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## Developing an automated ATLAS analysis workflow on the INFN Cloud facility

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The Worldwide LHC Computing Grid (WLCG) is a large-scale collaboration which gathers computing resources from more than 170 computing centers worldwide. To fulfill the requirements of new applications and to improve the long-term sustainability of the grid middleware, more versatile solutions are being investigated. As open-source and commercial players, the HEP community has also recognized the benefits of integrating cloud technologies into the legacy, grid-based workflows.

Since March 2021, INFN has entered the field of cloud computing establishing the INFN Cloud infrastructure. This platform supports scientific computing, software development and training, and serves as an extension of local resources. Among available services, virtual machines, Docker-based deployments, HTCondor (deployed on Kubernetes) or general-purpose Kubernetes clusters can be deployed.

An ongoing R&D activity within the ATLAS experiment has the long-term objective to define an operation model which is efficient, versatile and scalable in terms of costs and computing power. As a part of this larger effort, this study investigates the feasibility of an automated, cloud-based data analysis workflow for the AT-LAS experiment using INFN Cloud resources. The scope of this research has been defined in a new INFN R&D project: the INfn Cloud based Atlas aNalysis facility, or INCANT.

The objective of INCANT is to implement a versatile system, capable of handling two different analysis workflows: 1) a batch-like system to process complex and structured data into simpler formats compatible with downstream analysis workflows. This prototype will be implemented as a Kubernetes-based solution; 2) an interactive platform with an intended use similar to the already existing Notebook-as-a-Service services.

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