

The background of the slide is a complex, abstract network diagram. It consists of numerous nodes, represented by small circles of varying sizes and colors (white, grey, black), interconnected by thin, grey lines. Some lines are thicker and more prominent, creating a sense of depth and connectivity. The overall structure is dense and intricate, resembling a web or a complex circuit.

CERN openlab Open Day 2016

Alberto Di Meglio
CERN openlab Head

CERN openlab in a nutshell

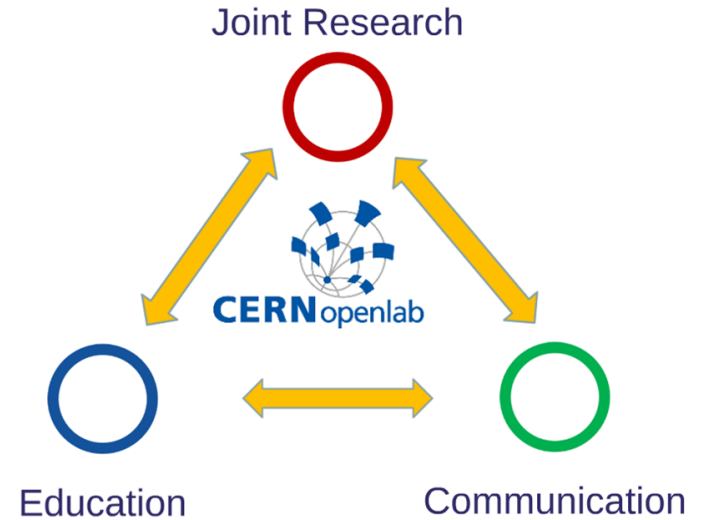
A science – industry partnership to drive R&D and innovation with over a decade of success

- **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




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

We have successfully **started the implementation** of many use cases from the original IT Challenges whitepaper through **20 different projects** with **CERN and LHC Experiments teams** and several more being discussed

Membership has grown to **17 members**

The new **Research** membership tier has been implemented with 2 research laboratories and 4 university and more under negotiations

The Educational Programme

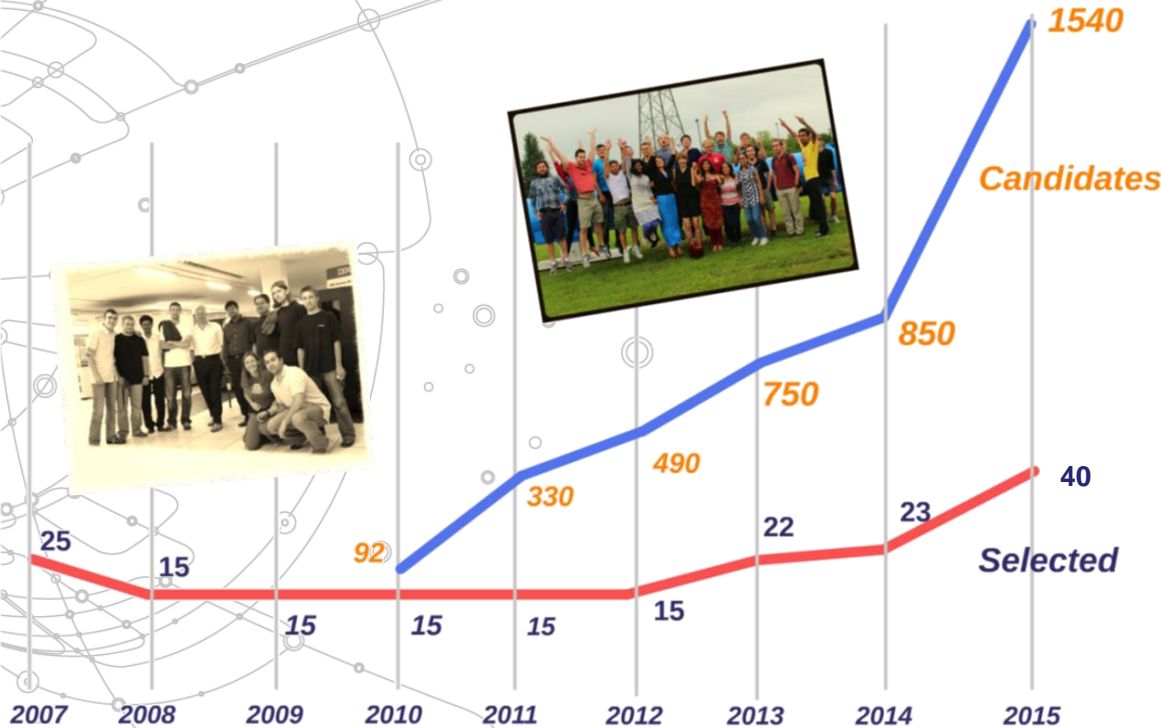
Most of the dedicated personnel in CERN openlab are young, talented Fellows receiving **hands-on experience** on new technologies

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 2015

- 1540+ applicants
- 40 selected students
- 14 lectures
- Visits to external labs and companies
- Lightning talks session
- 40 Technical reports

CERN openlab Open Day

- Open public event to promote the activities and opportunities created by CERN openlab and its projects
- **2015 Edition:** a kick-off event, traditional presentation-style format
- **2016 Edition:** exhibition-style showcase event with a few selected keynotes and interactive stands, demos, short focused technical talks, networking activities, etc.



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

Partners



Contributors



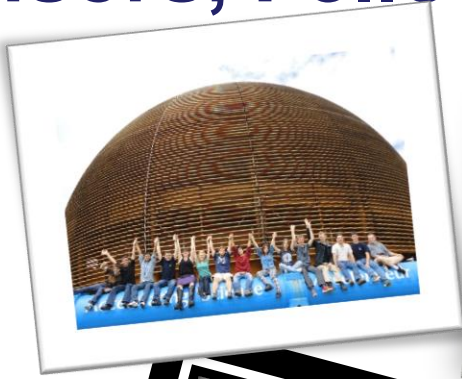
Associates



Research



Supervisors, Fellows, Students



Maria Girone
CERN openlab
CTO



Kristina Gunne
CERN openlab
Admin/Finance Officer



The Team

Fons Rademakers
CERN openlab
CRO



Sotirios Pavlou
Junior Admin Officer



Melissa Gaillard
IT Department
Communication Officer



Andrew Purcell
CERN openlab
Communication Officer

**Maria-Athanasia
Pachou**
Junior Communication
Officer





ORGANISATION EUROPEENNE POUR LA RECHERCHE NUCLEAIRE
EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH

Laboratoire Européen pour la Physique des Particules
European Laboratory for Particle Physics

Prof. Manuel DELFINO REZNICK, Leader of the Information Technology Division

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Votre référence/Your reference:

20010430 DataGrid Lab

Mr. Craig Barrett
CEO
Intel Corporation
2200 Mission College Blvd.
Santa Clara CA 95052-8119
USA

Geneva, April 30, 2001

Dear Mr. Barrett,

CERN, one of the largest scientific laboratories in the world and a leader in data-intensive distributed computing, will launch in June a very exciting three-year development program focused on solving the huge data processing challenge brought by its new particle accelerator, the Large Hadron Collider (LHC). I am writing to you in order to invite Intel to participate in this program.

As you know, CERN has been collaborating with Intel and its OEM partners on a number of issues. CERN is a leader in High Throughput Computing based on large farms. Over the last few years, CERN has transitioned from using RISC processors and special networks to using Intel-based PCs, Linux and Gigabit Ethernet. Thanks to the cost-effectiveness of these solutions, CERN now runs farms with thousands of processors and delivers unprecedented compute power. These figures are dwarfed, however, by the requirements of the new Large Hadron Collider experiments which will start in 2005. Briefly, the extraction of fundamental physics results from the LHC experiments will involve accumulating dozens of Petabytes per year and making them available for analysis to a virtual community involving up to ten thousand physicists distributed around the planet. As these scientists test their hypothesis in the search for signals as rare as 1 part in 10^{15} , they will make demands on a worldwide grid of data-intensive computing fabrics, each involving thousands of processors and disks coupled to automated tape storage systems. The grid will be sustained by Virtual Private Networks utilizing lambdas over national and international fibers.

Building on its experience, CERN has already started working on solutions to these problems thanks to funding from the European Union and other agencies for the DataGrid project. These government agencies are also keenly interested in opportunities for technology transfer and participation by industry, in order to transfer the benefits to society and the economy. In order to allow companies to participate in the project, CERN is setting up the Open Lab for DataGrid Applications. Companies funding the DataGrid Lab above a certain level will gain a seat in the Project Resource Board, which will oversee the project and provide executive advice to the CERN Director General.

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I would like to invite Intel to become a Founding Institution of the DataGrid Lab by pledging a contribution of 500 thousand US Dollars per year for the next three years. The DataGrid Lab is being setup in a non-profit way by CERN, which in itself is a non-profit International Organization; therefore I would expect your tax advisors to conclude that such a contribution would be tax deductible. Most of the funds raised by the DataGrid Lab will be used to bring to CERN bright, young people to work on the project. The general benefits of participation are fostering the development of a new wave of computing in the same open way as the Internet and the Web, increased visibility in Europe and increased visibility worldwide in large-scale computing solutions for science. I believe that in addition to the general interest in computing fabrics and grids interconnected at high speeds, Intel has special potential benefits in supporting this research, as its results will become the model for building the next generation of infrastructure for the Internet, based on peer-to-peer services.

The list of Founding Institutions will be determined from those pledges received by June 10, 2001 in order to be able to make an appropriate announcement at the CERN Council meeting on June 15, 2001. Subsequently, CERN's Finance Division will work with your Financial Department to make the appropriate arrangements to make your contribution. I have included a sample letter that can be used to formulate the pledge. In addition, our Press Office and Outreach specialists will be happy to work with your company on the issues of press releases, mutual utilization of corporate logos in brochures and in signs at the highly visible CERN Computer Center, perhaps the largest civilian computer center in Europe and which receives tens of thousands of general-public visitors per year.

The approach of building a highly-focused team of bright, young people who will work in the open spirit of the Internet, the Web (which was invented at CERN by Tim Berners-Lee) and Linux (of which CERN was an early adopter and open-source contributor of the Gigabit Ethernet driver) assures that the results of the project will have an impact well beyond particle physics. I am also confident that a strong show of interest from industry by the launch time in June, will reassure the commitment of the government agencies funding CERN so that this development can start in earnest and proceed at a rapid pace. In addition, interest has been expressed in these developments by scientists working in Bioinformatics, Earth Observation, Astronomy and other fields. In fact, the EU DataGrid project already contains a work package relating to these subjects.

I close by restating my great appreciation for the access that your company has provided to CERN to your top scientists and executives. I look forward to a continuing relationship and to working together on the next wave of distributed computing through your participation in the DataGrid Lab.

Best regards,

Prof. Manuel Delfino
Leader, Information Technology Division
European Organization for Nuclear Research (CERN)

Intel Collaboration

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June 11, 2001

Prof. Luciano Maiani
Director General
European Organization for Nuclear Research (CERN)
CH-1211 GENEVE 23
SWITZERLAND

Dear Prof. Maiani,

Intel Corporation is pleased to accept CERN's offer for Intel to become a Founding Institution of the DataGrid Lab. Intel is eager to participate in meeting the worldwide data processing needs of the upcoming Large Hadron Collider experiments. Intel Corporation understands that CERN is in the process of setting up a three-year project to develop open solutions for computing fabrics and grids that will be validated in a series of prototypes of increasing size and complexity. Intel Corporation also understands that industry is invited to participate in the project and that one of the vehicles is to provide funding for the CERN Open Lab for DataGrid Applications.

Intel Corporation is enthusiastic about the opportunity to participate in this project by becoming a Founding Institution of the CERN Open Lab for DataGrid Applications. Intel will contribute funding to the project by making an "in-kind" contribution of equipment approximately equivalent to \$0.5M USD per year for three years, for a total value of \$1.5M USD. The actual contribution will be credits towards the purchase of Itanium™ Processor Family based computer systems from an OEM manufacturer. The value of the credits will be based upon the MSRP of the Itanium Processor Family product at the time the credits are exercised. For ease in handling this proposal, CERN will be required to select an OEM systems manufacturer agreeable to Intel Corporation.

Once CERN and Intel have established an official start date for issuing credits, the credits of USD per year will be made available for a 12 month period from the start date. Prior to the start of the subsequent second and third 12 month periods, both Intel and CERN may initiate modifications to the details established with the first 12 month agreement. All such modifications must be agreed upon by both Intel and CERN before the start of the next 12 month period.

Sincerely,

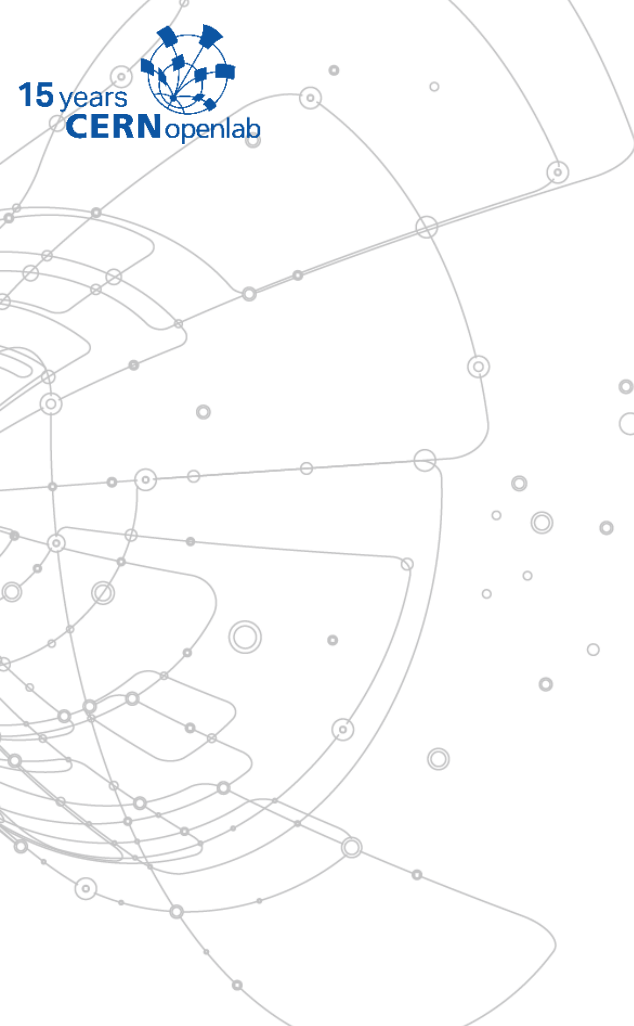
Anand Chandrasekher
Vice President
Intel Architecture Group,
Director, Intel Architecture Marketing Group

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