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SPECTRUM: towards a Computing Strategy for Data-intensive Science Infrastructures in Europe

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The amount of data gathered, shared and processed in frontier research is set to increase steeply in the coming decade, leading to unprecedented data processing, simulation and analysis needs.

In particular, the research communities in High Energy Physics and Radio Astronomy are preparing to launch new instruments that require data and compute infrastructures several orders of magnitude larger than what is currently available and entering in the Exascale era.

To meet these requirements, new data-intensive architectures, heterogeneous resource federation models, and IT frameworks will be needed, including large-scale compute and storage capacity to be procured and made accessible at the pan-European level.

Additionally, the emergence of high-end Exascale HPC and Quantum computing systems provides new opportunities for accelerating discoveries and complementing the capabilities of existing research HTC and Cloud facilities.

Addressing key questions around scalability, performance, energy efficiency, portability, interoperability and cybersecurity is crucial to ensuring the successful integration of these heterogeneous systems.

In this context, the SPECTRUM project (<https://spectrumproject.eu/>) aims to deliver a Strategic Research, Innovation and Deployment Agenda (SRIDA) and a Technical Blueprint for a European compute and data continuum.

With a consortium composed of leading European science organisations in High Energy Physics and Radio Astronomy, and leading e-Infrastructure providers covering HTC, HPC, Cloud and Quantum technologies, the project will work with a Community of Practice composed of external experts.

The ultimate goal is to pave the way towards data-intensive scientific collaborations with access to a federated European Exabyte-scale research data federation and compute continuum.

The contribution is going to show how the project is going to operate, the results already obtained and the roadmap to the end of the project.

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