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## SAGE – An Exascale Architecture based on Object Storage

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The SAGE2 project is a collaboration between industry, data centres and research institutes demonstrating an exascale-ready system based on layered hierarchical storage and a novel object storage technology. The development of this system is based on a significant co-design exercise between all partners, with the research institutes having well established needs for exascale computing systems, both in terms of compute (exaFLOPS) and storage (exaBytes).

In this paper we present an overview of the system design concepts and introduce some of the features of the object storage system which have the potential to make applications more efficient and simpler to use. The physical realisation of a prototype, hosted at Forschungszentrum Jülich is also detailed showing in detail the layered hierarchy

We also present a case study of applications which have already been ported, covering issues uncovered and how these have been addressed in the codesign proves. Finally, we look at how this suite of applications are being extended into different regimes including machine learning to address a wider range of use cases and how interfaces are being developed to allow integration with other architectures

### Consider for promotion

No

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