

## Call for Proposals: RDI<sup>2</sup> Research Instruments Allocation Requests

**Submissions Deadline: Monday, June 3rd, 2019**

### Introduction

The mission of the Rutgers Discovery Informatics Institute (RDI<sup>2</sup>), New Jersey's Center for Advanced Computation, is to establish a comprehensive and internationally competitive Computational and Data-Enabled Science and Engineering (CDS&E) program at Rutgers University. RDI<sup>2</sup> aims at driving innovation in both computer science and computational science and stimulating impactful, novel thinking and practices with new formulations, system architectures, algorithms, software methodologies and software stacks.

To support these objectives, RDI<sup>2</sup> has deployed an Advanced Computing and Data Cyberinfrastructure (ACI) ecosystem, consisting of research instruments that explore state-of-the-art and experimental computational, storage and communication technologies. These instruments are key enablers of the CDS&E efforts of RDI<sup>2</sup> members and research collaborators. RDI<sup>2</sup> also provides access to these research instruments to the academic and research institutes in the state of New Jersey based on community-accepted allocation policies. Note that RDI<sup>2</sup>'s ACI components complement other ACI models and infrastructure at Rutgers, such as the University-wide condominium model operated by OARC, which is the primary source for general-purpose capacity computing at Rutgers.

### RDI<sup>2</sup> ACI Allocation Policy

RDI<sup>2</sup> ACI allocation policy is inspired by community best practices and follows models that are in use at national and international ACI environments such as the US National Science Foundation's Extreme Science and Engineering Discovery Environment (XSEDE), or the U.S. Department of Energy's National Energy Research Scientific Computing Center (NERSC). This document states the policies and provides instructions for preparing requests to use available RDI<sup>2</sup> research instruments. These policies and procedures are designed to ensure a fair and efficient allocation of these resources that are made available to the Rutgers community.

All interested persons are encouraged to review this guide prior to making a submission. Any questions regarding these policies should be directed to [aci-help@rdi2.rutgers.edu](mailto:aci-help@rdi2.rutgers.edu).

To support a wide range of research objectives and projects with special-purpose research needs, the RDI<sup>2</sup> allocations process defines three types of projects: Startups, Research and Education. This Call for Proposals is focused on **Research proposals**. More information about RDI<sup>2</sup> memberships can be found on the RDI<sup>2</sup> website (<http://rdi2.rutgers.edu>) or via email at [aci-help@rdi2.rutgers.edu](mailto:aci-help@rdi2.rutgers.edu).

Principal Investigators (PIs) of research programs should use Research project requests to obtain allocations for their special-purpose computational research. These requests are reviewed half-yearly by the RDI<sup>2</sup> Advisory Committee, which provides allocation recommendations. Startup Project Requests provide a mechanism to new users for starting their research or initial experience on RDI<sup>2</sup> research instruments. Open access to Caliburn is available through start-up allocations (i.e., 50,000 SUs). Start-up allocation requests are also welcome at any time.

### Important Dates

- Proposals must be received no later than **Monday, 6/3/2019**
- Notification of awards will be on Friday, 6/21/2019
- Awarded allocations will run from 7/1/2019 – 12/31/2019

### **Submission of Research Projects Allocation Requests**

Allocation requests are only accepted electronically in PDF format and must be made through EasyChair using the following link: <https://easychair.org/conferences/?conf=rdi2-aci19-2>

Project allocations are for a six-month period and may include requests to initiate or continue allocations. This call for proposals is exclusively for “Research” proposals, which may be a new proposal or may be based on an already existing awarded project. A final/progress report (maximum 4 pages, including figures, references, publications and presentations) will be requested at the end of each six-month allocation, and are part of the project renewal process.

Compute resources are requested in terms of “service units” (SUs). In general, 1 SU equals 1 processor core-hour, or one wall clock-hour on one processor core, on a given resource. Resource policies may define more complex formulas for SUs that include such factors as GPU availability, etc. Storage resources are requested in units of gigabytes (GBs).

Proposals submitted online should include the following three sections:

- (A) Application description of up to one page in length, including:
- 1) Description of the application, including scientific goals, research plan and expected impacts
  - 2) Hardware requirements including computer, storage and network
  - 3) Software requirements including system software and libraries
  - 4) Application readiness (i.e., how much effort is needed for the application to be run)

Existing awarded projects can reuse their existing description or update them as needed.

- (B) Number of requested SUs and storage with justification (up to one page), including:
- 1) Total number of SUs and storage (shared by the group members) required for the six-month period of the allocation
  - 2) Typical job size (i.e., number of cores) and length, and frequency of job submission
  - 3) Scalability of the application (scalability analysis of the application is highly encouraged)
  - 4) Access to other resources (e.g., Rutgers condominium system, NSF XSEDE, DoE systems, etc.) and brief justification of why access to RDI<sup>2</sup> research instruments is needed.
  - 5) Special requirements (e.g., access to GPU or large memory nodes)

- (C) Description of the team. For each user, including PI and researchers/students:
- 1) Full Name
  - 2) NetID
  - 3) Email address
  - 4) Contact phone number
  - 5) Address
  - 6) Campus
  - 7) School
  - 8) Department

The detailed description of Caliburn and its user guide can be found at:  
<http://docs.rdi2.rutgers.edu/aci/>

### **PI Eligibility**

The Principal Investigator (PI) of an allocated project is the person responsible for the accuracy of the resource request and the management of the ensuing allocation. Most commonly the PI is a faculty member or research scientist. A PI may not be a student; a qualified advisor e.g., faculty member, must serve in this capacity. Students will be eligible for Startup and Education allocations and can be part of a project team. A PI may share his/her allocation by establishing accounts under the allocation with any number of collaborators, including graduate or undergraduate students.

## **Supplements**

A supplement is a request for additional resources during an existing allocation time frame. Its purpose is to support changes in the original computational research plan that are required to achieve the scientific goals of the project. This may include support for projects proceeding more rapidly than anticipated or that require more resources than anticipated. Supplement awards are highly dependent upon availability of resources and limited when allocation awards have been reduced to eliminate oversubscriptions.

To request additional resources during an allocation award period, a PI may submit a Supplement Request for resources via email to [aci-help@rdi2.rutgers.edu](mailto:aci-help@rdi2.rutgers.edu). A Supplement request should include a description of new projects or why more resources are needed to complete the project in progress; a work plan that includes justifications that detail the new resource requirements, and any new efficiencies in codes or methods.

## **Acknowledging Support**

RDI<sup>2</sup> requests that an acknowledgement of support should appear in any publication of material, whether copyrighted or not, that describes work which benefited from access to RDI<sup>2</sup> Research Instruments. RDI<sup>2</sup> also requests that a reference to this work be provided. A sample acknowledgement:

*"This work used resources from the Rutgers Discovery Informatics Institute, which are supported by Rutgers and the State of New Jersey."*

## **Review Criteria**

Proposals will be reviewed against three criteria, which apply across all types of resources, with the level of detail of the review rising with the size of the requested resources:

- 1) **Appropriateness of Methodology:** For compute requests, the choice of applications, methods, algorithms and techniques to be employed to accomplish the stated scientific objectives should be reasonably described and motivated. For storage requests, the data usage, access methods, algorithms and techniques to be employed to accomplish the stated research objectives should be reasonably described and motivated.
- 2) **Appropriateness of Research Plan:** For compute resources, the proposed computations should encompass simulation parameters (step size, time scale, ensemble parameters, etc.) that are needed to obtain accurate and meaningful results, as well as the human resources that can be devoted to the task. The amount of resources requested should be derived from the methodology and the research plan.
- 3) **Efficient Use of Resources:** The research instruments should be used as efficiently as possible. Ideally, performance and parallel scaling data would be provided along with a discussion of optimization and/or parallelization work to be done to improve the applications. The reviewers may make their allocation recommendation to specific RDI<sup>2</sup> research instruments based on this criterion.