

GeoSTraTeCI (read geo-strategy): GeoSync Training, Technology and Cyber Infrastructure Development Center at the University of Hawai'i

The synchrotron earth science community produces at an accelerating pace a vast amount of numeric results that characterize physical and chemical properties, as well as behaviors of natural samples and synthetic minerals, which are utilized in modeling complex and large scale geosystems and phenomena. These results are currently scattered throughout the scientific literature, and not available via a centralized knowledge database that would be continuously updated, properly curated, including quality control, and equipped with proper interfaces allowing automated data mining and workflows. It is critically important that the new consortium establishes an appropriate comprehensive cyber infrastructure (CI) platform that would serve as a connection and technology resource for the community to advance and share their science, as an outreach mechanism, as well as a gateway to develop collaborations and outreach to other scientific communities.

We propose creating GeoSTraTeCI (read geo-strategy): *GeoSync Training, Technology and Cyberinfrastructure* Development Center at the University of Hawaii, to be managed by a team of researchers from several institutions, with decades of successful synchrotron research, instrument development, scientific software, database and science gateway development experience. The principal product of GeoSTraTeCI will be a new Science Gateway API that will utilize, integrate, and connect three existing online databases, AHED, AFLOW and ENKI, as well as create several new data repositories for mineralogy, mineral physics and petrology communities. The choice of these existing database/modeling products emphasizes strong multidisciplinary, well in line with the plans to expand the disciplinary scope of the GeoSync consortium beyond communities currently represented by COMPRES and GSECARS. GeoSTraTeCI will target the development of 4 different but integrated CI product/services: (1) Database development, management and integration of existing and new databases (deposition, curation, quality control, data mining tool development) (2) Data analysis and modeling open source code development, access and training with community engagement emphasis, and including automated workflows and software bridging the gap between experiments and computer simulations (3) Remote and secure access and training to specialized synchrotron and commercial software and (4) Online training and outreach tools, online collaboration and data sharing solutions.