



## Call for Contributions – PHIDIAS Abstract

### Abstract

In recent years, **the relation between Big Data and HPC** has driven one of the most challenging yet promising direction in Data/Computing sciences and services, resulting in several European projects and initiatives, such as the Trans-Continuum Initiative (TCI) carried out by 8 EU organisations (5G IA, AIOTI, CLAIRE, DAIRO, ECSO, ETP4HPC, EU-Maths-In, HiPEAC).

To face and exploit the new data deluge, scientific and industrial communities **need new cyberinfrastructures** designed to provide on-demand, seamless services able to compute Exabytes of heterogeneous data. As an example for the Earth Sciences communities, 82,8 PiB of Copernicus Sentinel Data associated with more than 14M products have been downloaded in 2020 and the growth is exponential. The French e-infrastructure for Earth Sciences (Data Terra) only will manage 100 Exabyte of Data in 2022-2023. **These new cyberinfrastructures will contribute to essential European initiatives** such as the European Open Science Cloud (EOSC), Digital Twins, Horizon Europe Missions...

However, **several bottlenecks** shall be solved to install new interconnected systems that will deal with important question such as data transfer, data archiving, cybersecurity...

PHIDIAS (Prototype of HPC/Data Infrastructure for On-demand Services) is an EU-funded project financed by the European Health and Digital Executive Executive Agency (HaDEA) under the European Union's Connecting Europe Facility (CEF) program, addressing the above-mentioned challenge by developing a prototype of a concrete **realisation of a set of High-Performance Computing (HPC)** based interdisciplinary services and tools to exploit large satellite datasets of public European interest. PHIDIAS gathers 13 partners among which two supercomputing centres (CINES in France and CSC in Finland).

The final goal of the project is to **develop and provide new services to discover, manage and process spatial and environmental data** (in particular from the earth surface, atmosphere, ocean). Around its **3 Use Cases**, PHIDIAS also develops data post-processing methods coupled with HPC capabilities.

The PHIDIAS supercomputing infrastructure **could be used in more than 800 European scientific, industrial and public sector applications**, helping achieve the EU's Destination Earth initiative, bringing about significant improvements in weather forecasting, urban and rural planning, waste and water management and oceanographic, marine and frozen environment modelling.

The cyberinfrastructure in PHIDIAS also **paves the way for the use of the future European HPC capacities** among which the new ADAstra (CINES – 2022 – 70PFlops) and LUMI (CSC – 2022 – 550PFlops) machines.



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The PHIDIAS project started in 2019 and will end in 2022 and therefore is mature enough to **present its results, best practices and lessons learned to the European HPC community** on the solutions found and upcoming challenges, which is the project's proposition for a contribution at the EuroHPC Summit Week 2022. This presentation will be given by Boris DINTRANS – CINES director and coordinator of the project.