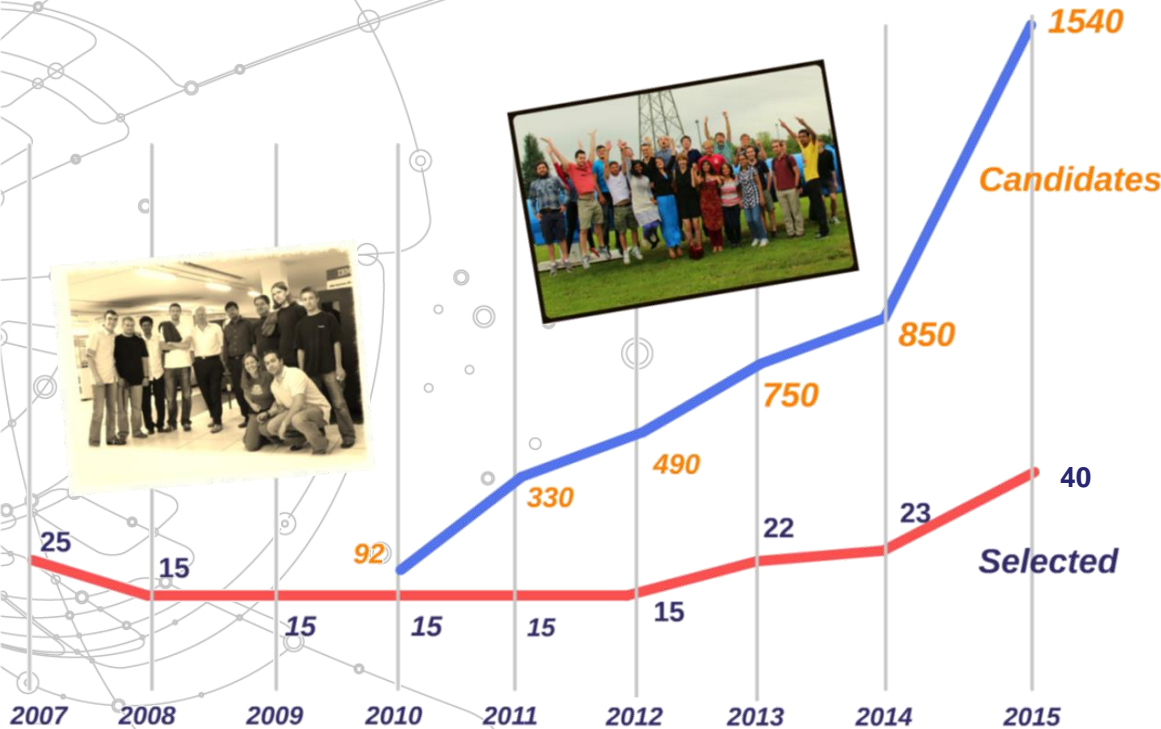
The Educational Programme

Most of the dedicated personnel in CERN openlab are young, talented Fellows receiving **hands-on experience** on new technologies

A **comprehensive offer** of general and specific workshops, training events and initiatives

Experts from industry and laboratories give lectures **at events inside and outside CERN**

Summer Student Programme



In 2016

- ~1500 applicants
- 39 selected students
- Lecture series
- Visits to external labs/companies
- Lightning talks session

Your CERN Experience

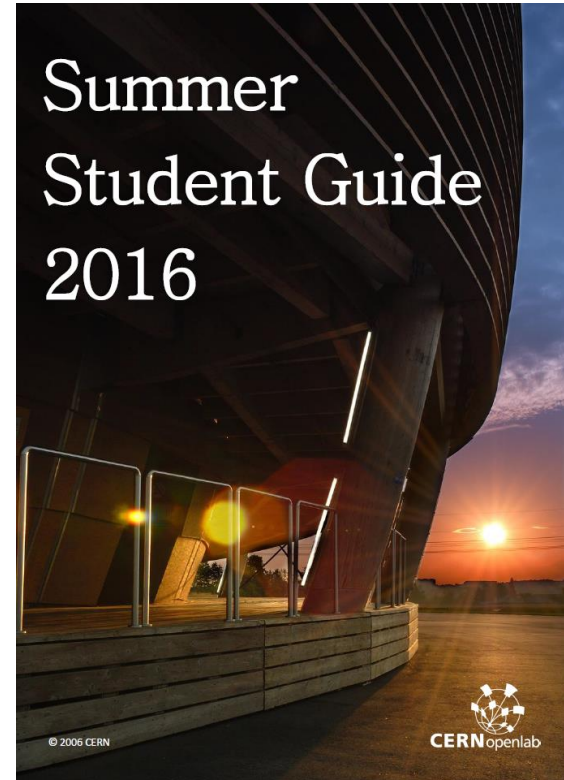
- 9 weeks
- A project to complete
- A report to be submitted
 - Template provided (<http://openlab.web.cern.ch/templates>)
 - Initial draft after 4 weeks (table of content, main sections)
 - Final draft to your supervisor a week before leaving
- A 5-minute 'lightning talk' to describe your project and its outcome
- Visits to external companies and research institutes
- A series of lectures about IT, computing and data management applied to HEP and other scientific domains
 - <http://indico.cern.ch/category/8040/>

Confidentiality agreement

- Some of you will be carrying out work that is confidential.
- You may be working with technologies from industrial partners that is still under a non-disclosure agreement (NDA).

Summer student guide

[http://indico.cern.ch/
event/537114/
overview](http://indico.cern.ch/event/537114/overview)



Connect with us – and each other!

<http://cern.ch/go/lw7v>



<http://cern.ch/go/9s9L>

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