Overview

The National Science Foundation has invested in resources like XSEDE and the Open Science Grid to enable research, but Alabama's institutions of higher learning are often unable to leverage those investments for lack of local CI development resources or research computing facilitator expertise. This problem puts Alabama researchers at a competitive disadvantage for sponsored research that would otherwise benefit the overall research capacity, healthcare needs, and economic growth of the people of Alabama. Inadequate CI in the state manifests in several ways including no last mile of high capacity network connectivity, limited access to robust high-performance computing or skilled reasonably priced cloud computing solutions. Most important is the lack of dedicated research computing support. The root cause is clear: no single institution in the state has been tasked with creating and implementing a coherent, unified CI plan for the Alabama institutions of higher education. The recently announced NSF CI CoE: Demo Pilot: Minority Serving Cyberinfrastructure Consortium, the Alabama EPSCoR "ALEPSCoR RII Science & Technology Plan," and Governor Kay Ivey's Alabama Executive Order 720 to stimulate an innovation economy all herald the unique moment in time where Alabama industry, state, and academic research priorities are aligned with state political priorities. To seize on this rare opportunity, we propose the *Alabama Advanced Research Computing Consortium* (AARCC) planning project as an Alabama statewide collaboration among public, private, and HBCU doctoral granting institutions to solicit long-term local, state, regional, and additional federal funding to mitigate CI deficiencies in the state in collaboration with existing industry partners, academic institutions, regional consortiums, and national CI organizations.

Intellectual Merit

The AARCC planning project will produce three deliverables: 1) an Alabama statewide research CI development plan, 2) a statewide research network plan, and 3) a statewide research computing consortium organizational plan. Eight stakeholder engagement events will be held at the eight doctoral degree granting institutions in Alabama, two of which are designated HBCUs, and one event will be held with industry leaders in the state. These events will be an opportunity to inform researchers and campus leaders about the research CI available, but also for the project team to learn about research priorities and current barriers at those institutions. Representatives from the eight colleges/universities will form working groups to assure representation during plan development. A collaborative and coordinated approach is the best path to success given the institutional diversity, readiness, and priorities.

Broader Impacts

Alabama is at a unique moment in time where federal, state, and academic research priorities are poised to invest in a robust statewide CI for economic development and research goals. The eight institutions are representative of the entire AL higher education profile of 60 institutions and 15 HBCUs. The primary goal of AARCC is to increase Alabama researcher competitiveness by ensuring access to modern research CI and knowledge. Funding from the NSF for this project will provide credibility, authority, and an objective platform free of institution-specific motives for the stakeholders to move forward with an Alabama statewide initiative. AARCC will also achieve economies of scale for CI financial investments and knowledge dissemination for CI professional and research software engineering workforce development that individual institutions cannot. We seek Alabama research competitiveness in the NSF Big Ideas of Growing Convergence Research, Harnessing the Data Revolution, and Understanding the Rules of Life based on ALEPSCoR state priorities for investment.