The Strabo digital data system for Structural Geology and Tectonics

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We are developing the Strabo data system for the structural geology and tectonics community. The data system will allow researchers to share primary data, apply new types of analytical procedures (e.g., statistical analysis), facilitate interaction with other geology communities, and allow new types of science to be done. The data system is based on a graph database, rather than relational database approach, to increase flexibility and allow geologically realistic relationships between observations and measurements. Development is occurring on: 1) A field-based application that runs on iOS and Android mobile devices and can function in either internet connected or disconnected environments; and 2) A desktop system that runs only in connected settings and directly addresses the back-end database. The field application also makes extensive use of images, such as photos or sketches, which can be hierarchically arranged with encapsulated field measurements/observations across all scales. The system also accepts Shapefile, GEOJSON, KML formats made in ArcGIS and QGIS, and will allow export to these formats as well.

Strabo uses two main concepts to organize the data: Spots and Tags. A Spot is any observation that characterizes a specific area. Below GPS resolution, a Spot can be tied to an image (outcrop photo, thin section, etc.). Spots are related in a purely spatial manner (one spot encloses anther spot, which encloses another, etc.). Tags provide a linkage between conceptually related spots. Together, this organization works seamlessly with the workflow of most geologists. We are expanding this effort to include microstructural data, as well as to the disciplines of sedimentology and petrology.