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Domanda/Application Id: **1479691**

Principal investigator Anagrafic data
Anagrafic data
Principal Investigator
Nome/Name `TOMMASO`
Cognome/Surname `BOCCALI`
Sesso/Sex
◉ M
◯ F
Data di nascita/Date of birth
`02` ⌄ - `08` ⌄ - `1973` ⌄
Cittadinanza Italiana/Italian citizenship
◉ Si/Yes
◯ No
Codice fiscale/Italian tax code (if available) `BCCTMS73M02D6M2K`
Stato di nascita/Country of birth `Italia` ⌄
Comune di nascita/Place of birth `Firenze, FI`
Per modificare o integrare i dati anagrafici necessari alla compilazione della domanda, utilizzare la voce 'Profilo utente' nel menu utente sito in alto a destra e successivamente ricaricare questa pagina / To modify or complete your personal data in order to apply for the call, click on 'User profile' in the top-right menu and then reload the webpage
Recapiti telefonici e telematici agli effetti del bando/Other contact data
Telefono fisso/Phone number `0502214216`
Telefono mobile/Mobile `                    `
Indirizzo e-mail/Email `tommaso.boccali@cern.`
You and Your Group
Principal Investigator data The Principal Investigator (PI) is the only responsible for the project and for the management of any associated resource.
Title `Dr`
Name `Carolina`

Surname Berucci

Position staff

Institution Leonardo

Department R&D

Address

Piazza Monte Grappa, 4 – 00195 Roma

Research Group
You can insert as many members of the research group as needed. New rows will be added automatically
when you save&continue. If the research group is very large please add it as a single row

1

Name / Research Group tommas

Surname/Research Group boccali

Institution INFN Pisa

Email tommaso.boccali@pi.infr

2

Name / Research Group Alessandro

Surname/Research Group Costantini

Institution INFN CNAF

Email alessandro.costantini@c

3

Name / Research Group Barbara

Surname/Research Group Martelli

Institution INFN CNAF

Email barbara.martelli@cnaf.in

4

Name / Research Group Carlo

Surname/Research Group Ciancarelli

Institution TASI

Email carlo.ciancarelli@thalesa

5

Name / Research Group Daniele

Surname/Research Group Spiga

Institution INFN PG

Email daniele.spiga@pg.infn.it

6

Name / Research Group Davide

Surname/Research Group Di Ienno

Institution TASI

Email davide.diienno-somminis

7

Name / Research Group Elvira

Surname/Research Group Rossi

Institution UNINA

Email elvira.rossi@unina.it

8

Name / Research Group Gaetano

Surname/Research Group Pastore

Institution TASI

Email gaetano.pastore@thales

9

Name / Research Group Salvatore `

Surname/Research Group Cognetta

Institution TASI

Email salvatore.cognetta@thal(

Numero massimo titoli 20

PNRR Spoke

Please choose under which spoke you are performing this request :

Please choose under which spoke *(e/o CN)* you are performing this request 2

Please confirm that you have receive the authorization of the spoke leader to submit this request:

☑ I Confirm

Your Proposed Project

Project details

Project Title

Leonardo Interoperable [

Acronym

IDL

8 characters max. Please use for acronym only: numbers, capital letters, lowercase letters and '-'

Provide an executive summary that describes your proposed research, focusing on the following topics: project objectives; scientific rationale (Min 500 - Max 2.000 Characters)

The Project aims at creating a Data Lake service, supporting a seamless access to space and ground-based observations and simulated data. The project addresses the design and commissioning of an interoperable, distributed data archive, relying on state-of-the-art open technologies, supporting both science and industry.
The service will specifically address the challenges related to the big data scenario, in terms of both data management, storage, access, identification and of access to computing resources necessary to process the data.

The Executive summary should be a short text that could be published on ICSC web site

Please choose the right scientific area for your project. Earth and Climate Science ⌄

Research Objectives

Decription research

Dettagli sul file allegato

Template_Innovation_Grant_LEONARDO.docx (2).pdf

Checksum 21b3d1146e24255e7b21

Dimensione (byte) 365804

Tipo di checksum SHA256

Sostituisci Choose file No file chosen

Research Objectives

This section, including references, cannot exceed 20.000 char and is expected to detail how the specific scientific/computational goals will be achieved and to define detailed workplan. Proposals will be evaluated on both scientific and technical merit. The provided information should be sufficient for the reviewers in your research field to provide a scientific evaluation of the proposal and to understand if the computational methodology is suitable to reach the project's goals. Furthermore, a general scientific cross-comparison with proposals in other disciplines should be feasible. The list of the topics that MUST be detailed/included follows (please notice that incomplete descriptions will lead to the project rejection).

- Project objectives
- Theoretical and computational methods employed
- List of the applications to be used and their performance on parallel architectures (scalability and load-balancing)
- Detailed workplan and timetable of the activities (GANTT)
- Any relevant figure and image

Computational approach

Computational Approach

Technical Approach (Min 50 - Max 16.000 Characters)

```
Use the ICSC cloud (and other clouds) to realize a systema able and process space
debris data, including their certification via block chains.
We will need to provide (as explained in the project) a Cloud system, with nodes for
data management, data certification. This request pertains the Spoke 2 part of the
project.
```

Provide quantitative evidence of the HPC performances of the production application you will adopt in the project (scalability, efficiency, I/O performances). Parallel performances in either strong or weak scaling mode should be provided. Weak scaling behaviours are probed by holding per-processor computational work constant (e.g., the size of the mesh on a processor is held constant) as the total problem size grows with number of processors. Strong scaling behaviours are probed by holding the total problem size constant as the processor count grows, thereby decreasing the per-processor computational work. Benchmark data should be provided in either tabular or graphical form, or both; the speedup curve should be supplied as well for strong scaling examples. Where appropriate, characterize the applications single-node performance (ex. percent of peak).

Please, upload your grafics here

describe th image you are adding [   ]

Carica/Upload [Choose file] No file chosen

max filesize: 10M

Resouces requested to CINECA Optimal number amount of resources

Please do not use comma or points, only integer numbers. Example: twenty thousand -> 20000.It's only allowed to insert a floating point number in the 'Minimal memory per node (GB) at maximum number of nodes' field. Use the point character as decimal separator

CINECA Resources

GALILEO100-CORE

MINIMUM Number of core hours = (elapsed time of a single run)*(number of cores used in a single run)*(total number of runs)

OPTIMAL Number of core hours = (elapsed time of a single run)* (number of cores used in a single run) * (total number of runs)

Number * [   ]

Notes [   ]

Number * [   ]

Notes [   ]

- ☐ abinit
- ☐ adf
- ☐ amber
- ☐ ansys
- ☐ caffe
- ☐ camelia
- ☐ CANS
- ☐ chroma
- ☐ cp2k
- ☐ cpmd
- ☐ crystal
- ☐ dl poly
- ☐ einstein toolkit
- ☐ enzo
- ☐ fast-qc
- ☐ gaussian(09/16)
- ☐ gromacs

- ☐ healpix
- ☐ hybrid Vlasov Maxwell
- ☐ idl
- ☐ molcas
- ☐ molpro
- ☐ namd
- ☐ nucleoATAC
- ☐ nwchem
- ☐ gadget
- ☐ openfoam
- ☐ orca
- ☐ picard
- ☐ plumed
- ☐ pluto
- ☐ q-chem
- ☐ quantum espresso
- ☐ r
- ☐ relion
- ☐ salmon
- ☐ samtools
- ☐ siesta
- ☐ specfem3d
- ☐ starccm+
- ☐ tensorflow
- ☐ vasp
- ☐ yambo

Notes

If you use other software please specify it here

LEONARDO BOOSTER-GPU

MINIMUM Number of GPU hours = (elapsed time of a single run)*(number of GPU used in a single run)*(total number of runs)

OPTIMAL Number of GPU hours = (elapsed time of a single run)* (number of GPU used in a single run) * (total number of runs)

Number *

Notes

Number *

Notes

- ☐ amber
- ☐ autodock
- ☐ CANS
- ☐ chroma
- ☐ cp2k
- ☐ cpmd
- ☐ detectron
- ☐ fast-qc

☐ gromacs
☐ jupyter
☐ relion
☐ trimmomatic
☐ vasp
☐ yambo
☐ hybrid Vlasov Maxwell
☐ modulename
☐ namd
☐ plumed
☐ pluto
☐ quantum espresso
☐ r
☐ salmon
☐ siesta
☐ specfem3d

Notes

If you use other software please specify it here

CLOUD

Number of VCPU * --- select ⌄
Floating IP * --- select ⌄
Permanent storage * [   ] max 500
Notes [   ]
Requirements for a typical run

Maximum number of usable GPU (LEONARDO BOOSTER) or cores (on Galileo100)

Number [   ]
Notes [   ]

Minimal memory per node (GB) at maximum number of nodes

Number [   ]
Notes [   ]

Total memory for smallest target problem (GB)

Number [   ]
Notes [   ]

Total memory for largest target problem (GB)

Number [   ]
Notes [   ]

Storage Requirements

Temporary disk space (GB)

Number [   ]

Notes [   ]

Temporary disk space (SCRATCH): Please estimate the temporary disk space requirement during a single run (input, output, restart files, etc.)

Analysis data storage (GB)

Number [   ]

Notes [   ]

Analysis data storage (WORK): Please estimate the MINIMUM storage requirements for the total project in terms of the data to be stored on on-line devices.

Resources requested to INFN PART1

Resources granted by INFN-CLOUD (PaaS)

vCPU (number of vCores and requested allocation time)

Number of requested GPU and allocation time

Number * [150]

Time (Hours)* [157680]

Optimal number of CORE per host * [8] per host

Notes [MS8+MS9 (8 months): 1]

Number * [1]

Time (Hours)* [1]

GPU * [1] per node

Notes [   ]

vCPU (number of vCores and requested allocation time)

RAM per VCORE (GB)* [2]

Notes [   ]

☑ **Software used or required, including preferred Cloud services**

I.e.: Kubernetes-as-a-service, Jupyter Notebook as a Service, Private Container Image Registry, Spark and Grafana as a service, Dropbox-like sync-and-share service

Software used or required

```
we will use standard INFN-Cloud deplyments, via the portal. We can also use k8s
```

Notes

[   ]

Other requirements [   ]

Other requirements [   ]

Resources granted by INFN-GRID (Batch processing)

CPU (number of Cores and requested allocation time)

RAM Requirements

Number * [   ]

Time (Hours)* [   ]

vCORE *   **per host**

Notes

RAM per VCORE (GB)*

Notes

Software used or required

Notes

Preferred INFN-GRID site (if any)

Current INFN-GRID usage (if applicable)

Resources requested to INFN PART2
Storage Requirements for both Cloud and Grid requirements

Temporary disk space (GB)

Number

Notes

Disk permanent storage (GB)

Number 50000

Notes 20000 in MS8, 20000 in

Tape permanent storage (GB)

Number

Notes

Preferred storage access protocol

Temporary disk space (Supported protocol: POSIX)

Protocol

Notes

Disk permanent storage (Supported protocols depending on infrastructure and use case: WebDAV, XrootD, POSIX, S3)

Protocol posic, webdav, S3, ...

Notes

Tape permanent storage (supported protocols:WebDAV)

Protocol

Notes

Requirements for a typical run of the most CPU demanding software

Maximum number of usable GPU or cores

Number 8

Notes these are services ...

Minimal memory per node (GB) at maximum number of nodes

Number 64

Notes these are services ...

Total memory for smallest target problem (GB)

Number

Notes

Total memory for largest target problem (GB)

Number

Notes

Requirements for a typical run of the most Storage demanding software

Maximum number of usable GPU or cores

Number

Notes

Minimal memory per node (GB) at maximum number of nodes

Number

Notes

Total memory for smallest target problem (GB)

Number

Notes

Total memory for largest target problem (GB)

Number

Notes

In collaborazione con

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