The Strabo digital data system for field geology

Strabo is a new data system for field geology data. The Strabo system was intended to provide digital capacity for the structural geology and tectonics community, but is now being expanded to encompass the sedimentary geology and petrology communities. The data system will allow researchers to share primary field data and observations, apply new types of analytical procedures (e.g., statistical analysis), provide a context for sampling, plot simple maps and stratigraphic sections, and create common vocabularies to facilitate interactions within and across geology communities. This will enhance new advances in geoscience research and teaching.

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 multiple scales. The system also accepts Shapefile, GEOJSON, KML formats made in ArcGIS and QGIS, and will allow export to these formats as well. The Strabo database will be linked to other databases to provide integration with other EC efforts.

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 another spot, which encloses another, etc.). Tags provide a linkage between conceptually related spots. Together, this organization encompasses the workflow of most geologists. Strabo comprises a valuable database that can be shared and accessed by multiple Earth science subdisciplines.