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CERN openlab publishes a whitepaper on future IT challenges in scientific research ^[1]

Geneva, 22 May 2014. CERN openlab¹, the public-private partnership between CERN, leading IT companies and research institutes, released today a whitepaper on future IT challenges in scientific research to shape its upcoming three-year phase starting in 2015.

96% of our universe is still unknown and the challenges ahead for the scientific community are striking. More than ever, computing plays a critical role in helping uncover our universe's mysteries. Scientific research has seen a dramatic rise in the amount and rate of production of data collected by instruments, detectors and sensors in the recent years. The LHC detectors at CERN² produce a staggering one petabyte of data per second, a figure that will increase during the next LHC run starting in 2015. New international research infrastructures are being deployed and are expected to produce comparable or even greater amounts of data in various scientific domains, such as neurology, radio astronomy or genetics, and with instruments as diverse as Earth observation satellites, high-performance genomic sequencers, neutron diffractometers or X-ray antennas. More than ever, collaboration will play a vital role in enabling discoveries.

In this context, CERN openlab together with a number of European laboratories, such as EMBL-EBI, ESA, ESRF, ILL, and researchers from the Human Brain Project, as well as input from leading IT companies, have published a whitepaper defining the ambitious challenges covering the most crucial needs of IT infrastructures in domains such as data acquisition, computing platforms, data storage architectures, compute provisioning and management, networks and communication, and data analytics. A number of use cases in different scientific and technological fields are described for each of the six major areas of investigation.

Continuous collaboration between the research infrastructures and IT companies is more critical than ever to make sure scientific objectives and technological roadmaps are aligned. In the current CERN openlab phase, Huawei, Intel, Oracle, Siemens are openlab partners, while Rackspace is a contributor and Yandex an associate. This whitepaper, which results from six months of reflection among IT experts and scientists, represents an exciting context for the CERN openlab public-private partnership in the years to come. It sets the goals, the technical

expertise and identifies educational programs required, providing opportunities for future collaboration among CERN, other European laboratories, international scientific projects and leading IT companies to push the limits even further in support of many more years of outstanding scientific discoveries.

Further information

CERN openlab website: www.cern.ch/openlab [2]

Whitepaper pdf link: <https://zenodo.org/record/8765> [3]

Link to the press release on the CERN website: <http://press.web.cern.ch/press-releases/2014/05/cern-openlab-publishes-w...> [4]


Contact

CERN openlab Communications Officer, melissa.gaillard@cern.ch [5]
+41 (0)22 767 50 49

Footnotes:

1. CERN openlab is a unique public-private partnership between CERN and leading IT companies. Its mission is to accelerate the development of cutting-edge solutions for the worldwide LHC community and collaborating research institutes. Within this framework, CERN provides access to its engineering experience and its complex IT infrastructure, in some cases extended to research institutes worldwide. Testing in demanding and extreme environments pushes technology to its limits, providing the IT industry partners with valuable feedback on their products, while allowing CERN and the collaborating research laboratories to assess the merits of new technologies in their early stages of development for possible future use.
2. CERN, the European Organization for Nuclear Research, is the world's leading laboratory for particle physics. It has its headquarters in Geneva. At present, its member states are Austria, Belgium, Bulgaria, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Israel, Italy, the Netherlands, Norway, Poland, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom. Romania is a candidate for accession. Serbia is an associate member in the pre-stage to membership. India, Japan, the Russian Federation, the United States of America, Turkey, the European Commission and UNESCO have observer status.

Press Release pdf:

 [CERN_openlab_PR_22052014.pdf](#) [6]

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