

Ontology for *The National Map*

Rob Raskin
NASA Jet Propulsion Laboratory
February 3, 2009

My Work/Interests

- Lead developer of the SWEET ontology
 - Scalable concept space for Earth system science and applications
 - Over 3000 concepts represented using OWL DL
- Science manager at Jet Propulsion Laboratory
- Key contributor to ontology development of Spatial Decision Support Consortium, based at U. of Redlands

Intersecting/Impacting Work

- I have developed a large-scale ontology
- For maximum benefit, ontologies should be:
 - Dynamic
 - core component
 - planned expansion by domain experts
 - Scalable
 - Separate abstract/general concepts from applied ones
 - Identify unidirectional importation
 - Build upon existing ontologies, where available

Benefits to National Map

- Common ontology implies common understanding of concepts across domains, expertise, cultures, etc.
 - Ontology goes well beyond a controlled vocabulary
 - Distinct user communities can map their own terms to common terms in the core ontology
- Ontologies are a form of cyberinfrastructure, in support of machine-to-machine communication

Challenges to National Map

- Large-scale ontology is difficult to visualize
 - Use of visual tools such as CMAP are strongly recommended
- Attain buy-in/agreement on terms inclusively
 - Design ontology to be strongly inclusive from the outset
 - Potential user community is **very** large
- Don't try to reinvent the wheel
 - Much knowledge is already captured and can be built upon incrementally

My Contributions

- Experience with ontology design
 - Faceted, scalable approaches enable knowledge base to grow gracefully
 - Provide structure for domain specialists to expand specialized knowledge
- Experience with ontology languages
 - OWL is very widely accepted; its use enables linking with existing and future ontologies
- Experience with ontology development tools
 - CMAP is strongly recommended, due to its intuitive, visual approach

