GeoAtom, OGC, and the Geospatial Enablement of Everything

Joshua Lieberman,
Traverse Technologies & Open Geospatial Consortium
Georeferencing is not just measurement, but representation (geometry, scale, reference system, attribute, authority).

Features are a discernment and representation of real world / geographic phenomena, but not of all reality or all knowledge.

Multiple, even conflicting features may be asserted to represent a given information artifact depending on circumstances, authority, application, intention.

In whatever form it is encoded, reliable metadata is critical for giving and retaining meaning in any georeferencing process.

GeoRSS / GeoAtom is a Web-compatible form of geospatial “reification” which can support multiple / related feature assertions.
General feature Model

Model presumes all is shared within an information community.

What if features are created and consumed by different communities?

What if phenomena have already been observed for a different, non-geographic application?
(Geo)semantic interoperability stack

- **Intention**: description, navigation
- **Perception**: visual - aural - tactile
- **Theory**: persistence, consequence
- **Discernment**: feature, context
- **Application**: discovery, analysis
- **Representation**: geometry, raster
- **Ontology**: upper, domain, foundation
OGC Tools +

- **GML & Simple Features**
  - Geometry is not the feature itself, but a property of the feature
  - Geometry is meaningful within a defined coordinate reference system
  - Georeferenced information is represented as “other” feature properties

- **Observations and Measurements**
  - Separates the O&M “event” artifact from the “Feature of Interest”
  - Links from the existing information to the georeferencing feature.
  - Observation artifact represented as a feature, with or without a geometry property

- **GeoRSS / GeoAtom**
  - Provides a lightweight model and encodings (XML, GML, OWL) for adding feature properties to “other” information
  - Links from the new feature assertion to the existing information without necessarily modifying the information itself
OGC Service Tools

- **WFS Gazetteer Profile**
  - Specialized feature type for Web Feature Service
  - Update work: feature type & operations
  - Not well suited for either relationships or metadata

- **OGC Catalog**
  - “Intended” for metadata records
  - ebRIM profile provides a rich relationship model and soft typing
  - Complex filter interface for full search capabilities
Trust, Lies, and Metadata

- Meta-data is *(not necessarily)* objective data about data.
- Meta-data for a resource is *(not necessarily)* produced only once.
- Meta-data must *(not necessarily)* have a logically defined semantics.
- Meta-data can *(not always)* be described by meta-data documents.
- Meta-data is *(not necessarily)* the digital version of library indexing systems.
- Meta-data is *(not necessarily)* machine-readable data about data.

...Semantic Web Metadata for e-Learning - Some Architectural Guidelines
Mikael Nilsson, Matthias Palmér, Ambjörn Naeve
**GeoRSS / GeoAtom**

- **Day job**: tag news feeds and other Web resources with geographic location, for discovery and visual browsing

- **Evening gig**: “featurize” resources, a new and independent geographic view of existing information

- **Midnight oil**: news about or annotations of existing features, eventful output of Web feature servers, story graphs, links to well-known features
GeoRSS 1.1 Content
“Featurizing” Model
• <georss:line>45.256 -110.45 46.46 -109.48 43.84 -109.86</georss:line>
• <georss:polygon>45.256 -110.45 46.46 -109.48 43.84 -109.86 45.256 -110.45</georss:polygon>
• <georss:box>42.943 -71.032 43.039 -69.856</georss:box>
• <georss:featuretypetag>city</georss:featuretypetag>
• <georss:relationshiptag>is-contained-within</georss:relationshiptag>

(GeoRSS Simple maps directly onto GeoRSS GML)
Thoughts

- Application matters: index, search, visualization, analysis, money
- Georeference is assertion: trust, authority, time-space validity, diversity
- Sense of place: culturally applicable representation, local usage, general understanding
- Multiple service levels: simple authorities vs. rich Web mining