

**SMAC - Working Group for Standards Meeting
December 6, 2011
NC Secretary of State's Office
Raleigh, NC**

Attending: Tom Morgan, Steve Strader, Janet Lowe, Silvia Terziotti, Luis Carrasco, Mike Mull, David Giordano. On the phone: James Armstrong, David Wiggins.

The featured guest for this meeting was Doug Nebert of the US Geological Survey, Federal Geographic Data Committee (FGDC). He did a presentation on FGDC Standards and National Spatial Data Infrastructure (NSDI).

Doug explained that in 2008, FGDC adopted framework standards for 11 themes. The approach is to adopt neutral abstract standards for different environments. This involves state, local, commercial and academic participants. Content-based standards have been the norm. Note: FGDC is moving toward ISO metadata standard.

FGDC endorsed 64 external geospatial standards for community users (in collaboration with DoD). One example is GeoTIFF Revision 1.0 as the adopted format for orthoimagery. ISO Technical Committee 211 relates to metadata, web services, encoding, and data quality. The approach is to set bounds, to develop general standards.

FGDC and OGC have common implementation specifications. GIS workflow is considered. OGC specifications include KML, WMS, GML, WFS, WCS. The trend in standards is to go beyond simple features. For example, web processing services are more complex. Practices matter. National Spatial Data Infrastructure endorses practices and specifications.

Standards are interdependent. For example, the HTTP standard is used for transporting WFS. GML XML schema validates and deploys.

Doug described the seven Framework themes. He would add geographic names to the seven. Regarding Framework, FGDC considers provider and consumer requirements. Models are built to support a common set of needs (not universal needs), and are independent of a specific geometry.

Regarding the 2008 published framework standards, the trend is to include data models. For example, the rail theme included an abstract model (UML) and companion XML schema files, and a minimum set of attributes to promote data exchange. It utilized standard terminology, and "reusable chunks" from other standards. It is a feature-based model, such that it does not use a single type of geometry.

The typical design process used for standards and models:

1. Requirements
2. Modeling advisory team (experts)
3. Application=neutral content model
4. Encoding
5. Review and modify

Unified Modeling Language is effective as a graphical tool that aids discussion and translates technical details. Tools commercially available include Rational Rose and Enterprise Architect (from Australia). This is more of a use case approach, used by ISO.

UML Diagrams describe the model. Class Diagram relates to information content, something like a data dictionary. Concepts, collaborations, tables and more. The use case approach engages the users.

Other comments by Doug: FGDC is hosting a UML to GML transform program to get to XML schema. Serialize = convert UML to XML for processing (XML is encoding). Nesting structure can be accommodated.

The National Map approach has changed in the context of heavy staff reductions. The program is reviewing existing models from FGDC and The National Map to adapt and adopt if possible. TNM is re-purposing commercial data that is past shelf life in some cases (e.g., roads). TNM is less a collector of datasets now.

Feature Catalog is a concept that includes feature types, definitions, attributes and their definitions, data types, domains, expected values and types. Not an implementation model – would need rules to create one.

Slide 34 explained: Conceptual model is UML. Encoding in XML (using a script based on rules in XSD file). Format A is data as XML. Validate against XML schema (shared). XML schema is specified near top of an XML document.

From abstract to implementation. Information exchange model – model for conversion to XML or GML. See outline on slide 36.

Services. Federation of data from multiple sources is achievable if all use the same schema. Gazetteer tested. Some state DOTs tested.

ArcGIS Data Models – Esri. Slide 38. Community based. Some are very specific. Automatic setup in database builder. ArcGIS Server is trivial to implement this way. Model expressed through WFS is the Esri model, hard to match federal.

Q: Can Esri work with Enterprise Architect (EA)? Janet believes yes. She will look for an email about it. EA is favored by Doug.

Slide 39. Use EA or Rational Rose. Output XML and GML.

Private schema to public schema. Request and response standardized. Slide 40. Translation utilities. Potential for nationwide content.

USGS and The National Map will have information forthcoming. Reconsideration of TNM, less collection, data modeling exercise, republishing data models for others to use. Maybe within 3 months. Not a lot of attributes in TNM except for National Hydro Dataset. Base mapping concept is still primary for TNM.

Doug urged the group to check the links in the PPT.

Tom commented that this goes well beyond content standards. Practices are included.

Doug pointed out that a neutral facilitator helped with the development process. Also, a modeler is helpful, and can apply knowledge of other groups, and reuse classes. The approach involves both content experts and IT experts, with a conduit to communities being essential. Data producers and users need to help understand and ratify a model.

Doug confirmed that there are capabilities to extend models. For example, a county could use its own extension of the model with additional fields (set up for a validation tool to accept). An alternate approach is to build in optional columns in the model that can be populated (or not) by the data providers.

Models vary in complexity. The cadastral model was very simple. The airport model turned into a very complex facility management system (to meet FAA requirements).

Part of the process is to determine an adequate set of properties – recognize at least, populate at best.

Tom noted that NC working groups look at content, but attention to technical architecture may be needed. Doug explained that there are roles for working groups and a technical advisory committee.

After Doug signed off, there was some group discussion. Tom, Janet and Luis pointed out the value of Doug's concept of not focusing on geometry, but focusing on what we are trying to describe. And, making progress toward data integration (combining data from multiple sources using the same schema) is important for several datasets. The FGDC approach provides flexibility. Esri data models represent an implementation stage.

Silvia recommended that the group review the adopted standards as well as Esri data models. Steve added that going through data model diagrams would help clarify the concepts presented today.

The group discussed examples of datasets that might be represented as points, lines or polygons depending on map scale and business processes; models need to accommodate those representations.

Tom suggested that a guidance document that tells the content experts what they need to consider and work through would be valuable. As David noted, subcommittees and experts are invaluable resources for the Standards Working Group to supplement knowledge and experience. Tom noted that Nancy von Meyer may be a resource for parcels, at least as an expert on content if not modeling.

Jeff suggested we look at the recently revised water and sewer content standard and best practices and consider how it fits the FGDC approach and how it differs.