Reusing the Magnetics Information Consortium (MagIC) Data Store, Search, and Web Components for EarthCube Integration

Research and education in the Earth Sciences are characterized by the collection, use and reuse of disparate, domain-specific data. One vision of EarthCube is to provide holistic approaches that allow seamless archiving, access to, and analysis of broad suites of Earth Science data, thereby enabling insights that could not have been previously imagined. Considerable effort needs to be invested before such integrated approaches can become feasible, let alone routine. Some subdomains across the Earth Sciences have invested considerable intellectual resources and time to develop data models that provide scientific data and associated metadata to their specific communities while other domains lack such integrated resources. Data in these subdomains may remain dark, undiscoverable, and unusable for reproducing crucial science experiments, testing research hypotheses, or creating well-informed teaching materials. In many subject areas, smaller online nodes have not (yet) been developed because the relevant communities may be too small and lack resources and expertise in information technology. Software developed for the MagIC database can be reused to dramatically reduce the time and effort needed to create nodes for these smaller data sets.

The Magnetics Information Consortium (MagIC) at https://earthref.org/MagIC recently invested heavily in developing a modern web application replacing an older monolithic architecture with configurable containerized microservices. This solution has vastly improved the modularity and scalability of the MagIC web application, presenting an opportunity for its web components to be configured for reuse in many other data repository scenarios. By using the MagIC framework other subdomain scientists can establish new data nodes in which their data will be easily uploaded using scalable tools for ingesting free-text data files and spreadsheets, standardized per their community norms, homogenized by applying well-documented and versioned domain-specific data models, and reusable through web interfaces that are customizable for their specific needs. We believe that as sufficient numbers of these small and disparate data nodes appear online, there will be a significant payoff in their use through larger integrative applications, such as those being developed by EarthCube. In this poster we will present the MagIC framework technologies and how to apply them to other Earth Science subdomains.