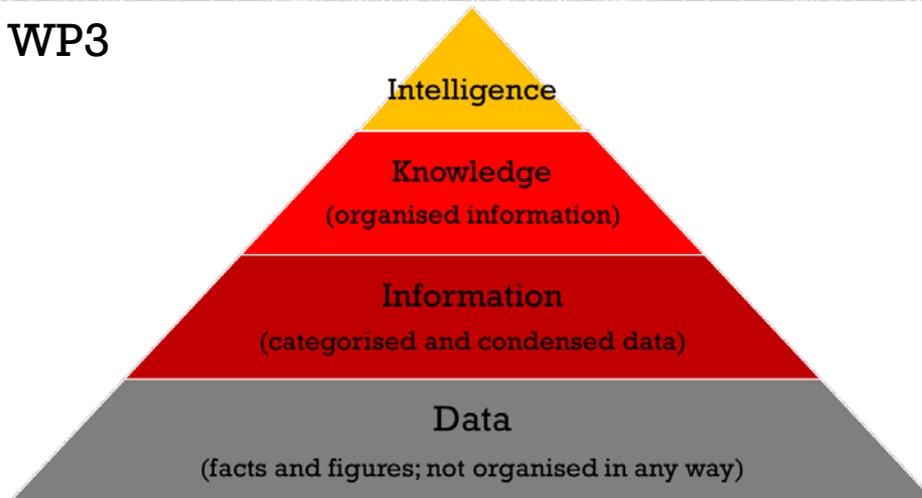


DATA FOR RAW MATERIALS INTELLIGENCE CAPACITY

WP3



Evi Petavratzi
MICA 1st progress meeting
28 Sept 2016



British
Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

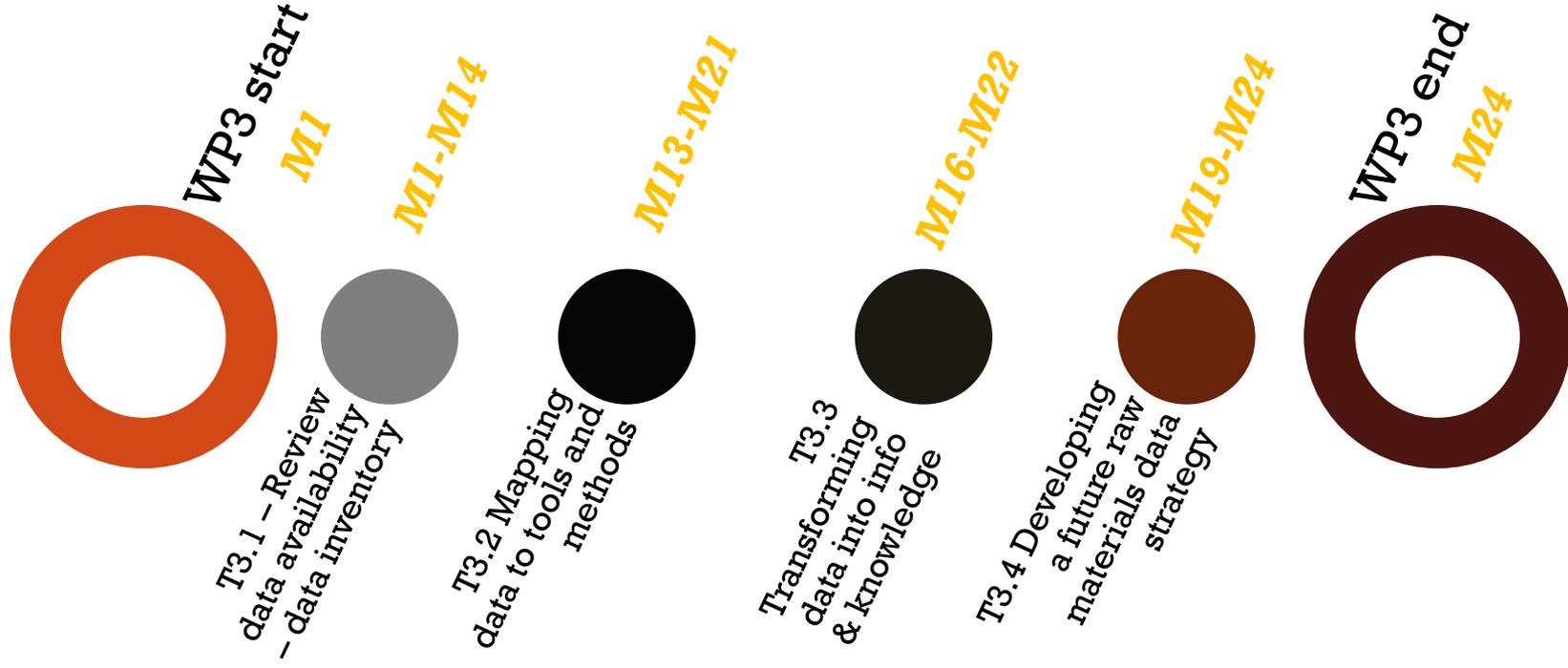
- **Objective**
- **Timeline**
- **Tasks and Deliverables**
- **Progress**
- **Next steps**

To review and assess datasets relevant to raw materials that will provide the evidence, information and knowledge required by stakeholders.

- **WP3 does not generate new data**, but undertakes a review of existing datasets and produces metadata records.
- The data review is ‘constrained’ by the **identified domains & concepts**:

- D1 Primary resources
- D2 Secondary resources
- D3 Industrial processing and transformation
- D4 Raw materials economics
- D5 Critical raw materials
- D6 Raw materials policy and legal framework
- D7 Environment and health in a life cycle perspective
- D8 International reporting

WP3 TIMELINE



Task 3.1 Data availability

- Task 3.1.1 Preliminary structure of data inventory
- Task 3.1.2 Review existing datasets and data inventories
- Task 3.1.3 Review additional datasets
- Task 3.1.4 Quality assurance of the raw materials inventory
- Task 3.1.5 Case studies on data uncertainty

Deliverable D3.1 – Draft data inventory: Due in Month 14

Task 3.2 Mapping data to tools

Deliverable D3.2 – Final data inventory: Due in Month 20

Task 3.3 Transforming data into knowledge

- Task 3.3.1 Consortium expert knowledge
- Task 3.3.2 Workshop on data for mineral intelligence

Deliverable D3.3 – Report on transformation of data into information. Due in Month 22

Task 3.4 Raw material data strategy

Deliverable D3.4 – Raw material data strategy and report on data inventory. Due in Month 24



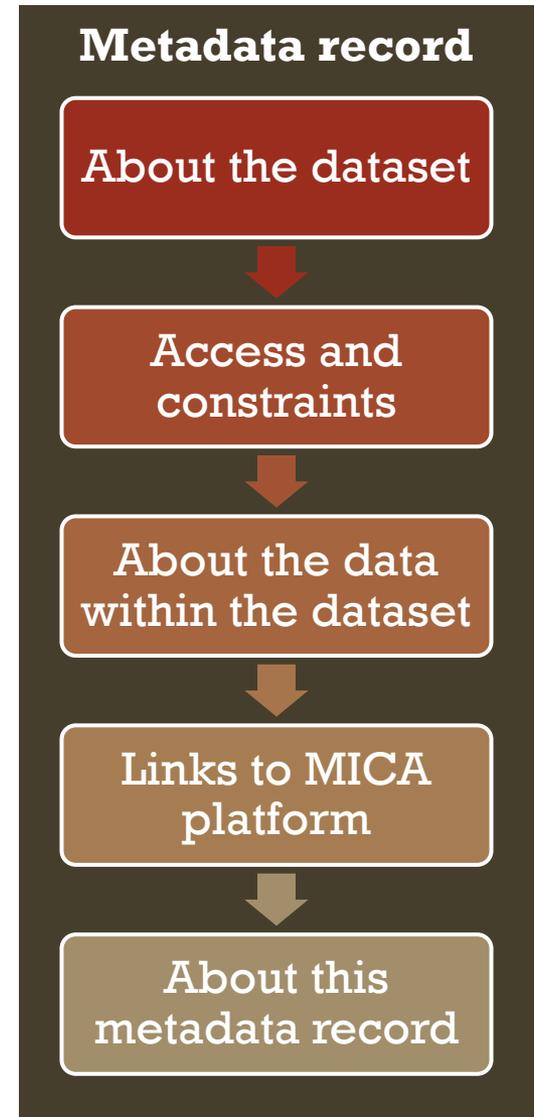
MICA

Mineral Intelligence Capacity Analysis

WP3-PROGRESS



- Metadata standard ISO 19115:2003/19139 has been used to structure the records
- **Step 1:** Started with the development of a spreadsheet form, which has been used for metadata gathering
- **Step 2:** Progressed with the development of an online metadata inventory using the spreadsheet form as a basis



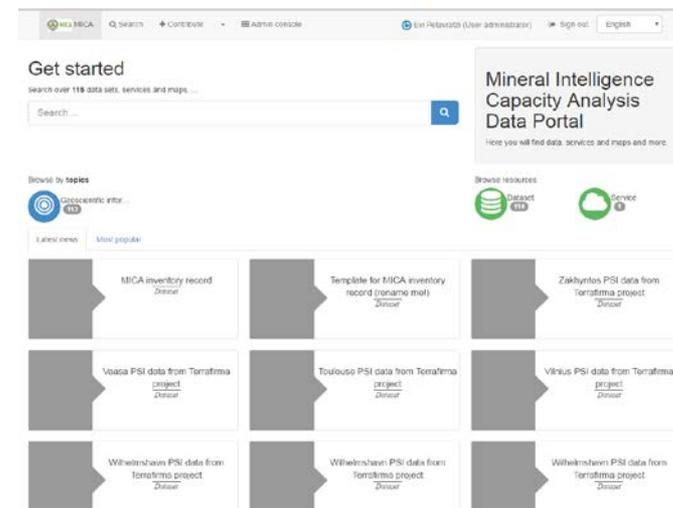
METADATA-SPREADSHEET TEMPLATE

Dataset title	Commodities	Keywords
Date of creation/ publication/ revision	Temporal extend	Geographical coverage
Edition	Dataset type	Methods of data generation
Dataset abstract	Dataset class	Purpose of data generation
Status	Dataset theme	Data quality
Dataset language	Access	Confident intervals
Dataset web address	Confidentiality	Domain and concepts
Dataset contact	Limitations	Date record created; created by
Frequency of update	Requirements for data generation	Data record reviewed; reviewed by; record validated

1. Develop the online template
2. Incorporate existing data records
3. Disseminate and include additional records

Benefits of an online data inventory:

- All WP3 partners can use it and information is stored in a single place.
- Easy to use and add data. Filters can be used to search for data of interest
- Consistent approach: same vocabularies are shared with WP6 (ontology structure)
- Data can be harvested and data from other metadata catalogues can be added



[Link to the online metadata inventory](#)

For most fields there is a direct match....

Spreadsheet temp.

Online inventory

Dataset title	←	Title
Date of creation/publ. rev.	←	Date (you can add all three)
Edition	←	Edition date
Dataset abstract	←	Abstract
Status	←	Status
Dataset language	←	Language
Dataset web add.	←	Linkage
Dataset contact, city, postcode etc	←	Organisation name, city etc

Spreadsheet temp.

Online inventory

Frequency of update	←	Maintenance and update freq.
Keywords	←	Keyword
Geographical coverage	←	Continents, Country etc
Limitations	←	Use limitations
Purp. of data gener.	←	Purpose
Date record created	←	Metadata date stamp
Record created by	←	Metadata contact

....but not for all

Spreadsheet template	Online inventory template
<p>Temporal extent</p> <p>Data class</p> <p>Commodity list</p> <p>Domains and Concepts</p>	<ul style="list-style-type: none"> ▪ The field should match the MICA SpatialTemp Ontology vocabulary ▪ The field should match the MICA LinksDataConcepts ontology vocabulary ▪ The field should match the MICA CommoditiesTronto vocabulary ▪ The field should match the MICA Main Ontology vocabulary
<ul style="list-style-type: none"> ▪ Dataset themes ▪ Dataset type ▪ Access ▪ Confidentiality ▪ Requirements for data generation ▪ Method of data generation ▪ Data quality ▪ Confidential limit 	<p>Produce an alternative vocabulary and where possible use the terms specified within ISO 19115:2003/19139</p>

Domains

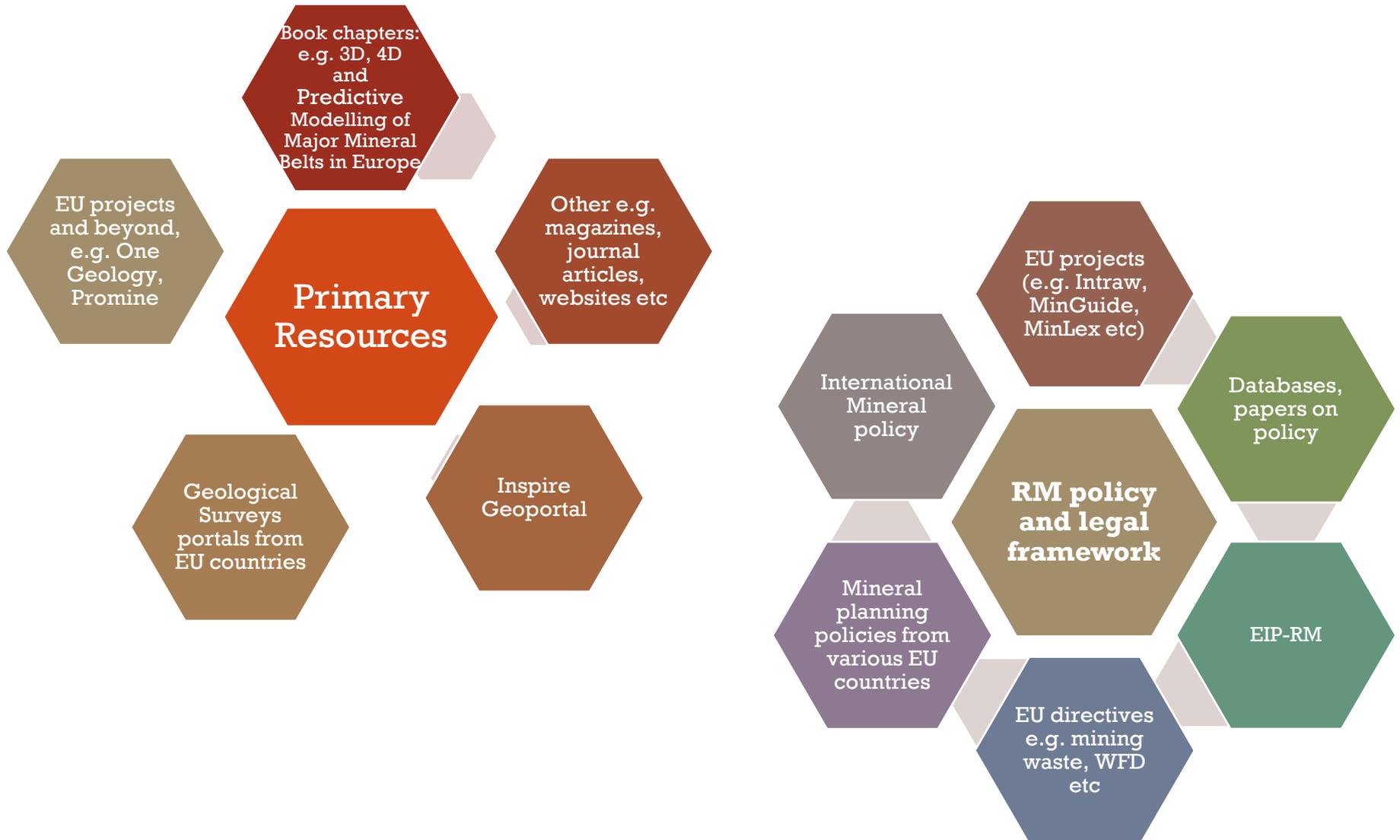
- D1 Primary resources
- D2 Secondary resources
- D3 Industrial processing and transformation
- D4 Raw materials economics
- D5 Critical raw materials
- D6 Raw materials policy and legal framework
- D7 Environment and health in a life cycle perspective
- D8 International reporting

Concepts

Domain	Concept Level 1	Concept Level 2	Concept Level 3	Concept Level 4	Tick or X
D1 PRIMARY RESOURCES	Mineral exploration	Regional reconnaissance	Preliminary studies (existing data, docs, maps, aerial photographs, reports, articles, monographs, theses...)		
			2D predictive mapping		
			Mineral resources potential assessment / estimating undiscovered resources (e.g., USGS methods)		
			Regional geology		
			Remote sensing (incl. regional geophysics...)		
			Regional geochemistry		
		Detailed surface exploration	Regional heavy mineral sampling		
			Detailed geology		
			Detailed geochemistry		
			Detailed geophysics		
		Subsurface exploration	Detailed heavy mineral sampling		
			Excavation		
			Drilling	Auger drilling Percussion drilling Core drilling	
		Resource assessment	Drilling assessment	Percussion drilling assessment Core drilling assessment	
			Geological interpretation	3D geological model	
			Ore beneficiation tests		
			Approximate resource calculation	3D 'bloc' model	
		Ore deposit evaluation	Core drilling systematic		
			Mine workings reconnaissance / adit mapping		
			Geostatistical estimates		

- Preliminary data gathering undertaken
- Approx. 180 records using the spreadsheet template.
- More are required and a second stage of data gathering is on its way.
- Second stage of data gathering: a more systematic search for datasets, plus take into account WP2 findings.
- **Partners are required to add records**

Domain	No of records
D1 Primary resources	45
D2 Secondary resources	14
D3 Industrial processing and transformation	5
D4 Raw materials economics	27
D5 Critical raw materials	18
D6 Raw materials policy and legal framework	42
D7 Environment and health in a life cycle perspective	4
D8 International reporting	24

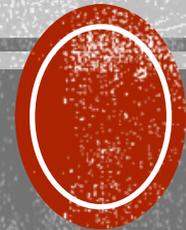




MICA

Mineral Intelligence Capacity Analysis

WP3-NEXT STEPS



- Continue with data gathering to include many more records in the inventory . **All WP3 partners to be involved in this process.**
- Where possible, incorporate existing metadata records from other projects e.g. Minerals4EU, EURARE, other. This will accelerate data collection .
- Transfer records from the spreadsheet template into the online inventory template
- Depending on the outcomes of WP2, new Domains and Concepts may be added in the MICA ontology. In that case additional datasets should be sought. **Important that WP3 is kept informed of any changes in the MICA ontology.**

- Two case studies to develop quantitative understanding of data uncertainty.

- **Aim:** to develop a general framework upon which an assessment of data uncertainty can be undertaken.

- **Approach:**
 - Identify broad categories of datasets, e.g. geochemistry data.
 - Identify what key features of the datasets define their quality (e.g. location, analytical technique used). Key features may change for data producer and data users.
 - Based on these key features and expert consultation, produce 'fish diagrams' and produce data quality indicators.

Task 3.3 Transforming data into knowledge

- **T3.3.2 Workshop on data for mineral intelligence**
 - How are data used by stakeholders to aid decision making and what is the associated data uncertainty?
 - Focused workshop with selected stakeholders

- To be discussed further during the WP3 meeting....

Deliverable D3.1 – Draft data inventory is Due in Month 14

- **Draft inventory** with adequate number of records to cover all **Domains and Concepts** should be ready.
- **Case studies** on Data uncertainty to be included in Deliverable 3.1.
- **Quality assurance framework** for the metadata records to be developed and explained in Deliverable 3.1



MICA Mineral Intelligence
Capacity Analysis



Co-funded by
the European Union

THANK YOU FOR YOUR ATTENTION

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Metals

Precious

Base metals

Iron and ferro-alloys

Specialty and rare metals

Industrial Minerals

28 commodities in total

Example

barytes, borates, diatomite
feldspar, fluorspar, graphite, other

Missing a classification for secondary raw materials!

kaolinitic clays, brick clays, other

Precious & semi-precious stones

Examples

Diamonds, emerald, ruby, sapphire,
corundum, other

Sulphur and fertilizer minerals

Examples

Sulphur, pyrite, phosphate rock,
potash

Energy commodities: out of scope but recorded if datasets refer to them

About the dataset....

Temporal extent	<ul style="list-style-type: none">• geological time• historic (up to 2005)• recent (from 2006 onwards)• present (2016 only)	<ul style="list-style-type: none">• near future (2017 to 2021)• long term future (2021 to 2046)• very long term future (2046 and beyond)
Dataset type	<ul style="list-style-type: none">• inventory• database• compilation• collection• website	<ul style="list-style-type: none">• individual item of data• geographic dataset• non-geographic dataset• model• software
Dataset class	<ul style="list-style-type: none">• general descriptive information• spatial data• statistical data	

Data themes

Production
Imports
Exports
Resources
Reserves
Exploration
Other economic
activities
Geochemistry
Geophysics
Geology
Mineralogy
Minerals
Composition,
structure and origin
of rocks

Risks of earthquakes
Volcanic activity
Landslides
Gravity information
Soils
Permafrost
Hydrogeology
Erosion
Environmental
Pollution
Waste storage and
treatment
Waste flows
Environmental
impact assessment
Environmental risk

Nature reserves
Landscapes
Elevation
Health
Imagery base maps
Planning cadastre
Society
Utilities
communication
Transportation
Structure
Other (specify)

Access and constraints

Access

- Available for free for all purposes
- Available for free for non-commercial purposes
- Available after registration (but without the need to pay a fee)
- Available to subscribers only (who pay a fee)
- Available to purchase only
- Unknown

Confidentiality

- Not confidential
- Data shown is not confidential but some data may not be included due to confidentiality issues
- Significant confidentiality issues may exist
- Strictly confidential
- Unknown

Limitations

briefly describe any legal constraints that may apply to the data or any other limitations on their use.