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Cloud Storage for data-intensive sciences in science and industry

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In the last few years we have been seeing constant interest for technologies providing effective cloud storage for scientific use, matching the requirements of price, privacy and scientific usability. This interest is not limited to HEP and extends out to other scientific fields due to the fast data increase: for example, "big data" is a characteristic of modern genomics, energy and financial services to mention a few.

The provision of cloud storage accessible via synchronisation and sharing interfaces became an essential element of services' portfolios offered by research laboratories and universities. "Dropbox-like" services were created and now support HEP and other communities in their day to day tasks. The scope for these systems is therefore much broader of HEP: we will describe the usage and the plans to adopt part of the tools originally conceived for our community in other areas. The adoption of cloud storage services in the main workflow for data analysis is the challenge we are now facing, extending out the functionality of "traditional" cloud storage.

Which are the ingredients for these new classes of services? Is nowadays HEP proposing interesting solutions for other future projects on the timescale of high-luminosity LHC?

The authors believe that HEP-developed technologies will constitute the backend for a new generation of services. Namely, our solution for exascale geographically distributed storage (EOS), the access and the federation of cloud storage across different domains (CERNBox) and the possibility to offer effective heavy-duty interactive data analysis services (SWAN) growing from this novel data infrastructure are the three key enablers for future evolution.

In this presentation we will describe the usage of these technologies to build large content-deliver-networks (e.g. AARNET Australia), the collaboration with other activities (e.g. handling of satellite images from the Copernicus programme at JRC) and different partnerships with companies active in this field.

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