*Note: This template is provided for full submissions to the Call for FY2023 Exploratory Proposals. No template is required for Letter of Intent submission, please refer to the EMSL website for full submission details. All italicized text should be deleted and replaced with your proposal content.*

**Title:** *The project title must be brief, scientifically or technically valid, intelligible to a scientifically or technically literate reader, and suitable for use in the public press.*

**Specific Aims*:*** *(~250 words). State the specific objectives of the research proposed (e.g., to test a stated hypothesis, create a novel design, solve a specific problem, challenge an existing paradigm or clinical practice, address a critical barrier to progress in the field, or develop new technology), providing concise and unambiguous detail.*

**Mission Relevance:** *(~100 words). Clearly explain how your research addresses specific mission areas and advances the science pertinent to DOE’s Office of Biological and Environmental Research, as well as EMSL's mission, and/or describe the value/impact of its economic or societal importance.*

**Background**: *(~400 words). Provide a concise discussion of previous work to make clear what the research problem is, why you want to do this particular study and exactly what has been accomplished, and demonstrate why the studies need to be continued.*

**Approach or Work Plan:** *(~1200 to 1500 words). Describe the work to be conducted at EMSL for the entire project duration, along with any preliminary, background measurements, or tests completed that validate the approach (include references where relevant and attach the full citations as an addendum). Identify which team member will be doing each portion of the work plan and demonstrate why your project requires EMSL resources and cannot be done elsewhere. For projects expected to require more than one year to complete, clearly delineate work activities for the first year.*

**Computing Approach:** *(Required only if Tahoma compute cycles are requested. 1-page maximum; does not count towards the 4-page limit). Provide details about the proposed computational method or approach, and software to be used. Do not exceed the 1-page maximum for the written description.*

**Computing Resources:** *(Required only if Tahoma compute cycles are requested.)*

## Sensitive Data Restriction

The EMSL computing systems available to users are not approved for use with sensitive data. The processing, storage, or transmittal of sensitive data (e.g. Personally Identifiable Information, Official Use Only, etc.) is thus prohibited on Tahoma and Aurora. Due diligence must be used to prevent inadvertent disclosure of invention, patent, or other sensitive information.

By checking this box, I confirm that participants on this proposal will NOT process, store, or transmit sensitive data on Tahoma or Aurora.

## Computing Resource Request

Using the table below, provide details regarding the amount of computer resources and support needed, as well as the amount of file storage you expect to need. See guidance on the following page.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **TOTAL RESOURCES REQUESTED** | | | | | |
| **CPU Hours** (total request for first year of project) | | |  | | |
| **GPGPU Hours** (total request for first year of project) | | |  | | |
| **Data Storage** (total request for first year of project) | | |  | | |
| **REQUEST DETAILS** | | | | | |
| **Software/Code** | **Node type** (CPU or GPGPU) | **Estimated number of jobs** | **Estimated total node hours** | **Relevant expertise of team members** | **EMSL support requested** (E.g. compiling code, libraries needed, training, etc.) |
| *Example entry (can be deleted):*  *DataProcessTool 2.3* | *CPU (there is a GPU version recently but we have not used it)* | *20* | *10,000* | *Expert at using. Minimal experience installing Windows version. No experience with Linux version, especially installation and using HPC (GPU and parallel versions of code; shared file system; job submission system).* | *Help installing on Tahoma. Tutorial and help logging in/running jobs. Guidance/training on managing archiving large output files, to ensure compliance with EMSL data policies. Assistance to ensure reproducibility and sustainability of our workflows, e.g. using Docker or Singularity. Also, there is apparently a way to “program” the software to sweep and analyze many files using scripting; it would be helpful to learn to leverage this capability.* |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

# *Guidance for Computing Resource Request (delete guidance prior to submission)*

## *Computing Resources*

*There is no upper limit on node hours that can be requested, but the amount of time requested must be justified and tied to the scientific aims of the proposal.*

*Tahoma allocations are awarded in units of wall-clock time expressed in node-hours, and there are a total of approximately 1,500,000 node-hours available per year. Tahoma's 160 CPU nodes each have 36 (3.1 GHz) Intel Xeon processor cores, so 10,000 Tahoma CPU node-hours are equal to 360,000 processor core-hours. The CPU nodes each have 384 GB of memory and 2 TB of on-node flash storage. Tahoma's 24 GPGPU nodes each have 36 processor cores and 2 Nvidia v100 GPGPUs, 1536 GB of memory, and 7 TB of on-node flash storage. Tahoma's 10 PB global file system is capable of 100 Gigabyte/sec bandwidth.*

*Upon successful review and approval of a proposal, computing resources will be allocated for analysis and archiving of experimental data generated at EMSL.* [*Additional details on Tahoma are available here.*](https://www.emsl.pnnl.gov/MSC/UserGuide/tahoma/tahoma_overview.html) *For questions regarding these requirements, contact* [*Jay Bardhan*](https://www.emsl.pnnl.gov/people/Jay%20_Bardhan)*.*

## *Data Storage Resources*

*EMSL Computing Resources use large shared file systems (details here), and as a result it is important that project proposals provide a meaningful estimate of data storage needs. EMSL user projects are required to follow EMSL’s* [*Data Management Policy, which is available here*](https://www.emsl.pnnl.gov/basic/data-management-policy/1243)*.*

**Appendix 1: List of References**

*Each reference must include the names of all authors (in the same sequence in which they appear in the publication), the article and journal title, book title, volume number, page numbers, and year of publication. If the document is available electronically, the website address also should be identified. Proposers must be especially careful to follow accepted scholarly practices in providing citations for source materials relied upon when preparing any section of the proposal. While there is no established page limitation for the references, this section must include bibliographic citations only and must not be used to provide parenthetical information outside of the 4-page Project Description.*

*Cite references in the text using numbers in square brackets: eg, [1] or [2-5]*

NON-ANONYMIZED PORTION STARTS HERE

**Appendix 2: CVs**

*Insert abbreviated CVs (2-page maximum each) for the PI and each of the co-PIs.*

**Appendix 3: Active Collaborators List**

*To help EMSL avoid conflicts of interest on our Proposal Review Panels, please insert a list of active collaborators for the PI and co-PI(s) from the past 2 years, and other individuals who may represent a conflict of interest (template available). In addition to research project collaborators, the list must include co-authors with whom you've actively interacted, co-editors, advisors and advisees, and financial affiliations, all from the past 2 years. This may be identical to the list provided in the LOI.*

*Participation in very large collaborative effort with an individual does not necessarily constitute a conflict of interest. Identify those who would have a personal interest in this proposal or whose unbiased judgment would be questioned by a reasonable person familiar with your relationship. You may substitute a list from a recent NSF, DOE, or other proposal that meets the spirit of this request, though lists of more than 100 collaborators (per investigator) should be shortened to include only the closest collaborators. Please use your best judgment in these cases.*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Key Co-Author** | **Collaborator** | **Advisee / Advisor**  *(specify)* | **Other**  *(specify nature)* |
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*Example of completed form, using recommended format (delete before submission):*

Table

Description automatically generated