1) The project:
    a) Description: The search for gravitational lenses in sky survey data is an old problem, but there have been few highly successful algorithmic solutions, because the data comes in the form of images. Human visual inspection is highly successful, but costly. The Dark Energy Survey has the potential to take images of more strong lenses within the next few years than have been discovered in all other astronomical surveys.
    This project aims to use convolutional neural nets to identify strong gravitational lenses in images.
    b) Phase 1: Software Testing and Basic Science Runs [single-node, small-scale data]
        i) Scaling tests on the cluster
        ii) Initial science runs with data
        iii) Tailoring the algorithm on simulations and data
    c) Phase 2: Major Science Runs [multi-node, large-scale data]
        i) Run on large-scale data sets for science
2) Proposed work-flow that will run on the cluster
3) Expected job sizes
    a) Phase 1 (testing):
        i) One node
        ii) Minutes to hours of processing time; occasionally on the scale of days.
    b) Phase 2 (production):
        i) Multi-node
        ii) Hours to days of processing time; unlikely to be longer than that.
4) How long are the cluster sources required:
    a) Phase 1: up to a few months
    b) Phase 2: 3-6 months
5) Disk Space required:
    The non-volatile data requirements are flexible and as yet uncertain, as I can store on local machines and transfer as needed. I also provide expected upper limits. We can adapt to what is available.
    a) Phase 1:
        i) volatile: <20GB
        ii) non-volatile: <100GB
    b) Phase 2:
        i) volatile: ?
        ii) non-volatile: < 2TB
6) Names of project supervisor or PI:
    a) PI: Brian Nord, PhD (post-doc); Co-I: Irshad Mohammed (Post-doc)
    b) Supervisors of PI:
        i) Liz Buckley-Geer (Lead of Computing for Astro)
        ii) Brenna Flaugher (Head of Astro/Lead of DES)