

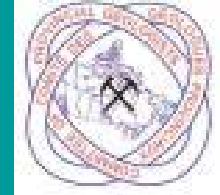
*CGKN XML/GML Project
Progress Report*

XML/GML Initiatives Working Group Progress Report

Toronto Workshop, 2003-Mar-07/08/09

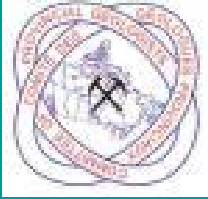
**Canadian Geoscience
Knowledge Network**





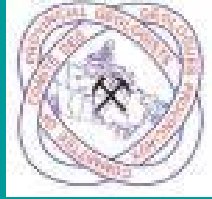
Why XML/GML?

- An interchange technology is an enabling technology that utilizes external metadata to allow applications to plug and play seamlessly with datasets in heterogeneous formats. An interchange technology can be utilized to solve the data application interoperability problem.
- XML/GML ensures interoperability.
- Extensible Markup Language (XML) provides the ability to describe a set of data using a standard schema.
- Geographic Markup Language (GML) defines the geographic location of a points, line strings or polygons through XML encoding.
- Primary goal is to describe data and data parameters using a structured description that can be parsed for ingestion into XML compatible applications.



Other XML Activities

- XMML Initiative by CSIRO, Australia
<http://www.ned.dem.csiro.au/XMML/>
- ESML Earth Science Markup Language
 - Tools and schemas to facilitate the use of many geoscience data types.



XML Developments in CGKN Exchange & Archive Formats

- XML was considered for:
 - Mineral Occurrence – point and qualitative attributes.
 - Geochemical Database – points and quantitative/qualitative attributes.
 - Geophysical Data – raster and quantitative attributes.
- XML/GML Schema Development contracted to GALDOS Systems of Vancouver, Canada.
- GML version 3.0b used for schema development.



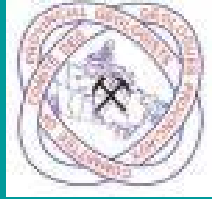
Mineral Occurrence Application Schema

British Columbia, Yukon, Newfoundland/Labrador and
Ontario

“Federated” schema designed to capture the common
elements of the participating databases.

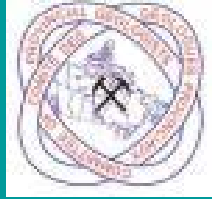
Development of the Application Schema demonstrated the
usefulness of XML/GML encoding and its potential to act
as a protocol for archiving and exchanging mineral
occurrence information across Canada.

Schema Definition and Sample Instance Document located
at <http://cgkn.net>



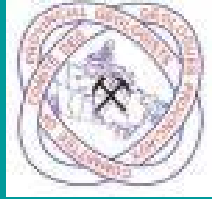
Geochemical Data Schema

- A Geochemical Reconnaissance XML/GML schema was derived from the Standardized Geochemical Data Model.
- A Universal Modelling Language (UML) description was initially created to capture the details of the model.



GXF Application Schema

- GXF (Grid eXchange Format) is used to manage and archive geophysical data at the Geological Survey of Canada.
- Translators (GML2GXF and GXF2GML) were created.
- Further work needs to be carried out on developing a number of raster based XML/GML encoding protocols for a variety of remotely sensed imagery that is not encoded in GXF.



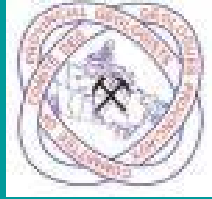
Transaction-Based XML

- Applications that query databases through SQL or specific commands produce output in XML/GML format.
- Useful for partial data extraction and map-based presentation.
- Virtual views of multiple databases and maps can be combined through XML integration with subsequent presentation using SVG.



Transaction-based XML

- Work by Eric Boisvert and Boyan Brodaric have made use of transaction-based XML for maps and virtual dataviews.
- Georgia Basin Digital Library is transaction-based XML project.
- Style sheets (XSLT) can be established to define the extraction and conversion of data for transaction-based XML.
- Simple Object Access Protocol (SOAP) is also used to access and merge objects from various XML compliant data sources.



Directions for XML in the CGKN

- XML/GML will continue to be used for archiving data.
 - Unicode format which can be parsed.
 - Style sheets can be used to convert between local standards (Provincial Mineral Occurrence Databases and a National Mineral Occurrence Schema).
- XML/GML will also be used for transactions and the creation of data views.
- Map-based XML/GML transactions will be displayed using map servers.



Status of the XML Project

- The use of XML is now an integral part of all CGKN projects.
- This project is now complete.