Center for Research Computing (CRC)

Policy for Collaborative Core Users

a) Confidentiality

All data shared with the CRC is kept confidential. All data analyzed in the facility are owned by the investigator and will not be shared unless specific written direction is provided by the owner.

b) Conflict resolution

The CRC utilizes a Service Level Agreement (SLA, see the Appendix A) approved by Notre Dame’s Office of General Council that, in addition to confidentiality agreements and cost, outlines procedures for conflict resolution consistent with University recharge policy. SLAs must be signed by users and the core prior to the start of a project.

c) Cost Recovery/Payment Policies

Payment for services policies are defined as following:

Users must sign SLAs prior to the start of a project. Fees for services shall be charged as set forth in SLAs. Users at Notre Dame and all Indiana CTSI are charged at calculated internal rates.

Collaborative projects lead by Notre Dame investigators can be eligible for internal rates if the following conditions are met:

1. Project is fully collaborative with open data sharing and the expectation of joint publication.
2. Data, software, and other research products generated by the CRC will be used jointly to facilitate future extramural grant submissions.
3. Or, in a case where existing joint funding cannot be subcontracted by regulation of the granting Agency. The first two qualifications apply.

Payments shall be made by sponsor within (30) days of receipt of invoices from the University, unless different agreements have been negotiated. In the advent of failed services the core staff will work with the users to identify the underlying causation. If sample quality or User error is identified as the cause the User will be responsible for the full contractual agreement. In the case of error or equipment failure that is the responsibility of the core the service will be repeated
without additional cost to the User. Projects that are terminated by a User-core agreement will be prorated based on work completed.

d) Prioritization of work

Priority is given to Notre Dame, IUSM south Bend, IU, and Purdue investigators who are providing funds from external or internal sources. Lowest priority will be given to industry sponsored or commercial work.

e) Publication

All publications resulting from projects supported by the CRC must acknowledge the CRC in all publications. To acknowledge support from the CRC the users should use the following citation:

"This research was supported in part by the Notre Dame Center for Research Computing through [CRC resources and services]. [We specifically acknowledge the assistance of ]"

Authorship is expected for collaborative projects.

f) Other Policies

All CRC policies are available at: https://crc.nd.edu/index.php/services/policies
Appendix 1

Terms of Service
for Services Provided by the Center for Research Computing

Agreement ID: ____________________________

(Name), having a principal place of business at __________________ (hereinafter referred to as "Client") has requested that the University of Notre Dame, through the Center for Research Computing, (hereinafter referred to as “CRC”), perform certain services as specified herein according to these terms and conditions.

RECITALS:

1. CRC has developed expertise in software engineering, methodologies of computation, visualization, GIS, and related technologies, equipment, and facilities (hereinafter referred to as "Specialized Services"), in the area of research computing;

2. Client desires specialized assistance requiring these Specialized Services;

3. Such Specialized Services are currently available on a limited basis from CRC;

4. Specialized Services contemplated by this Agreement are of mutual interest and benefit to CRC and Client, will further the Instructional, Research, and Public Service missions of CRC, and may derive benefits for both Client and CRC through the advancement of knowledge.

Terms of Service

Article 1 - Specialized Services
Specialized Services are described in the scope of work in Appendix A. The computational scientist assigned to this project will be <CRC Computational Scientist>.

Article 2 - Period of Performance

The period of performance shall be <Start Date> to <End Date>.

Article 3 - Fees

Fees for services shall be charged as set forth in Appendix B. CRC will work to ensure the total cost to Client does not exceed <Amount>. However, because there is shared risk between CRC and Client, to accommodate unforeseen circumstances the total cost is permitted to exceed no more than 20% of the quoted cost without prior written approval of Client.

When applicable, fees will include three hours per month of effort to maintain all project infrastructure (e.g., quality assurance and production servers on which software is staged and deployed, respectively). This maintenance includes patching and systems administration of the servers in question.

Additional fees may apply for any delays caused by Client as described under Client Duties and Responsibilities in Section 2 of Appendix A.
Article 4 – Usage and Attributions

CRC and Client shall both have the right to use and re-use any work products resulting from this agreement in other legitimate, University research efforts. Attributions to Client and CRC shall be appropriately displayed and maintained on/with the work products.

Article 5 – Reports and Publications

If required in Appendix A, the CRC shall provide Client with a written report regarding the data obtained in the course of said Specialized Services. The data from the report will not be published by the University without written permission of Client. Client recognizes that scientific processes, techniques, procedures, or other information resulting from the CRC’s work hereunder, which are not unique to processing Client’s proprietary materials or do not derive from Client-provided materials or information, may be deemed publishable by CRC, and that the researchers engaged in project shall be free to publish such information.

Article 6 – Warranties and Indemnity

CRC will conduct the work hereunder in a professional manner consistent with applicable scientific standards and the processes and protocols identified in Appendix A attached hereto. Beyond this, CRC makes no warranties, express or implied, regarding the results of work performed under this Agreement. Client agrees to indemnify and hold harmless CRC against any claims and costs (including reasonable attorneys fees) arising out of Client's or any third party’s use of the results of the work performed under this Agreement, or its reliance upon the reports set forth in Article 5, except to the extent that such claim or cost results from the negligent or intentional act or omission of the CRC. Under no circumstances shall the CRC’s liability hereunder extend to indirect or consequential damages, and CRC’s liability hereunder shall be limited to the amount of fees specified in Article 3 above.
Article 7 – Quality Assurance

As part of its software engineering process, CRC will include quality assurance activities (e.g., regression testing, UI testing, code reviews, user acceptance testing). Client agrees that the time/effort budgeted for these planned tasks cannot be superseded by other work without the explicit consent of both Client and CRC.

IN WITNESS WHEREOF, the parties hereto have caused these presents to be executed in duplicate as of the day and year written below.

Client

Signed: _________________________________
Name: _________________________________
Title: _________________________________
Date: _________________________________

CRC

Signed: _________________________________
Name: _________________________________
Title: _________________________________
Date: _________________________________
Appendix A

Description of Services, Scope of Work, and Required Protocols

1. Description of Application/Service

CRC will develop the X portal and database for Client. The portal and database will be logically available at X.nd.edu (a server being provided to the project according to costs specified by the CRC’s Virtual Machine Services Policy). The server will be physically maintained as a virtual machine (VM) at CRC’s Union Station data center. Under the current agreement CRC will maintain this system until midnight on <End Date>, at which time alternate arrangements will have to be made for system monitoring, patching, and backups—Client may wish to contract with CRC to continue these services.

Important project milestones include:

- Preparation Activities (due ??/??/??)
- Implementation (due ??/??/??)
- Quality Assurance (due ??/??/??)
  - User acceptance testing / debugging
  - Documentation
- Production Deployment (due ??/??/??)

Service Description

<table>
<thead>
<tr>
<th>What systems/applications are covered by this SLA and for what period of time?</th>
<th>The X portal and database server operating on a VM at Union Station from &lt;Start Date&gt; – &lt;End Date&gt;.</th>
</tr>
</thead>
</table>
| What services are included in this SLA? | • Construction and installation of the X server (VM)  
• Creation of the X portal and database  
• Configuration of the portal and database to operate in a production mode  
• Basic assistance with customizing and utilizing the portal  
• Monitoring and patching of the X server |
|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| What services are NOT included in this SLA? | For example:  
• Training of end-users in how to operate the relational database management system  
• Portal functionality extensions (beyond the X core functionality) |
| How will service be delivered? | CRC operations and cyberinfrastructure personnel will:  
• Construct and install the X server (including OS, Web server, database, and <Other>)  
• Develop and configure the X portal application that will be used to encode and store project data  
• Develop and configure the database schema that will store project data  
• Assist with basic customization and usage of the portal  
• Monitor and patch the portal and associated infrastructure |
| What are the hours of operation (regular business hours and after hours support)? | Regular business hours: 8 a.m. – 5 p.m., Monday through Friday, except for University-recognized holidays |
| When will regularly scheduled maintenance be performed? | During the SLA’s time period, OS and application patches will be applied to the X portal and database no more than once every week in the case of emergency patches to address critical issues; the outage time selected for normal maintenance activity is twice each month (on the 1st and 15th days) from 7:30 a.m. to 9:30 a.m. |

**Performance**
### Service Commitments and Metrics

<table>
<thead>
<tr>
<th>Performance Metric</th>
<th>Service Commitment</th>
<th>Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effort Schedule</td>
<td>80% on schedule (meaning things can slip no more than 20% of the entire allotted project effort; e.g., unforeseen circumstances could cause a 100-hour project to require 120 hours of effort, but no more than this)</td>
<td>Number of hours of effort by which major project components miss their target</td>
</tr>
<tr>
<td>Quality Assurance</td>
<td>Sufficient testing/debugging will be employed to reveal and repair defects (in CRC work) that could prevent the system from operating in its intended manner. Note: this does not extend to underlying software systems NOT maintained by CRC.</td>
<td>Number of outstanding defects (caused by CRC craftsmanship) that prevent the system from operating in its intended manner</td>
</tr>
</tbody>
</table>

### Problem Resolution

<table>
<thead>
<tr>
<th>Description</th>
<th>Resolution/Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project effort exceeds 20% of total scheduled effort (e.g., due to poor planning or unforeseen circumstances)</td>
<td>CRC will provide necessary resources (at no additional cost to Client) to cover effort beyond 20% of the total, scheduled effort</td>
</tr>
<tr>
<td>Defects (post-SLA) as a result of CRC craftsmanship impair system’s intended business function</td>
<td>For up to one month following the completion of this SLA, CRC will correct all defects caused by CRC craftsmanship at no cost to Client. Between two and three months following the</td>
</tr>
</tbody>
</table>
Problem Resolution

<table>
<thead>
<tr>
<th>Description</th>
<th>Resolution/Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>completion of this SLA, CRC and Client will evenly share the cost of</td>
<td>repairing these defects. Beyond three months following the completion of this SLA,</td>
</tr>
<tr>
<td>any CRC-caused defects will need to be addressed as a new project through</td>
<td>any CRC-caused defects will need to be addressed as a new project through a new SLA</td>
</tr>
<tr>
<td>a new SLA at full cost. All work to repair defects will take place during</td>
<td>at full cost. All work to repair defects will take place during normal business hours.</td>
</tr>
<tr>
<td>beyond three months following the completion of this SLA, any CRC-caused</td>
<td></td>
</tr>
<tr>
<td>defects will need to be addressed as a new project through a new SLA at full</td>
<td></td>
</tr>
<tr>
<td>cost. All work to repair defects will take place during normal business</td>
<td>cost. All work to repair defects will take place during normal business hours.</td>
</tr>
<tr>
<td>cost. All work to repair defects will take place during normal business</td>
<td></td>
</tr>
<tr>
<td>hours.</td>
<td></td>
</tr>
</tbody>
</table>

CRC causes training sessions to be missed (e.g., by rescheduling project      | CRC will fulfill training sessions on mutually agreeable dates/times at no cost to |
| resources elsewhere)                                                       | Client. Should training involve systems administration,                              |
|                                                                            | CRC will maintain control of system until training is complete                       |

2. Responsibilities

CRC Duties and Responsibilities during the period of the SLA:

- Install, configure, and secure one VM server with the <OS> operating system. The system will be configured according to CRC security policies
- Install and configure the software services necessary to operate the portal and relational database. These services will include the Apache2 Web server, PostgreSQL database, and <Other>
- Design and build a software system to enable Web-based access to the database (i.e., store and retrieve project data, along with limited project administrative capabilities)
- Provide system administration: patching, monitoring, network security, and user access control

Client Duties and Responsibilities
• Inform CRC (through direct contact with relevant CRC developers or through the CRC’s Redmine project management system) about all errors occurring with the portal and database as soon as errors are identified
• In a timely manner, deliver any materials (e.g., project data, dummy data) and feedback (e.g., user acceptance testing) required for the project to progress. Any delays leading to non-productive cycles will result in additional charges for each idle hour.

3. Reassessments

This SLA is a dynamic document and may be periodically reviewed and changed when any of the following events occur:

• The environment has changed
• The customer’s expectations and/or needs have changed
• Workloads have changed
• Better metrics, measurement tools and processes have evolved

Contents of this document may be amended as required, provided mutual agreement is obtained and communicated to all affected parties. The Document Owner will incorporate all subsequent revisions and obtain mutual agreements and approvals as required.
Appendix B

Payment Schedule

At the end of each month, CRC will make a journal entry and charge Client’s following account based on CRC time logs, hourly rates for CRC services and Client’s monthly approval of the logs:

XXXXXX-XXXXX-XX

Important note: Please note that the CRC hourly rates are subject to change at the beginning of each fiscal year (July), and it is CRC’s responsibility to inform a Client of these new rates if the project spans beyond one fiscal year. In such a case the project final budget should be re-negotiated.

The business manager for this account is:

<Name>
>Title>, <Department>
<Email>
<Office Phone>
Appendix C

Project Workflow

The Center for Research Computing endeavors to follow established, best practices in all of its software engineering efforts. The following table describes the framework in which these practices are anchored:

<table>
<thead>
<tr>
<th>Work-Flow Step</th>
<th>Best Practice(s)</th>
<th>Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Initial contact with client</td>
<td>Face-to-face meeting</td>
<td>Meeting notes</td>
</tr>
<tr>
<td>2. Charter the project</td>
<td>Requirements gathering</td>
<td>Notes from planning poker</td>
</tr>
<tr>
<td>2. Charter the project</td>
<td>Project Estimation</td>
<td>Draft of project plan</td>
</tr>
<tr>
<td>2. Charter the project</td>
<td></td>
<td>Email client with plan summary</td>
</tr>
<tr>
<td>2. Charter the project</td>
<td>Draft and execute SLA</td>
<td>SLA document</td>
</tr>
<tr>
<td>3. Develop the project</td>
<td>Analysis and design</td>
<td>ERDs, UML diagrams, mockups, etc.</td>
</tr>
<tr>
<td>3. Develop the project</td>
<td>Establish development environment</td>
<td>Existence of project infrastructure</td>
</tr>
<tr>
<td>3. Develop the project</td>
<td>Software engineering and testing (cyclical)</td>
<td>Notes from weekly update meetings with client</td>
</tr>
<tr>
<td>3. Develop the project</td>
<td></td>
<td>Task, bug, support tickets in project tracker</td>
</tr>
<tr>
<td>4. Deliver the project</td>
<td>User acceptance testing</td>
<td>Updates to tickets in project tracker</td>
</tr>
<tr>
<td>4. Deliver the project</td>
<td>Debugging</td>
<td></td>
</tr>
<tr>
<td>4. Deliver the project</td>
<td>Testing and Quality Assurance</td>
<td>Test suites (unit and functional when appropriate) along with test reports, QA plan, etc.</td>
</tr>
<tr>
<td>4. Deliver the project</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Maintain Infrastructure</td>
<td>Turn over resulting infrastructure to client</td>
<td>All significant tickets in project tracker are closed</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>-----------------------------------------------</td>
<td>-----------------------------------------------------</td>
</tr>
<tr>
<td>5. Maintain Infrastructure</td>
<td>Production deployment</td>
<td>End of project reached according to schedule in SLA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>User-level documentation (as needed)</th>
<th>User manuals, how-to documents, etc.</th>
</tr>
</thead>
</table>

There is no cost to the client for workflow steps 1 and 2. Beginning in Step 3, a Service Level Agreement governs how a given project unfolds, specifying important elements including, but not limited to:

- How much effort and money a project will cost
- When the CRC will begin billable work on a project and when work will stop
- Which computational scientist, if any, will be assigned to help oversee project activities
- What work activities the CRC will perform
- What the client’s responsibilities are for the project
- Any provisos or special circumstances relevant to the project

During a project it is expected that regular, significant communication will take place between the client and CRC. Generally, this will happen in weekly update meetings during which the client meets with the CRC’s project team face-to-face or through telepresence.

Finally, it is imperative that the client be actively engaged in their project so that, in a timely fashion, they can:

- Provide any data needed by the developers
- Provide feedback on the state of the project
- Participate in user acceptance testing