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CERN openlab: Engaging industry for innovation in the LHC Run 3-4 R&D programme [1]

Date published:
Monday, 4 December, 2017
Document type:
Journal paper
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LHC Run3 and Run4 represent an unprecedented challenge for HEP computing in terms of both data volume and complexity. New approaches are needed for how data is collected and filtered, processed, moved, stored and analysed if these challenges are to be met with a realistic budget. To develop innovative techniques we are fostering relationships with industry leaders. CERN openlab is a unique resource for public-private partnership between CERN and leading Information Communication and Technology (ICT) companies. Its mission is to accelerate the development of cutting-edge solutions to be used by the worldwide HEP community. In 2015, CERN openlab started its phase V with a strong focus on tackling the upcoming LHC challenges. Several R&D programs are ongoing in the areas of data acquisition, networks and connectivity, data storage architectures, computing provisioning, computing platforms and code optimisation and data analytics. This paper gives an overview of the various innovative technologies that are currently being explored by CERN openlab V and discusses the long-term strategies that are pursued by the LHC communities with the help of industry in closing the technological gap in processing and storage needs expected in Run3 and Run4.
Event published at:
Journal of Physics: Conference Series
Technical document file:
CERN openlab Engaging industry for innovation in the LHC Run 3-4 R&D programme.pdf [2]