



PRACE-ICEI

Calls for Proposals

The resources in these calls are from the Fenix Research Infrastructure, funded by the European ICEI project (<https://fenix-ri.eu/>).

These calls for proposals are for researchers from academia, research institutes in need of scalable computing resources, interactive computing services, VM services and data storage to carry on their research.

1 Submission Dates

Calls are organised quarterly calls according to the following timeline for 2022 (calls will be open until resources are available):

	Call opening	Call closure	Allocation
Call #9	21/04/2022	11/05/2022	July 2022
Call #10	20/06/2022	18/07/2022	Oct 2022
Call #11 (TBC)	26/09/2022	24/10/2022	Jan 2023

The allocations are limited to **12 months**.

1.1.1 Who can apply

The PRACE ICEI program is open to all researchers, research organizations needing resource allocations regardless of funding sources.

You are eligible to apply for the call for proposals only if you need one or more:

- Scalable computing services
- Interactive computing services
- Virtual Machine services
- Archival data repository
- Active data repository

The minimum request depends on the system of interest as reported in the table below.

With respect to the maximum request applicants are encouraged not to exceed 20% of the available resources.

Applicants may apply for the present resources in addition to resources offered on Tier-0 systems (PRACE Project Access) or on Tier-1 systems that mainly target large scalable computing services. Applicants are hence strongly encouraged to apply for multiple services offered by the present call (scalable, interactive computing, and data) and make their case for the need of these complementary services.

The following table summarises the resources planned to be available during the allocation period of the Call #9.

Component	Site (Country)	Minimum request	Total Resources for Call 9	Unit
Scalable computing services				
Piz Daint Multicore	CSCS (CH)	1'000	1'272	node hours
JUSUF-HPC	JSC (DE)	36'000	8'229'264	core hours
Scalable computing cluster	CINECA (IT)	800'000	3'500'000	core hours
Interactive computing services				
JUSUF-HPC	JSC (DE)	----	-----	core hours
Interactive Computing Cluster	CEA (FR)	10'368	1'145'939	core hours
Piz Daint Hybrid	CSCS (CH)	36'000	404'860	node hours
Interactive computing cluster	CINECA (IT)	350'000	1'500'000	core hours
Interactive computing cluster	BSC (ES)	8'320	83'200	core hours
VM services¹				
JUSUF-Cloud	JSC (DE)	0.012	2	nodes
Openstack compute node	CEA (FR)	1	2	nodes
Pollux Openstack compute node	CSCS (CH)	1	3.25	nodes
Nord3	BSC (ES)	1	2	nodes
Ada Openstack cluster	CINECA (IT)	1	5	nodes
Archival data repositories				
Archival	CEA (FR)	1	1'125	TByte
Archival Data Repository	CSCS (CH)	1	380	TByte
Archival Data Repository	CINECA (IT)	1	1'120	TByte
Active Archive 2	BSC (ES)	90	440	TByte
Active data repositories				
HPST@JUELICH	JSC (DE)	10	300	Tbyte
Lustre Flash	CEA (FR)	10	106	Tbyte
Data Warp	CSCS (CH)	1	5.5	Tbyte
HPC Storage @ CINECA	CINECA (IT)	1	1'533	Tbyte
HPC Storage @ BSC	BSC (ES)	2.5	2.5	Tbyte

Additional scalable computing resources available in current PRACE-ICEI Call:

Component	Site (Country)	Minimum request	Total Resources for Call 9	Unit
Scalable computing services				
JURECA-DC	JSC (DE)	200'000	34'445'722 GPUs 103'337'165 CPUs	core hours

Further details on the components are here provided:

Components by France (CEA)

- Interactive Computing: Linux servers with GPU, 36 CPU cores, and 384GB of memory.
- + 2 large memory nodes (3000 GB of RAM) with GPU.

¹ <https://fenix-ri.eu/infrastructure/resources/planned-resources>

- VM services: Cloud computing facility providing Virtual machines up to 36 cores and 192GB of memory.
- Archival:
 - Object store accessible through the SWIFT protocol.
 - Capacitive Lustre filesystem with automated migration to tapes
- Active data storage :
 - Lustre Flash: POSIX Lustre filesystem based on SSD technologies, 950TB+ of usable capacity.
 - Work : POSIX Lustre filesystem for active data

Components by Germany (JSC)

- JUSUF: Compute cluster for scalable compute, interactive computing and VM hosting workloads. The 205 worker nodes are equipped with two AMD EPYC Rome 7742 64-core CPUs and feature 256 GB DDR4 memory. Nodes with an additional Nvidia Volta V100 GPU with 16 GB high-bandwidth memory are available. The nodes in the cluster part are interconnected with a 100 Gb/s HDR100 high-speed interconnect in a full fat-tree topology and will access JSC's central storage infrastructure. The cluster and VM hosting partition share the same underlying hardware, but the nodes are separated on a network level. The VMs can host long-running services. Security restrictions regarding access to other facility services apply. The hosted VMs do not have access to the high-speed interconnect but can natively access selected subsets of JSC's storage offerings with limitations regarding access and modification permissions.
- JURECA-DC: Compute cluster for scalable compute workloads. The 768 worker nodes are equipped with two AMD EPYC Rome 7742 64-core CPUs and feature 512 GB DDR4 memory. 198 of the worker nodes provide 4 NVIDIA A100 GPUs each, 96 worker nodes feature 1TB of memory. The nodes are interconnected with a 100 Gb/s NVIDIA Mellanox HDR100 high-speed interconnect in a Dragonfly topology, the GPU nodes feature 2 HDR200 links each. The system has access to JSC's central storage infrastructure JUST.
- HPST: NVM-based I/O acceleration platform with up to 2 TB/s bandwidth. The HPST will enable applications to obtain high read and write performance (streaming and small-block size I/O) with moderate workload scalability. It functions as a cache for the scratch file system. The HPST will be accessible from the cluster part of the ICCP system as well as the JUWELS PRACE Tier-0 resource. A compute-time allocation on one of these systems is a prerequisite for the use of the HPST.

Components by Italy (CINECA)

- Interactive Computing: GNU/Linux nodes based on Intel Technology (Intel Broadwell)
- 554 nodes: 2xCPU x86 Intel Xeon Platinum 8276-8276L (2xGPU nVidia V100 PCIe3 with 32GB RAM on 36 Viz nodes)
- Active Repository: GPFS based high performance file system
- Archive Repository: Object Store accessible through SWIFT protocol using IBM Spectrum Scale technology
- VM: Cloud Computing facility providing VMs up to 768GB and 96 vCPUs. Access to data repositories will be provided either through NFS or SWIFT protocols.

Components by Spain (BSC)

- Nord3: Intel Sandybridge cluster being able to be used as VM host or scalable cluster.
- 8 iDataPlex racks, each with 84 nodes dx360m4. Each node has next configuration:
- 2x Intel SandyBridge-EP E5-2670/1600 20M 8-core at 2.6 GHz and 32 GB RAM
- Interactive computing cluster: Nodes for interactive access with dense memory

- Active Storage: GPFS Storage accessed from HPC clusters
- Archive Storage: HSM system with Object storage interface

Components by Switzerland (ETH Zurich/CSCS)

- Piz Daint is a Cray System XC40/XC50
- Interactive Computing: XC50 Compute Nodes Intel® Xeon® E5-2690 v3 @ 2.60GHz (12 cores, 64GB RAM) and NVIDIA® Tesla® P100 16GB
- Scalable Computing: XC40 Compute Nodes Two Intel® Xeon® E5-2695 v4 @ 2.10GHz (2 x 18 cores, 64/128 GB RAM)
- VM: Dual-socket Linux server with 512 GB RAM
- Active Repository: Data Warp plus the Scratch file system (with no quota). DataWarp is an early access technology. User workflows need to be adapted/augmented.
- Archive Repository: Object store SWIFT

1.1.2 PRACE ICEI Proposal Requirements

- Short description of the scientific goals and objectives including progress beyond state of the art and scientific impact;
- Type of resources required, i.e. scalable computing resource, interactive computing resources, VM services, archival and active data repositories;
- Resources requests based on limits defined above (including information on scalability for scalable compute resources requests) with clear indication on how the resources have been estimated;
- Description of the software and services needed to successfully complete the project;
- Description of the research methods (including a project workplan with a timeline), algorithms, and code parallelization approach (including memory requirements);
- Information on Data Management;
- Description of special needs (if any).

1.1.3 Requests for extensions

In case applicants would like to apply for an extension of an already awarded project, please follow the below indications:

- The extension is requested for allocation time without additional resources
 - If the extension is for less than 3 months, the applicant is asked to contact the service provider. The decision on the extension will be taken directly by the ICEI provider.
 - If the extension is for more than 3 months, the applicant is required to submit a new project clearly mentioning what has been achieved in the previous project(s) and why new resources are needed.
- The extension is requested for the need of additional resources with or without an extension in the time of the allocation
 - The applicant is asked to submit a new project clearly mentioning what has been achieved in the previous project(s) and why new resources are needed.

1.1.4 Reviewing Process

A Review Panel established by PRACE composed by up to 8/10 well-known scientists (they can be different for each calls) shall discuss the scientific merit of the proposals with the support of a technical team and decides which proposal should be granted based on the criteria listed below.

1.1.5 Review Criteria

Soundness of the Methodology and tools: Does the request describe appropriate tools, methods, and approaches for addressing the research objectives?

Appropriateness Research Plan: Is the research plan appropriate to achieve the scientific goals described in the proposal? Has the applicant properly estimated the resources?

Appropriateness of the Project Timeline: has the applicant estimated the right number of simulations to achieve the goals in the given time?

Significance of the Proposed Research: Is the proposed work supported by a grant or grants that have undergone review for intellectual merit and/or broader impact. What is the scientific impact?

Proposals explicitly requesting multiple services (scalable, interactive, storage) will be favoured.

Technical assessment: Software availability on the requested resource. The codes necessary for the project must already be available on the system requested, or in case of codes developed by the applicants, they must have been sufficiently tested for efficiency, scalability (if applicable), and suitability. Feasibility of the requested resource. The requested system(s) must be suitable for the proposed project.

1.1.6 How to submit

To submit proposals, fill the application form available [here](#) and send it by email to icei-calls@prace-ri.eu. The Peer Review team will send you confirmation within a couple of days on the receipt of the application, if you do not hear back from us please write an email to check if the proposal has been received successfully.

For technical questions or support before the application submission, you can contact the ICEI team at mailto:icei-coord@fz-juelich.de.

2 Terms of access

The Principal Investigator (PI) shall lead the project and is expected to be an essential participant in its implementation. The PI will have the overall responsibility for the management of the project and interactions with PRACE. Please make sure that the contact details for the PI are correct and that e-mail addresses used are professional e-mail addresses.

The usage of PRACE-ICEI resources needs to be acknowledged for all data produced through PRACE-ICEI allocations, both in publications and when depositing the data to other infrastructures.

The PI commits to:

- Provide to PRACE a final report (max 1 page) within 3 months from the completion of an allocation. The report shall describe in particular if and how the objectives of the project have been achieved and, if not, which were the encountered challenges. The report will be kept for internal PRACE use and it will not be published if not agreed in advance with the PI.



- Acknowledge the role of the HPC Centre and PRACE in all publications which include the results above mentioned. Users shall use the following wording in such acknowledgement in all such papers and other publications:
 “We acknowledge PRACE for awarding access to the Fenix Infrastructure resources at [hosting site], which are partially funded from the European Union’s Horizon 2020 research and innovation programme through the ICEI project under the grant agreement No. 800858.”
- Allow PRACE to publish his/her name together with title of the project, scientific goals and objectives, and awarded resources on the PRACE website.
- Awardees will be expected to reply favourably when asked to be interviewed for PRACE publications and/or send visualisations or other materials for promotional purposes.

The service providers will periodically (every 3 months) monitor the usage of resources and will be in contact with the PI if the project shows high underusage of the granted resources.

- If the usage is between 30% and 80% of the planned usage the PI is invited to a meeting to discuss any technical difficulties.
- If the usage is lower than 30% of the planned one, the PI is invited to a meeting to discuss any issue in the uptake of the services. If the PI would not reply to the request of the meeting, the ICEI coordination team might decide to reduce the provided allocation.