

Integrated hierarchical metadata proposal: series, layer, entities and attributes

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Metadata are essential for exchanging, cataloguing and geospatial information searching. ISO 19115:2003 *Metadata* standard defines which information are part of metadata and their relationships and dependences, allowing the definition of metadata for different hierarchical levels like layer, series of layers, feature type, feature, attribute type or even attribute level. This approach ‘forces’ us to generate a complete set of metadata for each series, layer, feature type or attribute type to be described.

Our proposal considers that series and layer metadata are solved correctly using this approach (to generate a set of metadata for a series and one for each layer). Our presented model also considers defining father and son relationships between both sets of metadata. Some layer metadata elements can inherit the value of series metadata which is part of. It is necessary to allow layer metadata to set a particular value, superseding the value of the series or to add it to the series one. Our proposal defines which metadata could support series-layer inheritance and in which way.

Definition of entity and attribute metadata is possible using another approach based on the pre-standard *ISO 19109 Rules for application schema*, which includes the *General Feature Model (GFM)*. This standard defines the rules to create and describe an ‘application schema’ and includes the principles for the definition of entities and attributes instead of generating a complete metadata set for each one. Pre-standard *ISO 19110 Methodology for feature cataloguing* could also have been used as ISO-FGDC-METADATA-CROSSWALK-V4 suggest. But the approach based on ISO 19109 has been reinforced by the recent version 1.0 of the pre-standard *ISO 19139 Geographic Information – Metadata – XML schema implementation* (draft) that describes the XML implementation ISO 19115 standard for a layer and uses GFM (ISO 19109) for the definition of entities and attributes. Neither ISO 19139 nor ISO 19109 specify any structure for the attributes or their relationships although it allows an attribute to be defined by other attributes using the association attributeOfAttribute (elements ‘characterizes’ and ‘characterizedBy’).

Our proposal uses a definition of layer entities and attributes in layer metadata itself, using elements provided by ISO 19139 (based on ISO 19109), and suggests a general schema of application for a vectorial layer and a relational data base of thematic attributes.