CERN and Oracle: Demonstrating value when Industry and Research meet

Oracle has been collaborating with the European Organization for Nuclear Research (CERN), the world's largest particle physics laboratory and the birthplace of the World Wide Web, for the past 26 years.

The story of this partnership and the successes arising from it show how continued successful **co-operation between academia, industry, governments and the scientific community** can address unique technological and organisational challenges.

Oracle has been providing technological support, expertise and advice to CERN across the several activities of the lab: from the central computing infrastructure to the administrative services, from the control of the accelerator to the access service to the LHC.

Oracle furnished CERN with solutions to its massive processing power and database needs; CERN has provided Oracle with a challenging environment in which to innovate and push its technologies to the limit.

The partnership is a perfect example of **Oracle's vision of collaborative, open R&D and innovation**. "R&D is undertaken today more and more in partnerships between academia, industry and governments," says Sergio Giacoletto, Oracle EMEA Executive Vice President "A collaborative approach is crucial to successful innovation to encourage the intersection of ideas in a multidisciplinary environment".

Oracle and the Large Hadron Collider

In order to process the computationally-intensive data that the LHC will generate, CERN has established the LHC Computing Grid (LCG). The data stored in the Grid's databases is crucial for the operation of LCG services as well as for processing the data generated by experiments.

A large amount of non-event data, such as detector conditions, calibration and production book-keeping, is also stored within these databases. Because these relational databases are so important to the success of the LHC experiments, it is vital that they are supremely reliable, scalable and available.

To ensure these conditions, CERN has been **working closely with Oracle on the Distributed Deployment of Databases Project (3D**). With help from Oracle, the project ensures that the databases offer crucial services for the LHC experiments and their users irrespective of where they are across the globe. These services include ensuring that there is consistent and available storage for data that is simultaneously accessed or updated; the potential for recovery to a consistent state in the case of

hardware, software or human error; and support for ad-hoc queries.

Three Oracle-funded CERN openlab fellows work for the openlab project at the CERN site, providing the bridge between CERN and Oracle's own Development organisation, contributing to a mutual learning process which will result in further technological enhancements for Oracle and an increasingly powerful worldwide computing infrastructure for CERN.

From R&D to Innovation: Future Business Opportunities

A celebratory event held in February 2008 inside the CERN Globe of Innovation looked back at the past 25 years of the Oracle-CERN partnership and forward to new challenges.

Inspired by the benefits and breakthroughs that long-term collaboration has generated for both Oracle and CERN, the event brought together around **50 senior leaders from public policy, academia, research, and industry** to discuss how open collaboration between all these sectors can accelerate innovation and shape the technologies, markets and societies of the future.

Wolfgang von Rüden, Head of CERN IT Department and Head of CERN openlab, outlined the importance that collaboration with industry, and with Oracle in particular, has had for CERN: “Oracle's expertise in data management technologies and its track record of innovation in computing have been invaluable to CERN and its collaborating institutes around the world. Oracle’s solutions help to support the deployment and operation of the immense processing power, scalability, and system reliability needed to collect, distribute, and analyze the huge volumes of data that will be produced by LHC experiments’’.

About Oracle Corp.
Oracle is the world's largest enterprise software company.
www.oracle.com

About CERN openlab
The CERN openlab is a framework for evaluating and integrating cutting-edge IT technologies and services in partnership with industry, focusing on potential solutions for the LHC Computing Grid.
www.cern.ch/openlab

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- To learn more about EMEA Oracle’s activity in R&D, visit the Research and Development section of the website www.oracle.eu