Project title:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Faculty in the research cluster: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Students in the research cluster: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

NRT faculty: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**What is this document and how should you use it**

This document is a research and communication resource for you and your team members to:

1. Become familiar with the research expertise of team members
2. Identify and address communication challenges due to language barriers
3. Develop research questions that include other team members expertise and contributions, and that are relevant to the three core concepts of the OSU-NRT program
4. Provide and receive feedback from OSU-NRT faculty

The steps in this document are meant to be addressed as a group (two or more people) of faculty, students, or faculty + students. The ideal way to move through this document is to have both faculty mentors and students go through it, separately. Then, as a cluster of faculty AND students, compare and discuss your outcome and come up a unified document. Alternatively, faculty and students can work through the steps together, but students should take a primary role, while faculty advice.

The NRT faculty will help you through these steps by providing additional information on the NRT core concepts and by helping communication and convergence of your research questions. He/She can be involved at any step, but at the very least should be present when you discuss the outcome as a cluster (student + faculty).

We suggest that you start working through this set of questions during the Intensive Field Course in September. However, because development and convergence of your research questions is an iterative process occurring during the first academic year, we also recommend establishing a process (e.g., by-weekly meetings) to repeat these steps. During the first academic year there will also be other opportunities to meet as a group and work together (e.g., MRM 525 series).

Please see the core concept diagram below. Considering these three core concepts, work through the following points as a team:

1. **Each student/faculty describes his her expertise to the others, and try to place her/himself within one or multiple OSU-NRT core-concepts, or linkages between core-concepts, shown in the diagram below.** The goal of this exercise is to *a)* become familiar with the disciplinary expertise of your peers, and *b)* assess whether your team has a balanced blend of disciplinary background to address research questions from the perspective of the three NRT core concepts.
2. **Each student defines the three core NRT concepts based on his/her previously acquired knowledge and disciplinary background and shares and discusses these definitions with the rest of the team**. The goal of this exercise is that of exposing potential convergence/divergence of concepts that are key to the NRT program and to the team research. At this point it is not necessary to resolve ambiguity, but rather to expose it.
3. **Each student expresses her/his expectations for the NRT project**. Possible (valid) outcome include the balance between process vs product, timing to completion, individual vs team based activities. The goal here is to facilitate developing a *collective intentionality*, which involves shar*ing* goals and expectations.

1. **Each student/faculty writes down and discuss with the others 1 or 2 researchable questions from his/her disciplinary perspective.** Assuming that your group is composed of three students/faculty, you should end up with 3 to 6 researchable questions. The goal here is to understand the research interests that are represented in your team.
2. **Related to each of these researchable questions, discuss how each team member expertise and research interests is informing the other, for example by adding new insight to your question, or new research techniques.** The goal here is to form linkages between research questions and students.
3. Now that you have taken the time to address the previous 5 steps and familiarized yourself with the research opportunities and challenges perceived by each member of your team**, repeat steps 3-4-5. Collectively, can you come up with 1 or 2 researchable research questions, taking into account the contributions and expectations from all expertise included in your team?** The goal here is to start converging on your thinking in ways that include other team member expertise and contributions, and are relevant to the three core concepts of the OSU-NRT program. This will be an iterative process.

**NRT Core concepts**

1. *Coupled Natural Human* (CNH) systems: include human and biophysical systems, and their connections.
2. *Big Data* (BD): Large volume of data with high throughput. Big data can be temporal, spatial, or dynamic; structured or unstructured.
3. *Risk and Uncertainty* (R&U): A risk is quantified by some measure of the expected cost, involving probabilities and magnitudes, of an undesirable event. Uncertainty is driven by unknown processes and data quality.