

Vision of a distributed Mineral Resource Information System for CGKN

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Resources)**



Intent

- To complement existing provincial and territorial databases and web services.
- To draw more industry clients, international and national, to look at mineral potential in Canada: provide a first stop web portal to view/query deposits & occurrences across Canadian borders before switching to local sites to 'dig deeper'.
- To promote efficiency in maintaining distributed components of Canadian mineral resource information stores, streamline updates from new work in which GSC is involved.
- To make discovery of Canadian mineral resources more convenient and appealing for the public. A stable information system with consistently phrased common elements will provide 'hooks' for linking in auxiliary scientific studies and outreach resource information from other projects.



Components of a CGKN mineral deposit & occurrence data system

- Databases of mineral deposits & occurrences which remain with authoritative provincial & territorial custodians.
- **Prioritized data elements accessed from distributed sites using Web Services technology, made viewable/query-able through a CGKN web portal for mineral resources.**
- **Correlation tables for “controlled text” elements which can be used to remap terms to a consistent Canadian view. (also translation)**
- An existing ESS database of Canadian ‘well-studied’ (significant) metallic deposits filtered from World Mineral Geoscience Database Project databases.

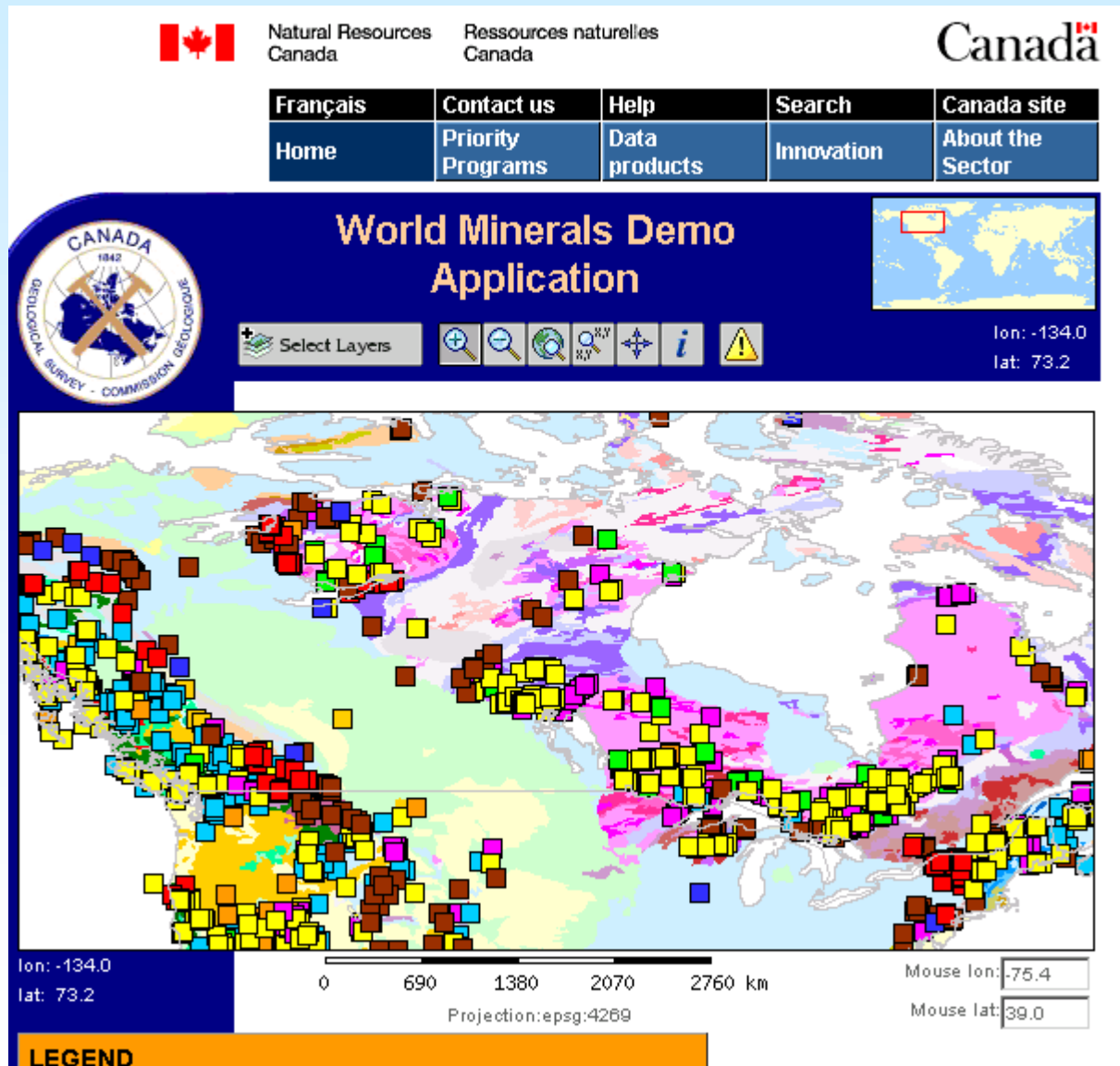


Database of well-studied deposits (filtered from World Minerals Geoscience Databases)

- Basis for comparisons of Canadian deposits with world class examples of major deposit types.
- No capsule (free text) geology: reliant on parameters.
- Compiled from scientific literature; tied to references.
- Large or significant deposits only - no (or few) occurrences.
- It must be improved, synchronized with authoritative P&T databases; parameters may be remapped to CGKN standards.
- Will complement, not replace, P&T databases that are based to greater extent on assessment reports, government reports and site visits, which document occurrences, and contain additional types of information related to P&T business.
- Can provisionally supplement parameters for significant deposits which are missing or embedded in capsule summaries in some P&T databases, or to provide interim coverage for major deposits until web services enabled in some regions.



Distribution of major metallic deposits (WMS) from Canadian deposit database



To be integrated with a recreation of elements of Robert Laramée's query/extraction interface

The screenshot displays the GlobalDB software interface, which is used for querying and extracting data from a geological database. The interface is divided into several main sections:

- GlobalDB -- Select Records:** This section on the left contains a "Tables And Cols:" field with the value "Use English". Below it is a "Build Condition" button and a table for defining conditional expressions.
- GlobalDB -- Database Tree View:** The central pane shows a hierarchical tree of database tables. The "Geological ages" table (1681 records) is currently selected and highlighted in blue. Other visible tables include "Deposit (1307 records)", "Deposit names (1650 records)", "Political location(s) (1308 records)", "Commodities (2666 records)", "Mineralogy (1859 records)", "Country rocks (873 records)", "Host rocks (1192 records)", "Host rock protoliths (35 records)", "External host rock forms (628 records)", "Internal host rock structures (273 records)", "Individual lithologies (989 records)", "Deposit-reference junction (2999 records)", "Metallogenic signatures (1260 records)", "Mineralization styles (1444 records)", "Coincident features (1159 records)", "Alteration signatures (39 records)", "Related igneous rocks (287 records)", "Regional tectonic structure (219 records)", "Radiometric ages (159 records)", and "Deposit (sub) types (1214 records)".
- Conditional Expression Table:** A table with 16 rows (Q01 to Q16) and one column labeled "Conditional Expression". The Q01 row contains the text "([Geological ages] WHERE".
- Field List Table:** A table at the bottom of the tree view showing the structure of the selected "Geological ages" table. It has three columns: "FIELD", "FIELDTYPE", and "TSEARCH".
- Search and Results Panel:** On the right side, there are buttons for "Main Screen" and "Cancel", a search icon, and a "Hits" counter showing the number "85".

Conditional Expression
Q01 ([Geological ages] WHERE
Q02
Q03
Q04
Q05
Q06
Q07
Q08
Q09
Q10
Q11
Q12
Q13
Q14
Q15
Q16

FIELD	FIELDTYPE	TSEARCH
▶ Deposit clan (type)	Text	Queryable
Geologic province	Text	Queryable
Geologic subprovince	Text	Queryable
Geologic district	Text	Searchable
Longitude - decimal degrees	Number (Double)	Queryable
Latitude - decimal degrees	Number (Double)	Queryable

CGKN activities

2003-2004



CGKN mineral deposit working group activities

- Surveyed clients, their need for the harmonized view, and their deposit topic priorities.
- Reviewed P&T databases, particularly which topics are described and how information is stored.
- Will recommend priorities using survey results and current database contents in report for NGSC and ESS program.
- Correlating commodity terms and mineral deposit classifications to produce re-map tables for CGKN view.
- Started to create a generalized geotectonic framework from provincial & territorial geological province-subprovince-district lexicons and domain boundaries. Will add tectonic setting - age-range - event type info where known.



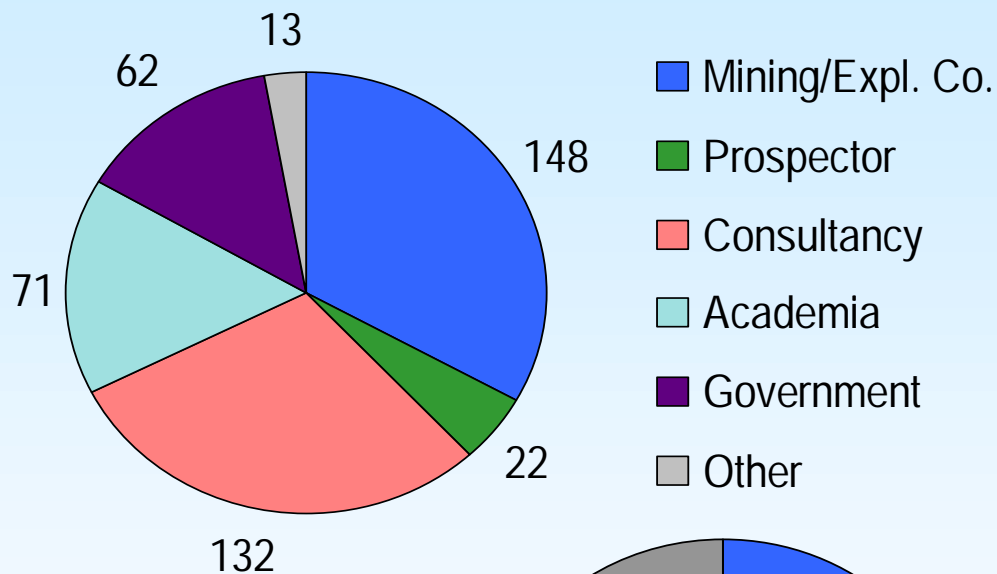
Client Survey

**November, 2003 -
February 9, 2004
403 valid responses**

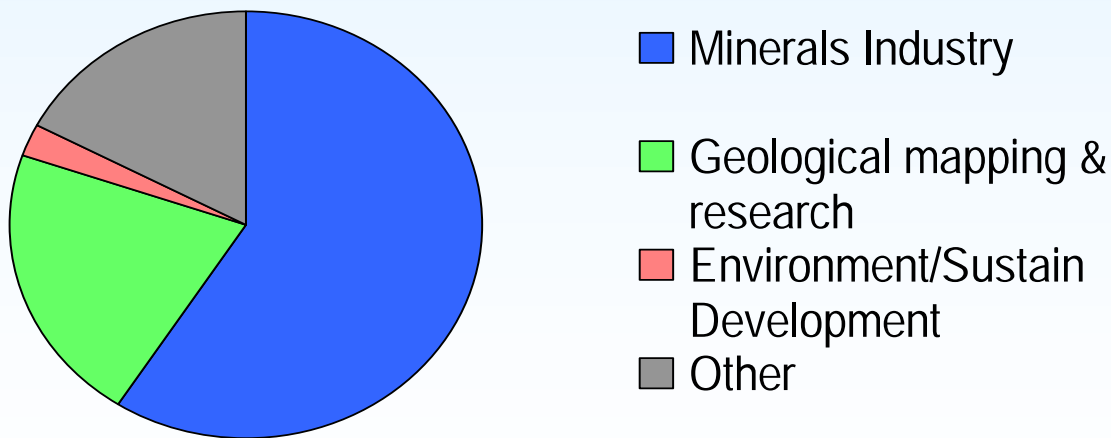


Primary organization class & business ?

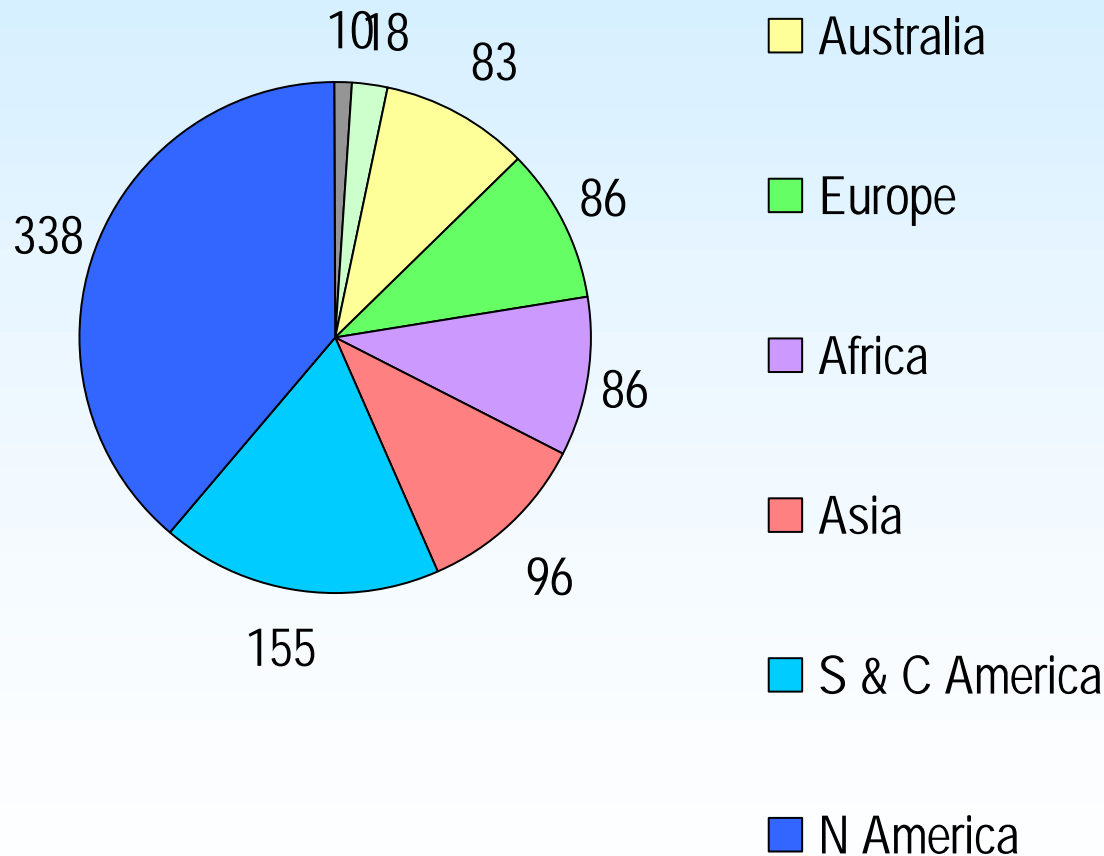
Organization type



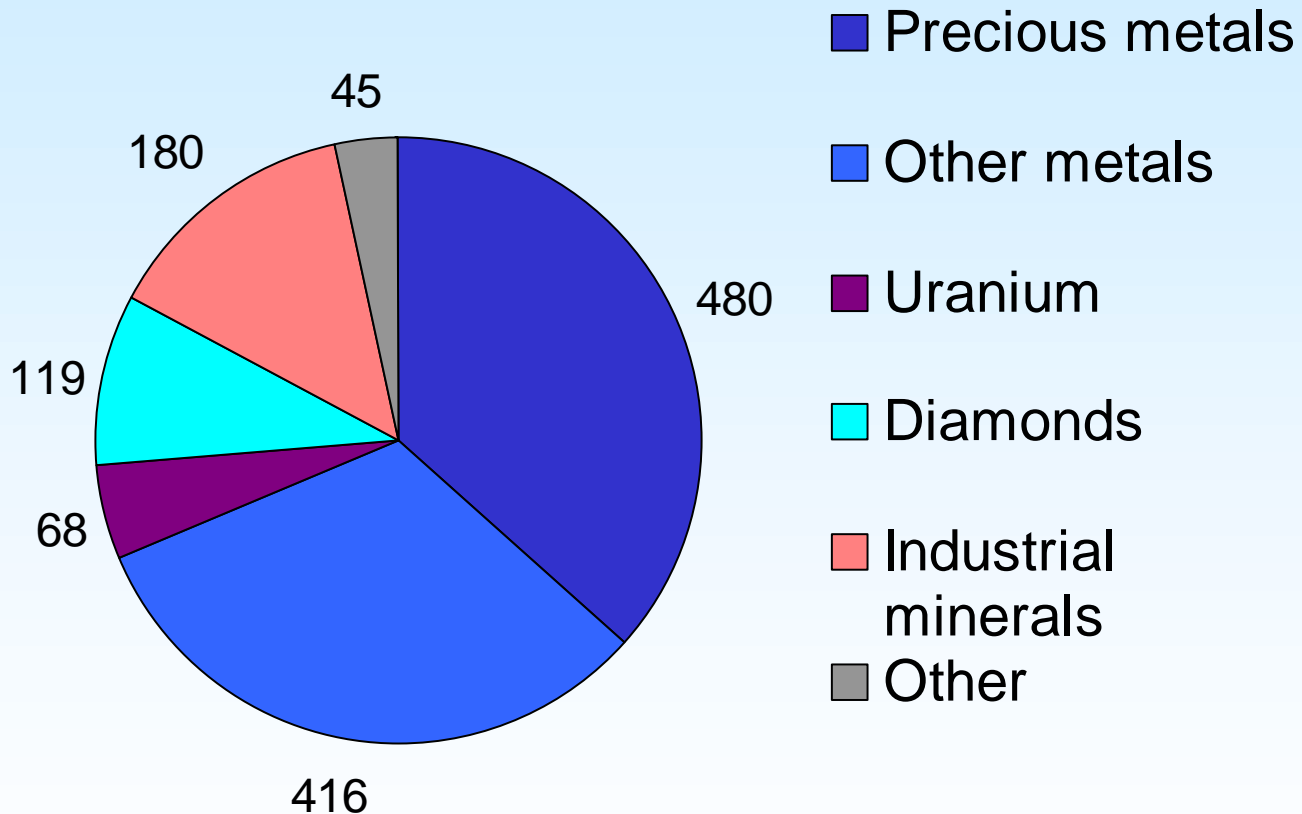
Primary business



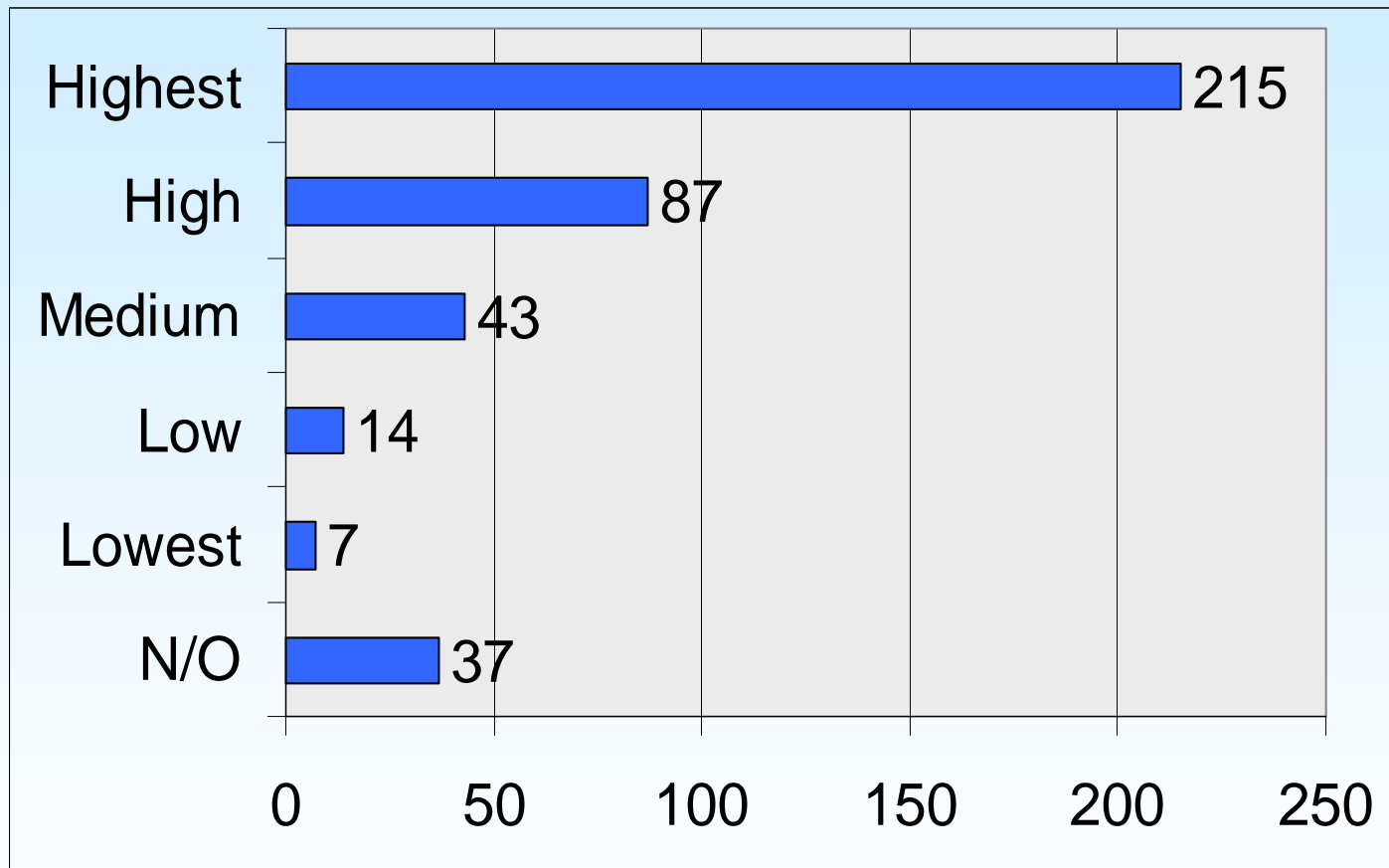
Areas of operation ?



Commodity focus ?



Ranking of usefulness of a consistent central portal/view ?



Priority topics ?

- Commodities, location, names and classification were most highly ranked, both for access and for query (as predicted).
- When asked to choose the next three most important topics, mineralization style, ore mineralogy, and host rocks were the most highly ranked.
- Mineralization style was a clear winner among the next three most important topics.



How clients wish to interact with (UL) and use data (LR) ?

Explore metadata	187
View spatial distributions	260
Point, click, view and print	230
Query/filter	237
Download digital information	240

Include it as report/legend text	225
Plot it on a map	232
Spatial modeling/visualization	242
Non-spatial computation/modeling	149
Refer to it casually, or bookmark	132



Contents summary

Topics captured in provincial & territorial databases and how controlled (restricted and consistent) terms used for each topic in a deposit description might be.



Topics covered by provincial & territorial mineral deposit databases ?

Name	BC	MN	NB	NF	NT	NS	ON	QC	SK	YK
Deposit description	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Deposit Group/District							Yes			
Mines	Yes	Yes								Yes
Geochemical/physical expr.			Yes	Yes						
Geochemistry	Yes	Yes		Yes		Yes	Yes	Yes		Yes
References	Yes	Yes	Yes		Yes		Yes	Yes	Yes	Yes
Production	Yes	Yes		Yes	Yes		Yes		Yes	Yes
Resources	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes
Exploration history	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes
Claims tenure		Yes					Yes			Yes
Land status		Yes								
Visits							Yes			



Elements of deposit description: controlled versus **free text**

	BC	MN	NB	NF	NT	NS	ON	QC	SK	YK
Alteration				controlled	controlled			controlled		
Alteration mineral	controlled	free text			controlled		controlled			controlled
Classification	controlled	controlled	controlled	controlled	controlled	controlled	controlled	controlled		controlled
Commodities	controlled	controlled	controlled	controlled	controlled	controlled	controlled	controlled	controlled	controlled
Capsule geological	free text		free text	free text	free text	free text	free text		free text	free text
Controlling features			free text		controlled		controlled	controlled		
Geochronology	controlled				numbers		numbers			numbers
Geological ages	controlled		controlled	controlled	controlled	controlled	controlled			controlled
Geological provin	controlled	controlled	controlled	controlled	controlled		controlled			
Host rocks	controlled			free text	controlled	controlled	controlled	controlled		controlled
Local/regional str	free text			free text	free text					free text
Locations	numbers	numbers	numbers	numbers	numbers	numbers	numbers	numbers		numbers
Mineralization styles		controlled		free text	controlled	controlled	controlled			
Mineralogy	controlled	controlled	controlled	controlled	controlled	controlled	controlled		controlled	controlled
Names	free text	free text	free text	free text	free text	free text	free text	free text	free text	free text
Orebody geometr	formatted	string		controlled			free text			
References	free text	free text		numbers	controlled		free text	controlled	free text	
Status	controlled	free text	controlled	controlled	controlled	controlled	controlled	controlled		controlled
Stratigraphic setti	controlled	controlled				controlled	free text			controlled
Tectonic settings	controlled			controlled	free text					controlled

Conclusions from content summary, survey, & discussion

- Many provinces/territories already capture the priority deposit description topics: commodities, classification, and mineralization style in controlled terms. These topics can thus be mapped to a consistent CGKN view using remap tables.
- Where these topics are contained only in freeform capsule descriptions (or are absent altogether), there will be more work to extract them as controlled text fields.
- Working group will choose CGKN terms, working first with commodities and classification. Many deposits/occurrences will be unclassified.
- Names do not have to be re-mapped for a central view.
- Presence of information, such as production and resources, in source databases can be flagged for CGKN view.
- Diverse datums and projections can be handled with OGC protocols. CGKN will choose the Canadian datum.





Next on the agenda ?

- Business/progress report
- Resume development of correlation (re-map) tables for commodities, classifications, and now, mineralization styles.
- Test web services for Canadian database of well-studied deposits (dependent on this being enabled through a CGKN or CCGK portal).
- Discuss/promote protocols for ownership, synchronization, and update of databases in the distributed CGKN-CCGK mineral information system (dependent on cooperation of others).
- Investigate methods of allowing a client's selection sets to be returned to the provincial/territorial web sites to 'mine' more comprehensive information.
- Geological province-subprovince-district framework to be continued. Will correct entries in Canadian database of well-studied deposits to match CGKN lexicon.





Natural Resources
Canada

Ressources naturelles
Canada

Canada 