Position Paper

Development of a CyberGIS Ontology using the newly re-engineered GIS&T Body of Knowledge Cyber Infrastructure
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A prototype of the cyber infrastructure framework for re-engineering of the GIS & T Body of knowledge has been developed (Ahearn et al., 2013). This new computational framework has at its core a concept based ontology represented using semantic web technologies in the Jena framework (Apache Jena Project 2012) and a series of Restful service that are used to interact with the BoKOnto. Maintenance of the ontology is conducted in a bottom-up fashion drawing from domain actors (i.e., members of the GIS&T community) in a participatory, collaborative setting where BoK2 concept development, editing, and validation are supported by a semantic visual wiki environment (Ahearn et al., 2013; www.gistbok.org). It also employs analytic components to infer new concepts and relationships through the data mining of knowledge artifacts. These changes are then passed via a web service to the BoKOnto for review and acceptance of concepts in the creation of a authoritative versions (Figure 1).

![Visual Wiki](Image)
![Data mining](Image)

**Figure 1: Creating authoritative versions**

The approval process could be configured in a number of ways.

- A "top down" approach in which experts in those disciplines review additions/changes to the GIS&T BokOnto to determine what concepts are accepted in the next version (traditional editor).
- Scores for confidence in a new concept and its connections could be generated from the bottom up in a collaborative fashion through assertion and debate by the community (Ahearn et al., 2013).
- Scores for new concepts could be inferred through data mining of the contributors publications to generate a weight for each concept they wish to add/modify. The concepts parent would be used for the scoring metric.
• Scores could for new concepts could be determined through the nature (confirmation of existing content, correction, or revision) of a contribution (Keßler and de Groot, 2013).

Our proposal is to use the new cyber infrastructure framework (Ahearn et al., 2013) described above to create a new body of knowledge for CyberGIS. Skupin (CyberGIS, 2013) has discussed, in his position paper, approaches to this end.

References

