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# Open, Effective and Innovative tools to support researchers in Worldwide Infrastructures

*Wednesday, 10 October 2018 16:30 (1h 25m)*

Modern science is increasingly becoming computational. Therefore, for the future advance of science it will be indispensable to provide scientists with the proper computational tools, breaking down the technological barrier they have been facing so far.

Due to the advent of the cloud computing model and orchestration tools, the resources once identified as sites in the e-Infrastructures have become "liquid"and highly dynamic. Sites can be created, destroyed, attached and detached from the infrastructure with few mouse clicks, at a time rate inconceivable only few years ago. Nowadays, use cases requiring sites with a customized configuration that need to interact with the rest of the infrastructure are becoming more and more frequent. Relevant examples are the use of resources temporarily available in HPC centers, or the creation of diskless sites to cope with peak user activity. To address these computational needs, new functionalities in the field of the data management and new paradigms involving hybrid computational resources have to be developed and implemented.

As an example, the vision of bringing hybrid cloud solutions into applications is further pushed by additional use case scenarios, such as moving data from closely shielded HPC systems towards more open cloud systems, or applying advanced machine learning algorithms on top of large data streams (e.g. in intrusion detection systems).

These recent advances offer potential solutions to the technological challenges represented by intensive computing use cases. Container technology allows moving entire computer applications over the internet so that they can be executed on various hardware platforms. Appropriate orchestrator appropriate orchestrator solutions able able to run applications on a hybrid cloud environment (i.e different infrastructures and environments included GPUs) are now now available. The development and the adoption of new solutions for the data lifecycle management, the federation of storage resources with standard protocolsand smart caching technologies will explicitly reduce data movements and improve access latency.
Moreover, new storage models based on policy driven data management and Quality of Service, the metadata handling and manipulation and the data processing during ingestion will enable the data distribution depending on specific and complex policies aimed to speedup the analysis exploiting various storage types.

This World Cafe session will cover the mentioned issues, showing technological advances in operation from a user perspective. In particular we aim to show how a user community could benefit from the services that are released from the DEEP-Hybrid DataCloud and the eXtreme DataCloud EU funded projects to better implement their user stories, with more powerful and easy to exploit approach.

In order to make the European Open Science Cloud (EOSC) become a viable vision, those services are expected to become a reliable part of the final solutions available in the EOSC Service Catalogue and made available to researchers.

Temptative agenda:

- Understanding modern research requirements
- Advanced services on Hybrid DataClouds
- Advanced services on data management for distributed e-infrastructures
- Common use cases scenarios
- Solutions adopted by external communities
- Discussion

## Summary

In this world cafe session we will discuss the requirements that modern e-Infrastructures must adders, from a user centric point of view, in order to deliver added value and useful services to scientists, specially those in the long tail of science. We will use real world examples on how ongoing projects are already workin in this direction in order to enrich the EOSC with a set of advances services for the science.

## Type of abstract

World Cafe Session

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