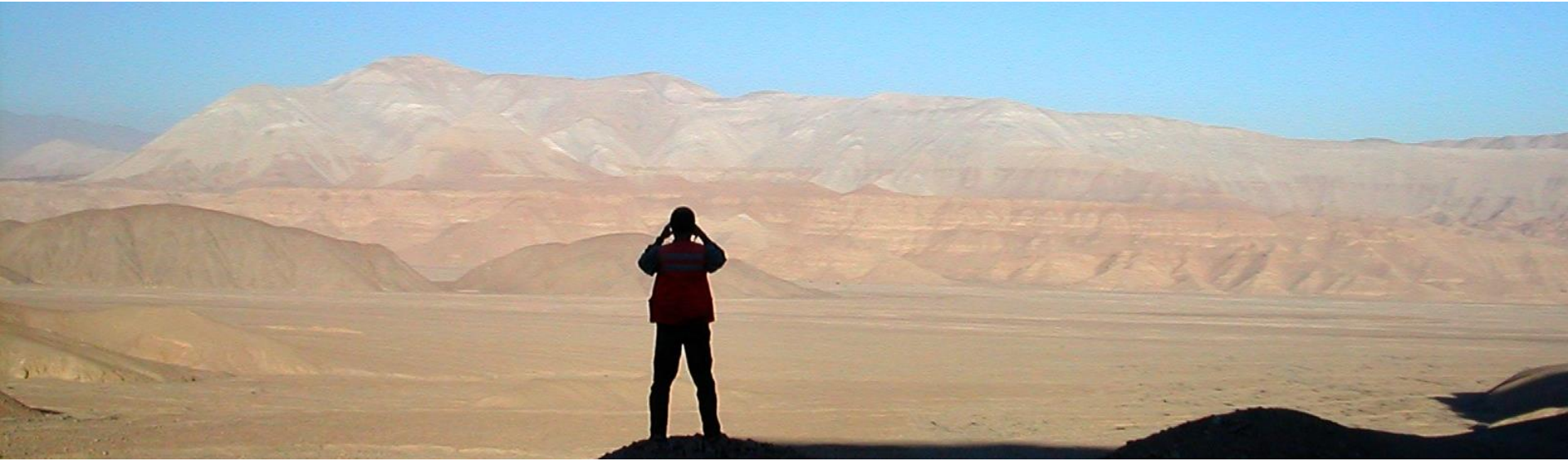
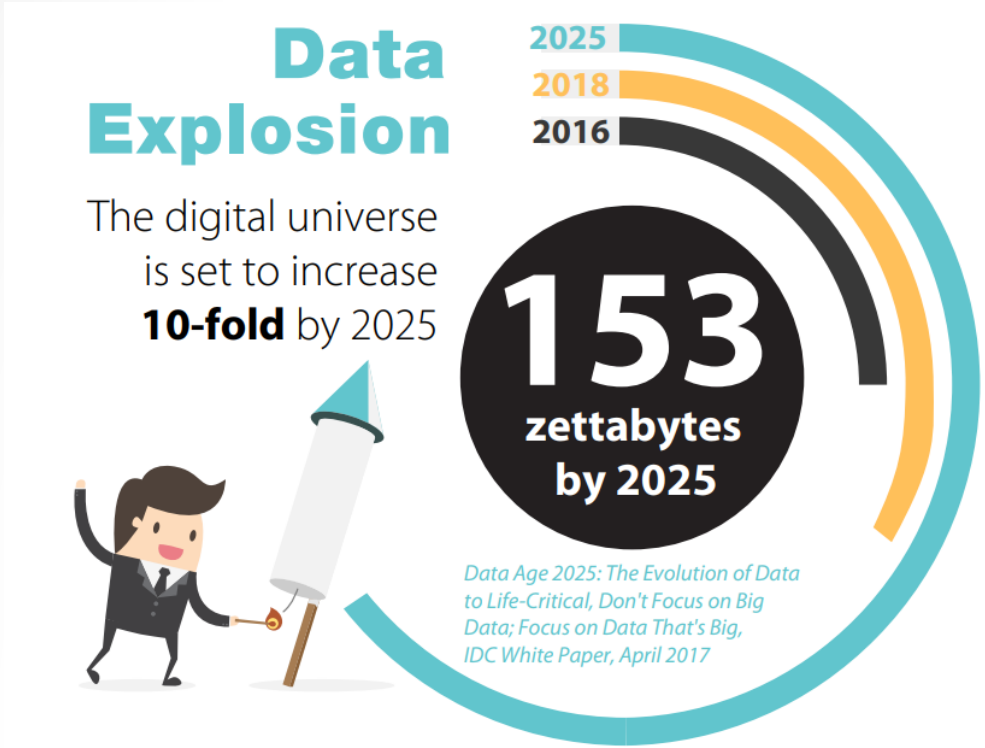
# Servicios y Soluciones para Datos de Exploración Mineral



# Agenda

- **Consideraciones sobre datos**
  - Big Data
  - Machine Learning
  - Visión
  - Tipos de datos
  - Legado de Datos
- **Por qué organizar los datos**
- **Recuperando los datos de Legado**
  - Limpieza y Organización – HudBay
- **Distribución y Descubierta**
  - Tecnología de gestión de datos - QDEX DAP
- **Integración y Personalización**
  - Botswana Geoscience Portal
  - Geological Survey of Norway Geoscience Portal

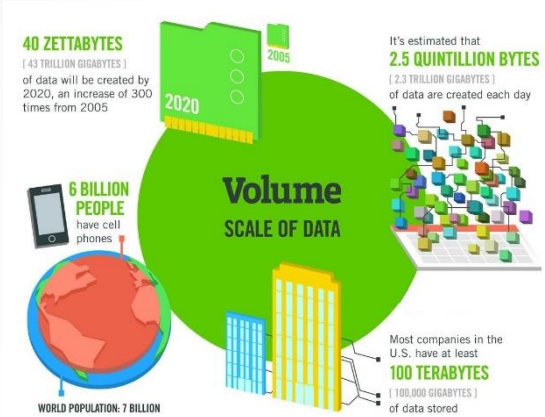
# Explosión de Datos

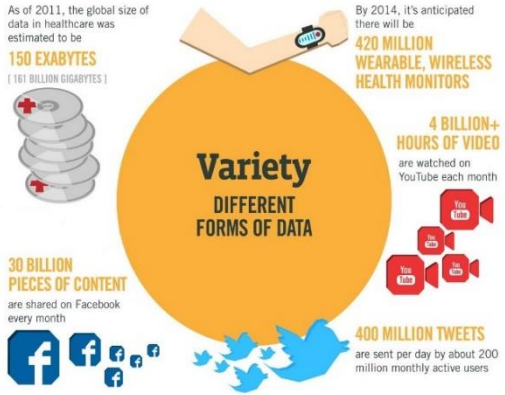


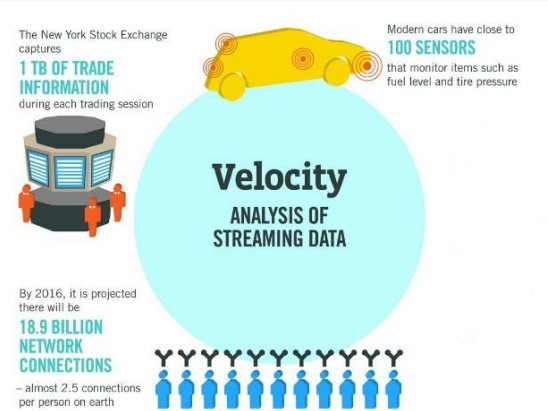

https://www.swisspostsolutions.com/en/infographic/businessprocessautomationinfographic.pdf

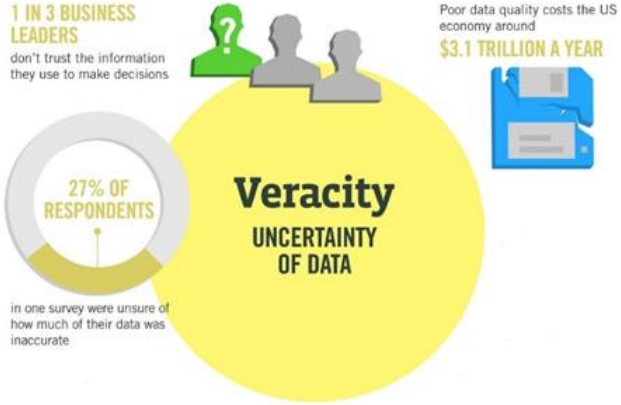

https://jacobsmedia.com/wait-internet-minute/

# 4 V's of Big Data



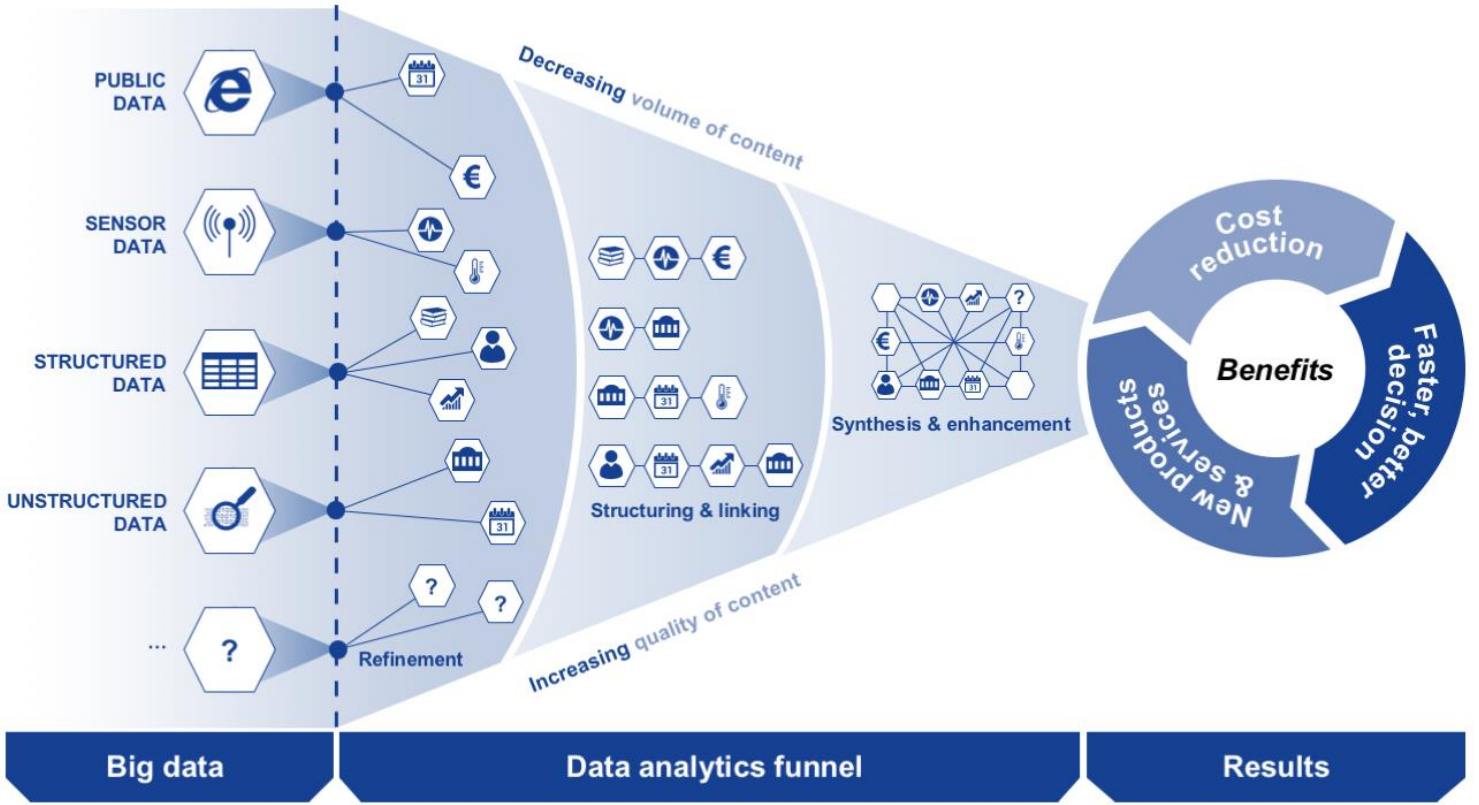



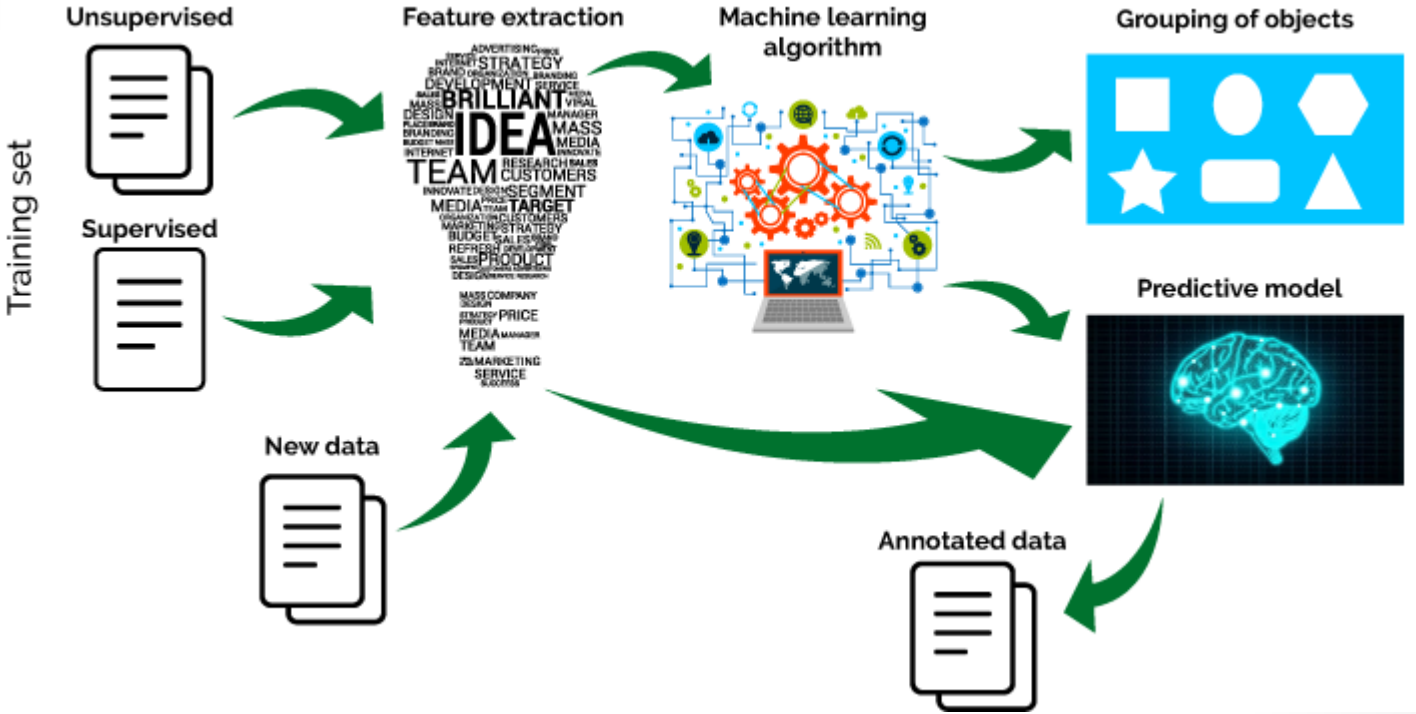

https://www.ibmbigdatahub.com/infographic/four-vs-big-data

# Extrayendo Valor de los Datos




http://www.talismaniandigital.com/importance-of-big-data-analytics-in-digital-marketing/

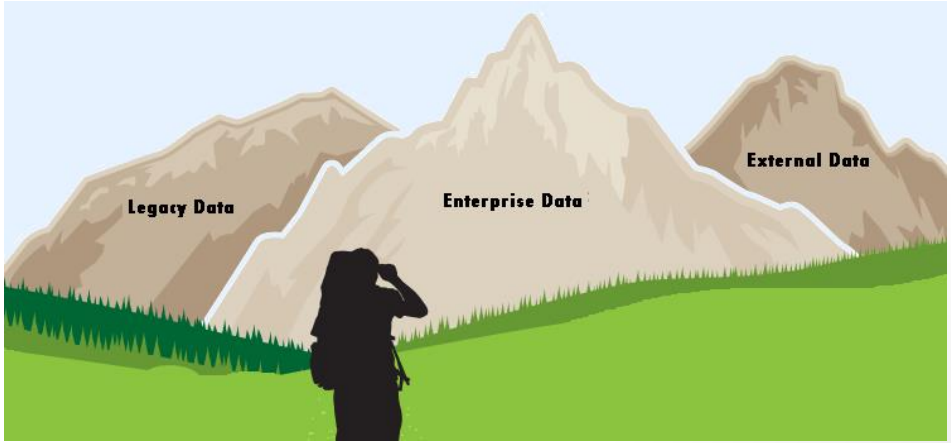
# Machine Learning




https://www.pantechsolutions.net/blog/machine-learning-projects-and-ideas/

# Visión – ¿Como llegar allá?

Necesitamos cuidar de nuestros datos actuales, recuperar los datos legados y cuando disponible usar datos externos para extraer el máximo VALOR de los datos.

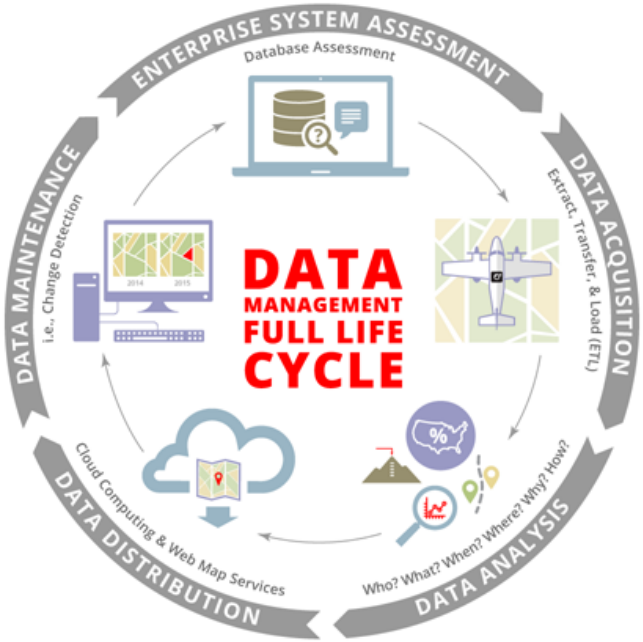


# Exploración Mineral


**(1.410 Ton)**

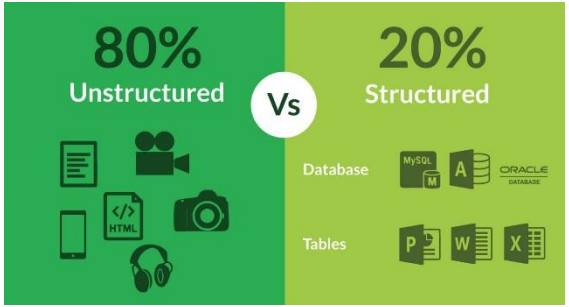
https://www.ibmbigdatahub.com/sites/default/files/infographic_file/IoT_Mining_Inforgraphic_FinalNew.pdf

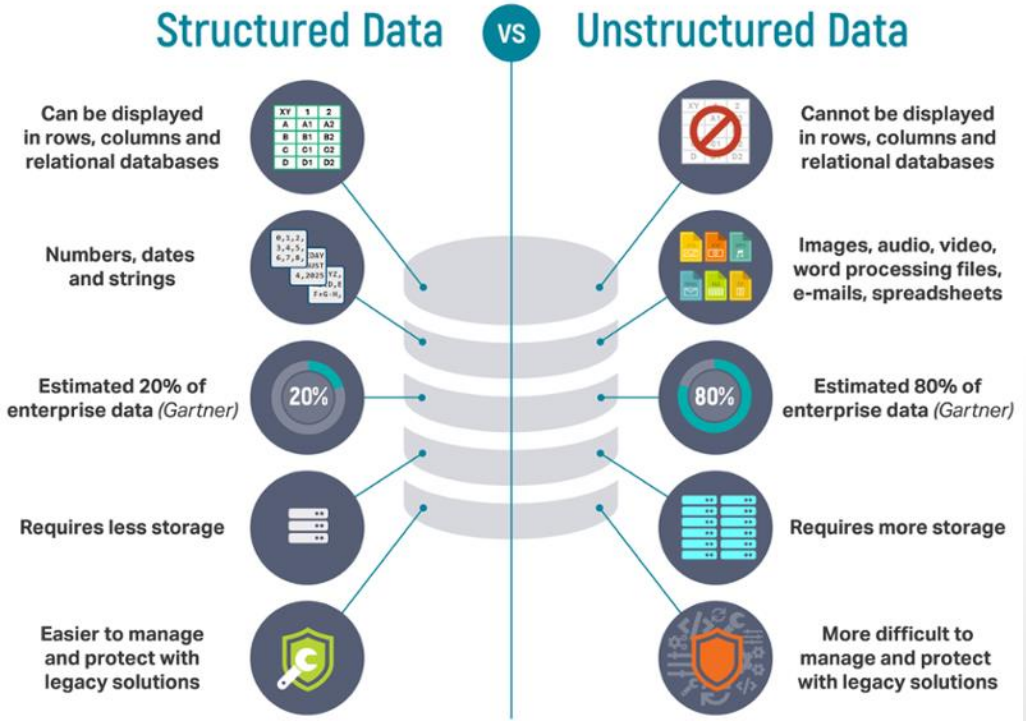
# Exploración Mineral - Contexto




https://www.sanborn.com/the-big-geospatial-data-management-lifecycle/

# Tipos de datos




https://www.igneous.io/blog/structured-data-vs-unstructured-data

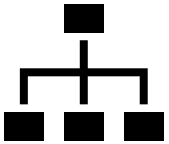
# Legado de Datos

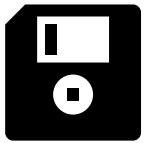
- Una gran cantidad de datos históricos
- Falta un mapa claro de datos no estructurados y se encuentran datos estructurados.
- Medios limitados para manejar sistemáticamente estos datos
- Desafíos
  - Están en todas partes
  - Gran volumen
  - Requisitos continuos de almacenamiento
  - Encontrar la información valiosa

Sarah Pinfold, Mining for value in Iluka's legacy data systems
http://agia.org.au/resources/presentations-articles-of-interest/

# Como es hoy día

- Archivos compartidos
- Unidades de disco duro externo
- Email
- Servidores fuera de servicio
- Servidores 'secretos' o desconocidos





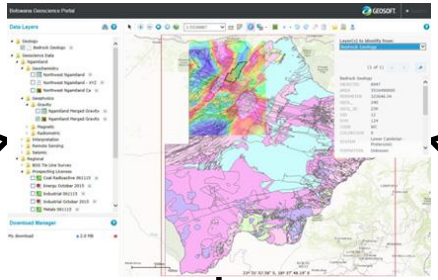



Sarah Pinfold, Mining for value in Iluka's legacy data systems
http://agia.org.au/resources/presentations-articles-of-interest/

# Como debería ser

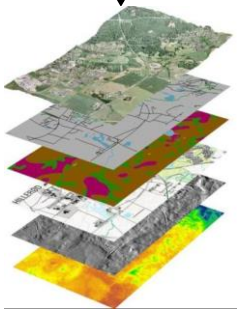
Sondaje / Geoquímico

Integracion - Portal

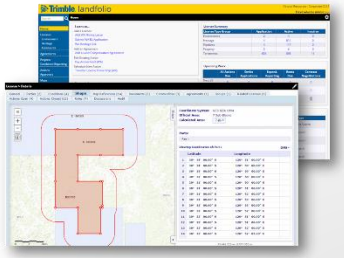


Reportes / Documentos


Geofísica / Imágenes DAP



GIS & Geologia



Derecho Minero Landfolio

# Por qué organizar los datos

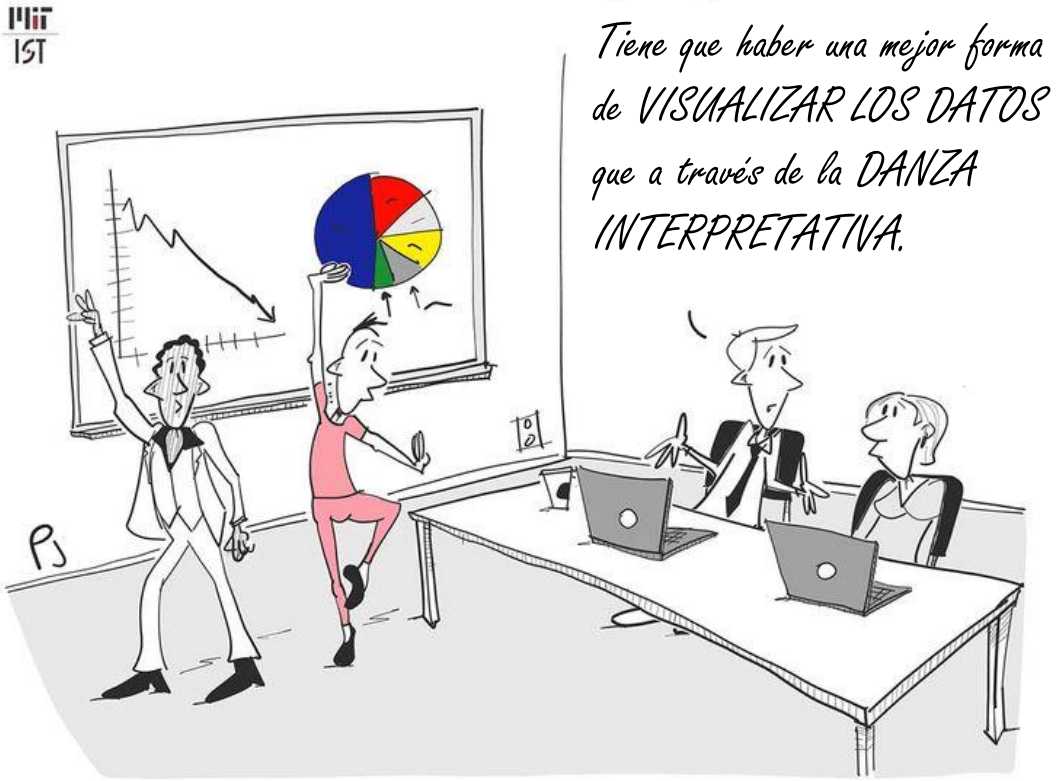
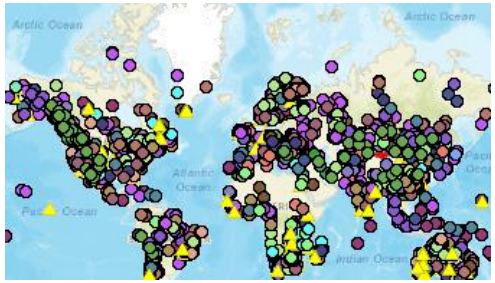
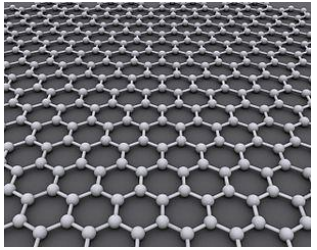



Photo credit: Pinimg.com

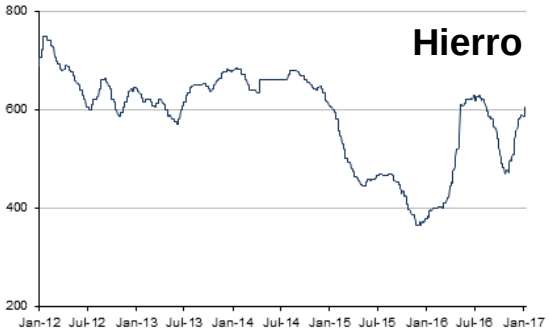
# Variación de valor de las commodities
# Política, nuevos minerales u otros




https://minerals.usgs.gov/science/criticalglobal/index.html



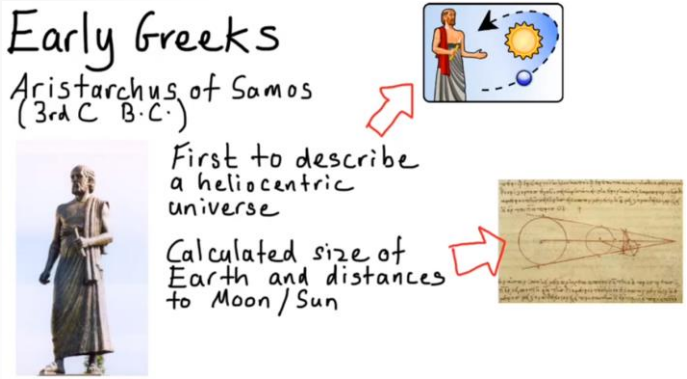
https://es.wikipedia.org/wiki/Grafeno

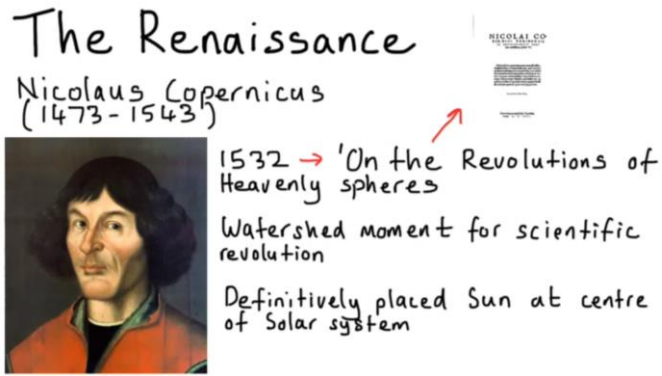



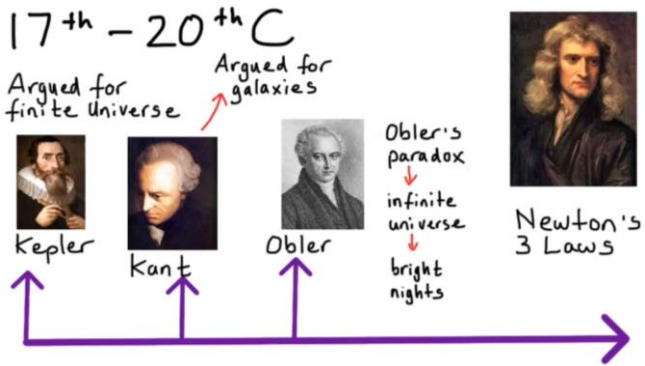


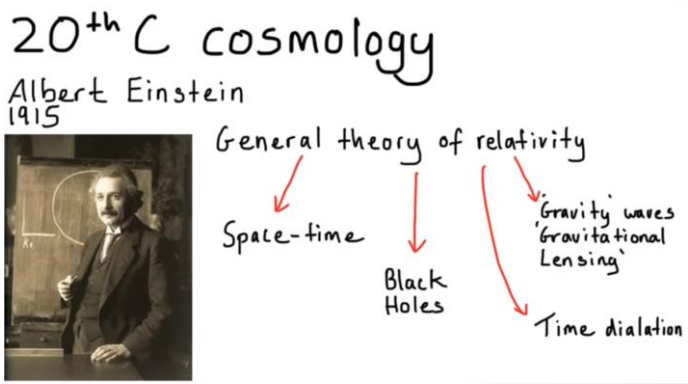
https://www.focus-economics.com/commodities/base-metals

# Legado de Datos – Reutilización de datos



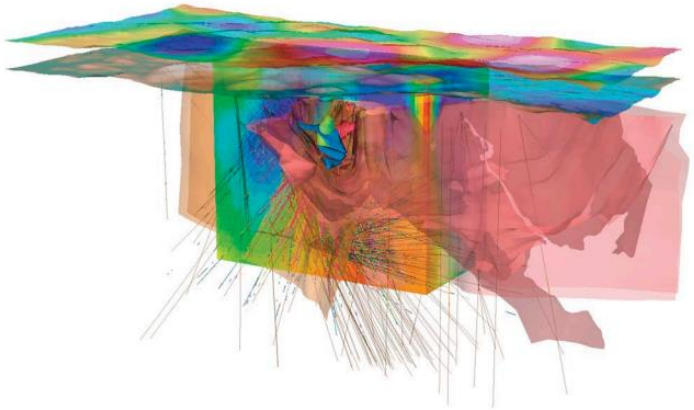




https://www.youtube.com/watch?v=MCUSEfDDXZk

# Nuevas formas de obtener valor de los datos

## VOXI Earth Modelling

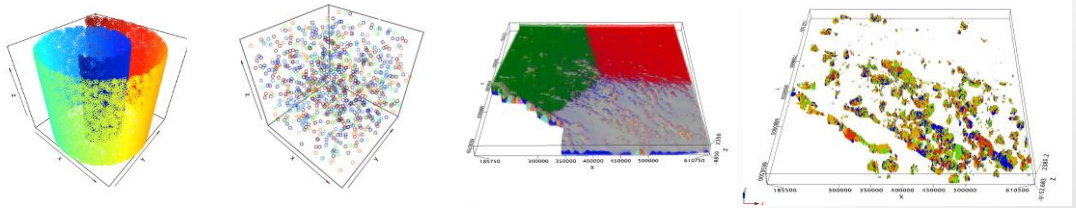
Build integrated exploration models with geology and geophysics



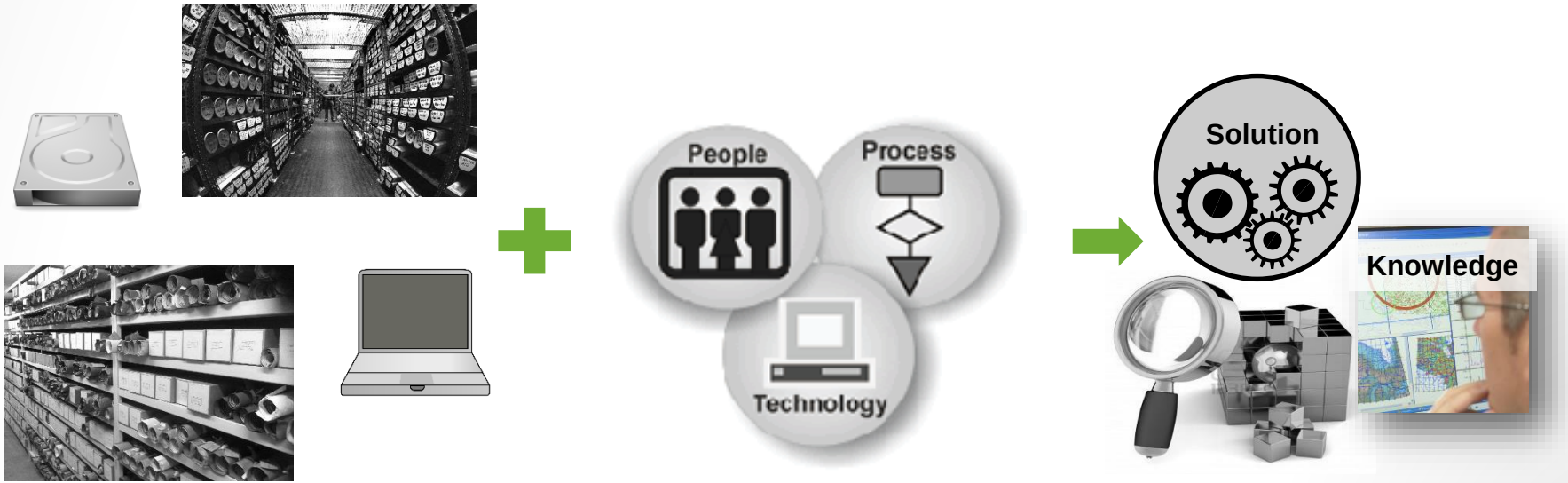
### Self-Organizing Maps (SOM)

SOM es una técnica de clasificación no supervisada usada para analizar y visualizar datos de alta dimensión basado en los principios de las mediciones del vector de cuantización.

Es una herramienta ideal para analizar un conjunto de datos con parámetros geofísicos dispares, cuando uno está buscando por relacionamientos y tendencias.



# Recuperando los datos de Legado



# Revisión & Análisis - Inventario de Datos


1- Consolidar

2- Analizar

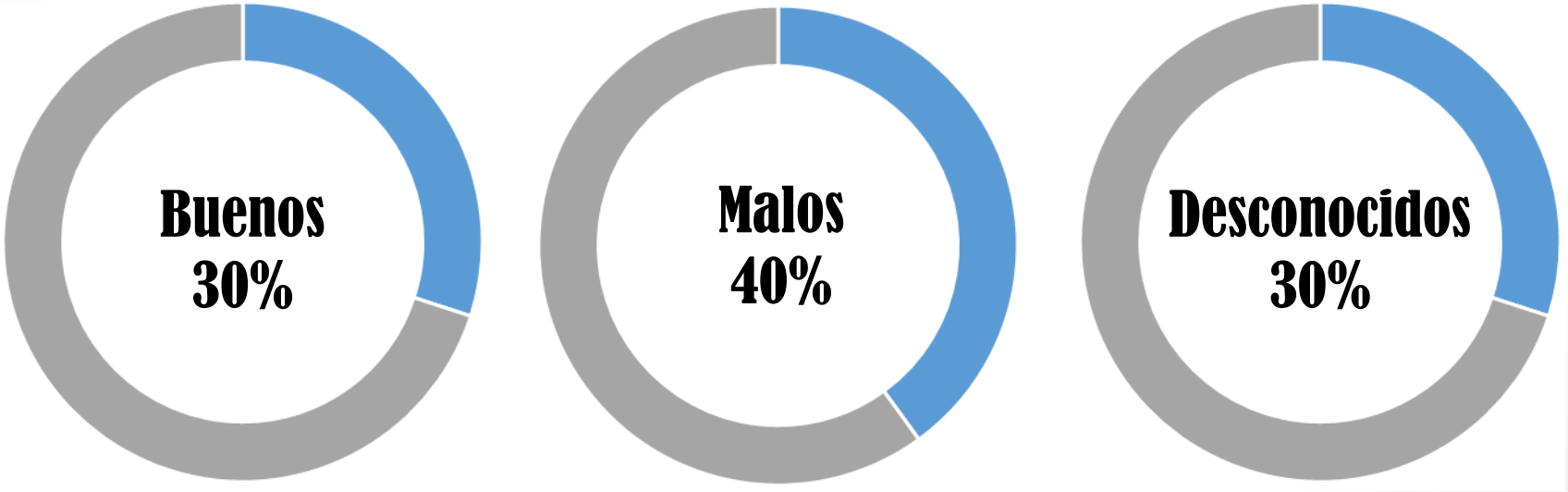
3- Obtener Resultado

# Inventario de Datos

Hasta 80% de los datos de Geociencias son redundantes, obsoletos o triviales (ROT).

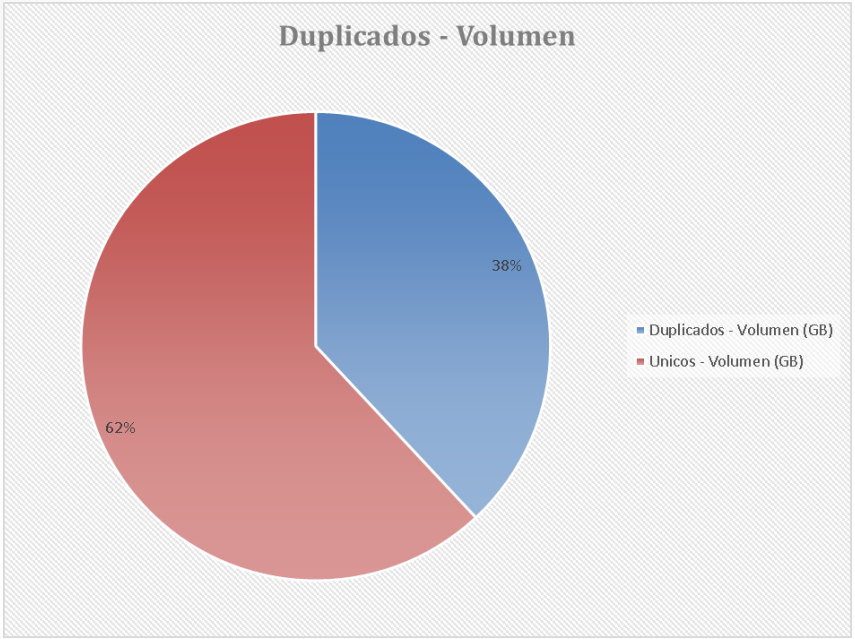
Faults.tab
faults.tab
Faults_Final.tab
Faults_final_v2.tab

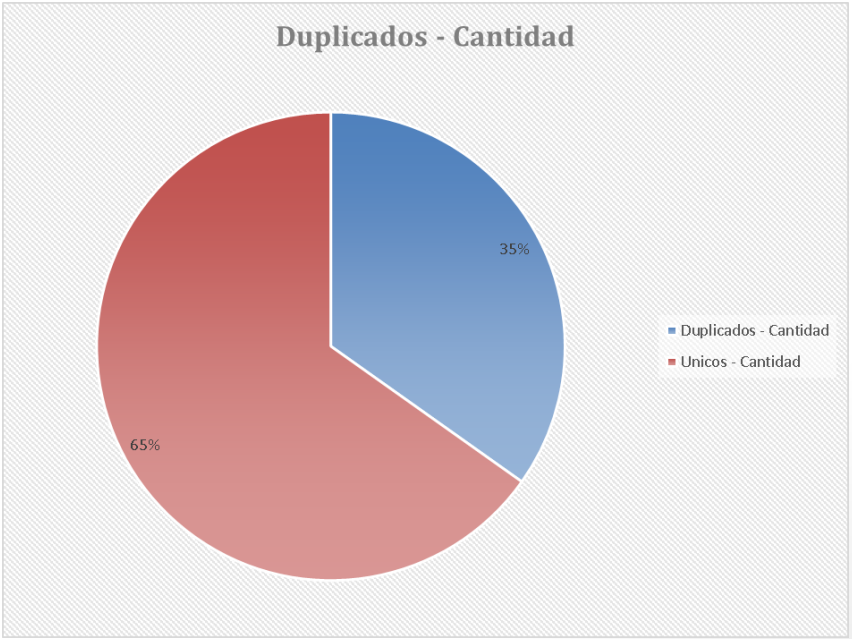
# Revisión de Datos



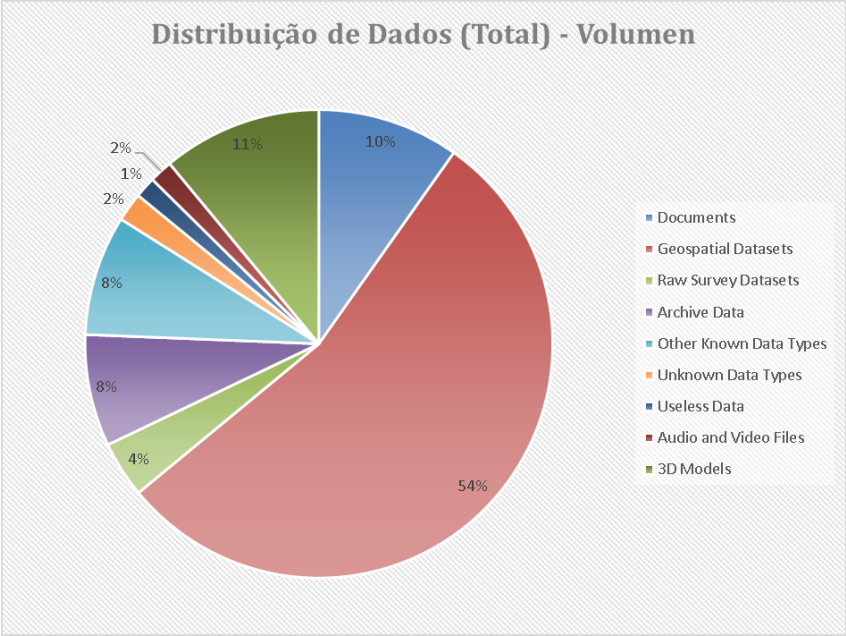

Promedio de nuestros clientes

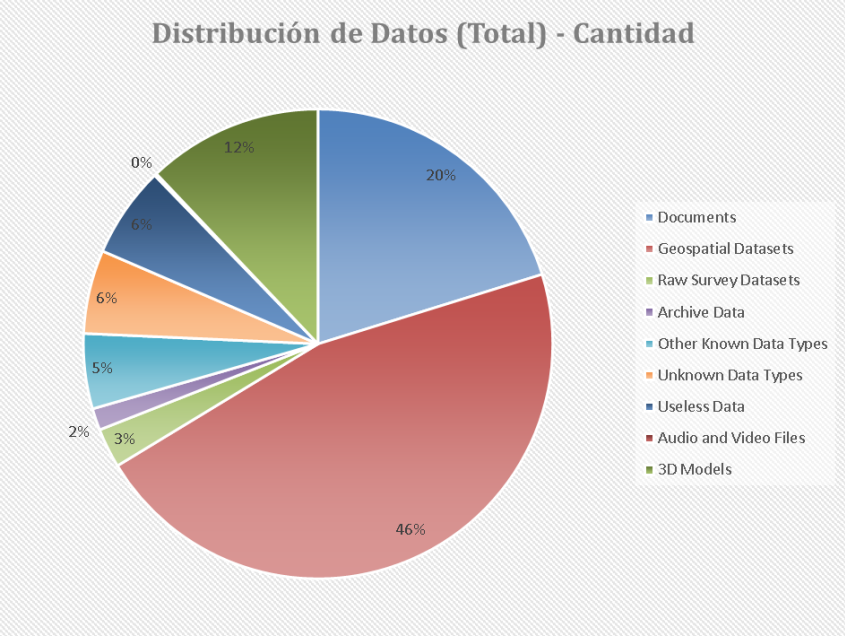
# Grafico - Duplicados



# Grafico – Distribución de Datos

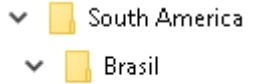


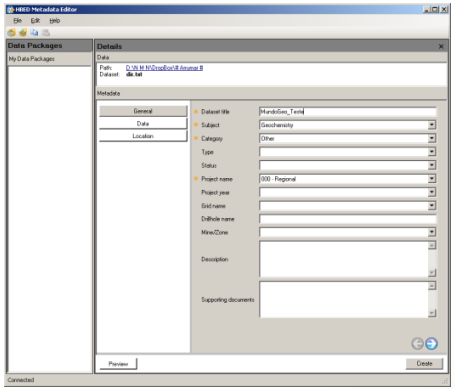

Información de un Inventario

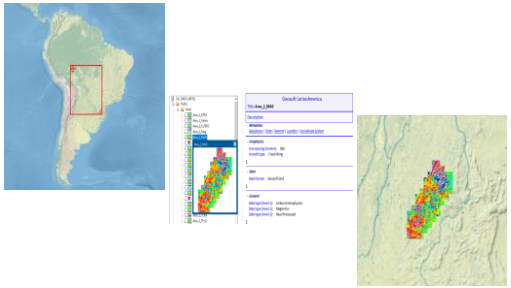
# Recomendaciones

- ✓ **Estructura de carpetas**
- ✓ **Nomenclatura de datasets**
- ✓ **Datos Crudos**
- ✓ **Metadados**
- ✓ **Gestión de Informaciones Georreferenciadas**

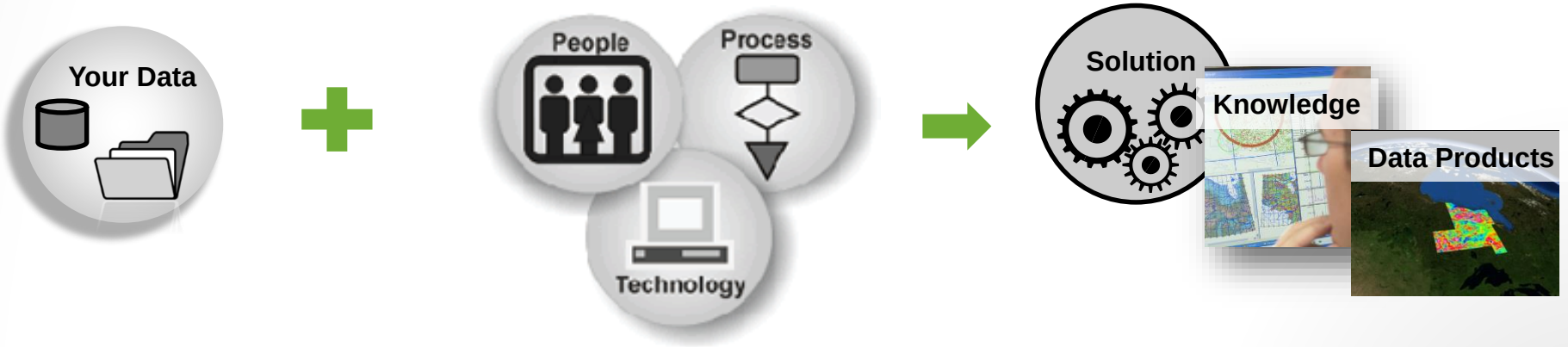



SAM_Brazil_ProyectName_MAG.zip



# Limpieza y Organización



# Ejemplo de proyecto de Limpieza y Organización

## Historical data finds new life on central server: Hudbay aims to find new mine in Flin Flon camp using data already collected

*by Virginia Heffernan*

*I see the integration between the three disciplines (geology, geochemistry and geophysics) becoming more commonplace. As deposits become tougher to find, that kind of collaboration will be the key to discovering our next mine.*

-Peter Dueck, Chief Geophysicist, Hudbay

Having data in a central system has led to improved workflows, team collaboration and better 3D interpretations incorporating geophysics, geology and geochemistry. Shown above: A 3D model generated with data from Hudbay's DAP server.

# Limpieza y Organización - Hudbay

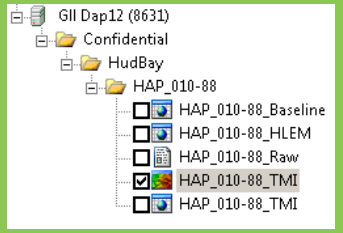
## Revisión de datos

- CALCOMP.PLS
- HAP10.CAL
- HAP10.CON
- HAP10.EM
- HAP10.LIN
- HAP10
- HAP10.PLT
- HAP10.XYZ
- HAP10C.DEV
- HAP10C.PLT
- HAP10EM.EMR
- HAP10GD.DEV
- HAP10GD.PLT
- HAP10M0.GRD
- HAP10M2.GRD
- HAP10MP.DEV
- HAP10MP.PLT
- HBTITLE.CON
- MAPLINE.CON
- STAKPOST.CON
- STAKPROF.CON

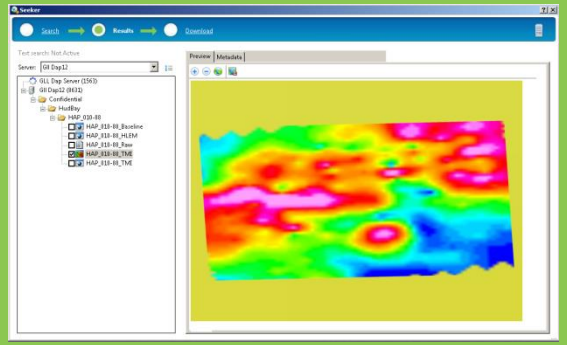
## Preparación de datos

- HAP_010-88_Baseline.gdb
- HAP_010-88_Baseline.gdb.xml
- HAP_010-88_HLEM.gdb
- HAP_010-88_HLEM.gdb.xml
- HAP_010-88_Raw.zip
- HAP_010-88_Raw.zip.xml
- HAP_010-88_TMI.gdb
- HAP_010-88_TMI.gdb.xml
- HAP_010-88_TMI.grd
- HAP_010-88_TMI.grd.gi
- HAP_010-88_TMI.grd.xml

## Listo!







# Metadatos - HudBay


- Informaciones sobre el dato
- Usados para búsqueda
- Estándar ISO 19139, FGDC  etc
- Combinación de XML y SQL
- Herramienta de Edición de Metadatos

Geosoft

Title: **HAP_010-88_TMI**

Description:

***Metadata:***

*Data* | *General* | *Coordinate System*

- ***Data***

Data format: Geosoft Database
Scale (1:): Not Applicable

- ***General***

Data type (level 1): Geophysics - Surface
Data type (level 2): Magnetics
Data type (level 3): TMI
Reference Document: http://hudbayxchange/exploration/Geospatial/Geophysical%20Datasets/A-1270-027B-Geophysics_Surface-HLEM-HAP_010-88.pdf

- ***Coordinate System***

Type: TRANSVERSE_MERCATOR
Name: NAD83 / UTM zone 14N
Units: m
Local datum: [NAD83] (4m) North America - Canada and USA (CONUS, Alaska mainland)

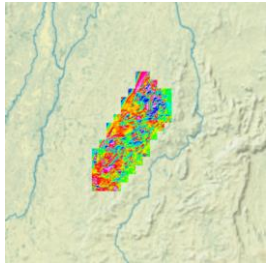
Extents

| | |
|---|---|
| Min X: | 317543.30840013 |
| Min Y: | 6053109.05030002 |
| Max X: | 318476.828045956 |
| Max Y: | 6053921.36715368 |

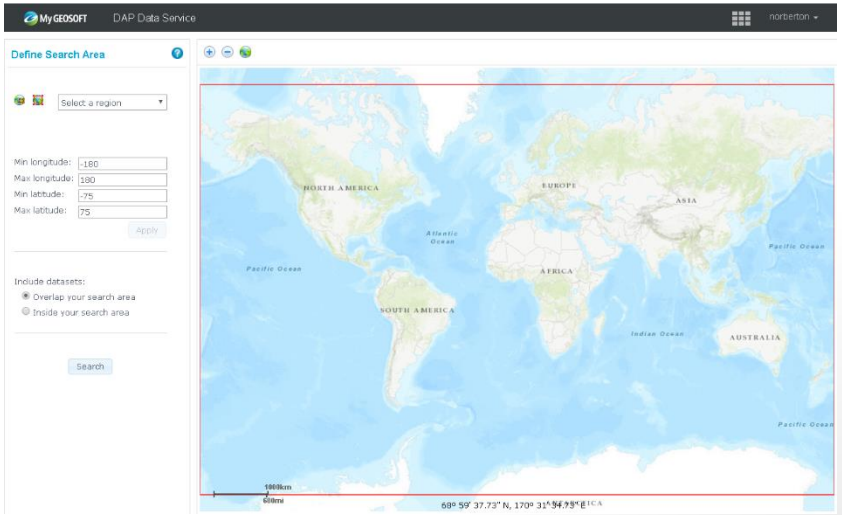
# Distribución y Descubierta

Selecciona tu área de proyecto.


Analizar y seleccionar los datos.



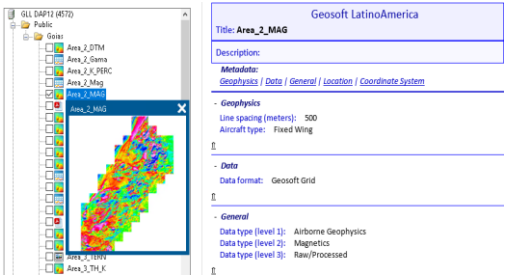
Visualización en el mapa y descargar.



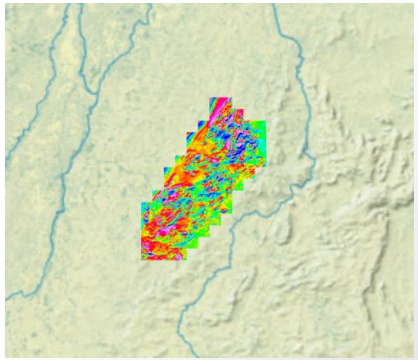
# Tecnología de gestión de datos - DAP

- Índexar.
- Buscar.
- Pre-visualisar.
- Descargar.
- Seguridad.
- Calidad y confiabilidad.

Selecciona tu área de proyecto.

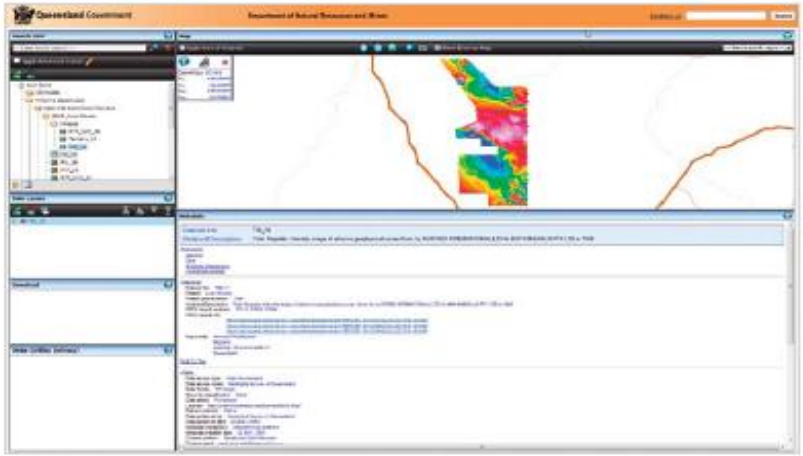



Analizar y seleccionar los datos.



Visualización en el mapa y descargar.

# Distribución y Descubierta – QDEX Data

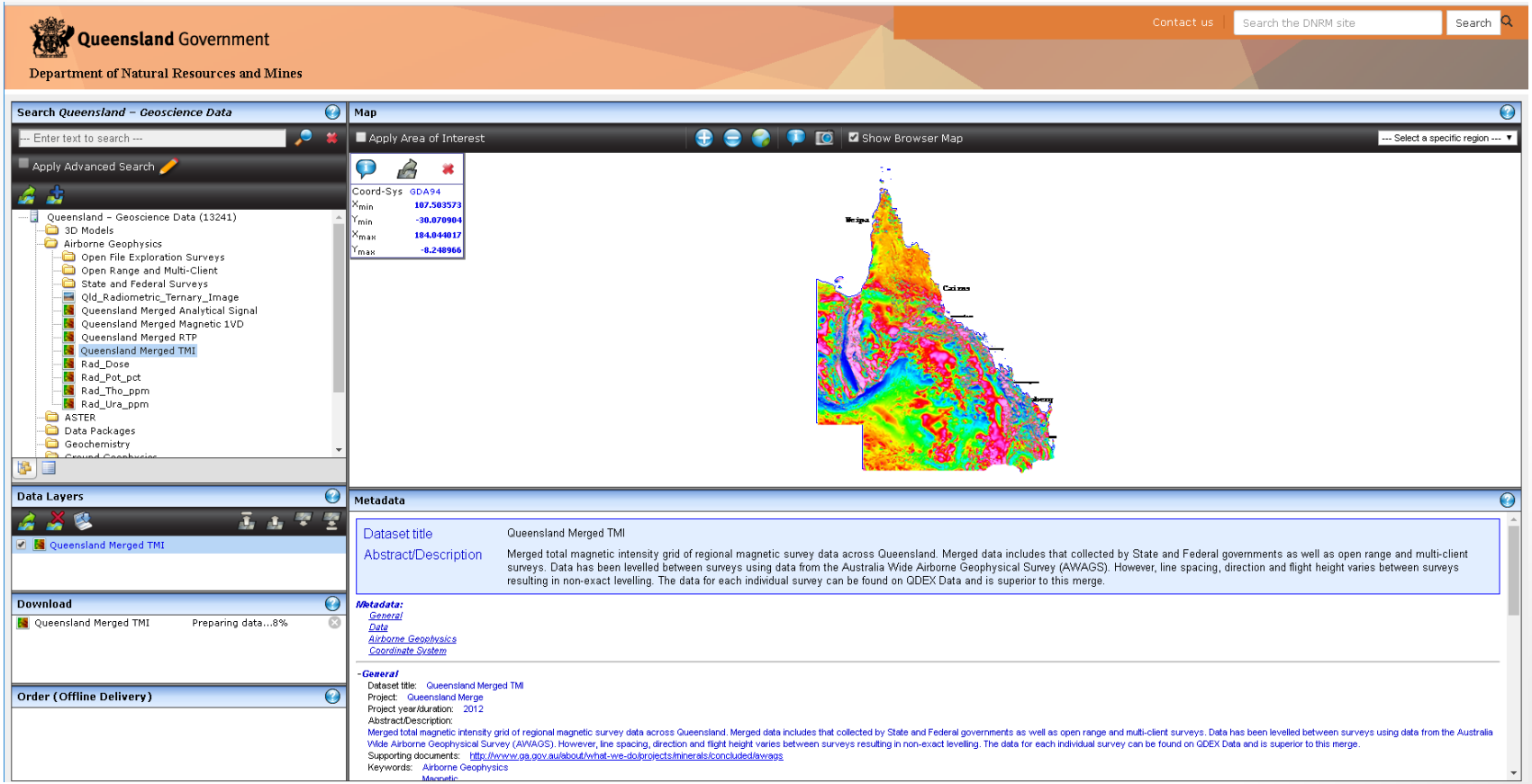


The Geological Survey of Queensland's new online system QDEX Data contains both government and private company survey results, such as the Avon Downs airborne geophysics survey, available as both images and data.

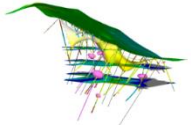
## QDEX Data: The new face of Queensland surveys

http://www.geosoft.com/media/uploads/resources/reports/ee-data-management-report-jan21-15-A4-web.pdf

# Geological Survey of Queensland QDEX - Data

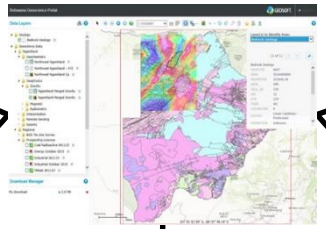


# Integración y Personalización

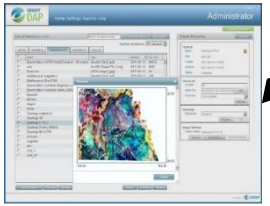


Sondaje /
Geoquímico

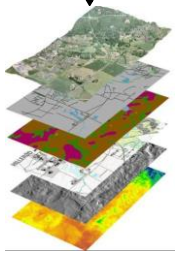
Integracion - Portal



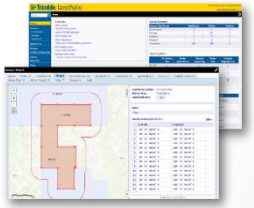
Reportes /
Documentos



Geofísica / Imágenes
DAP

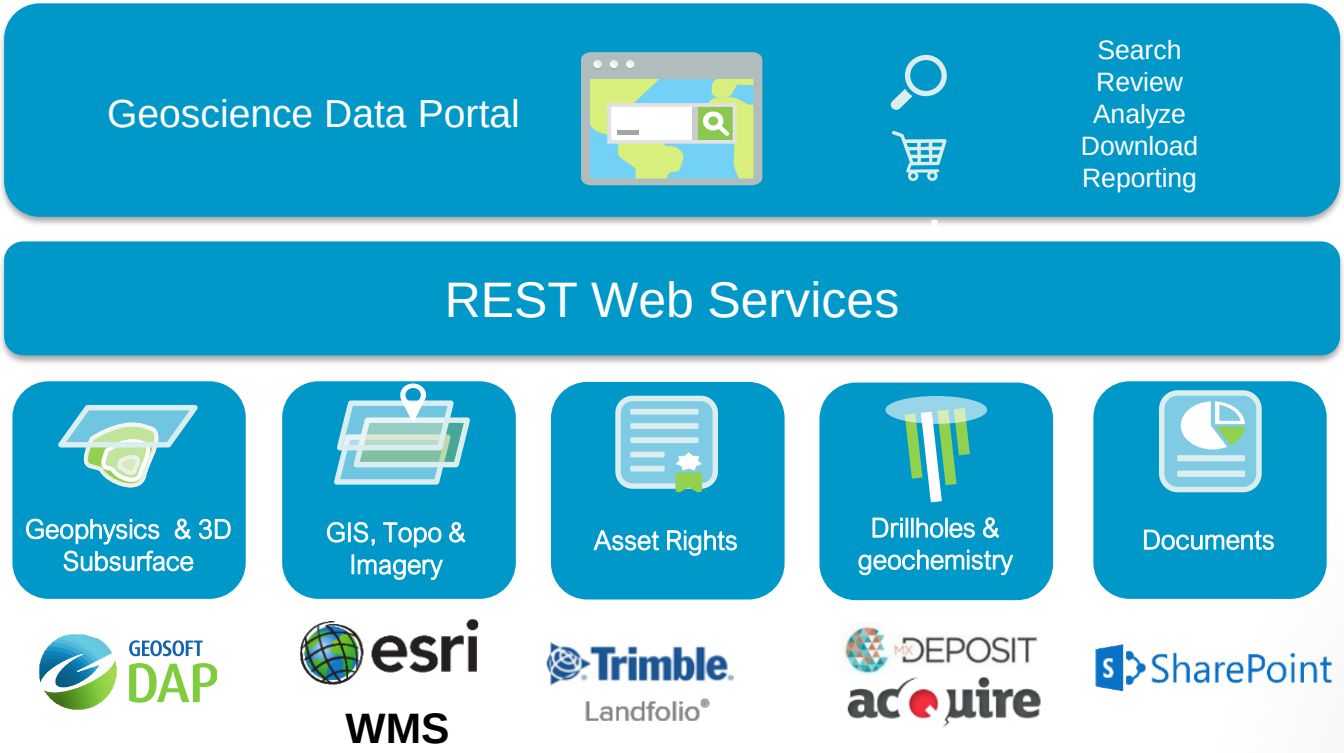


GIS & Geologia

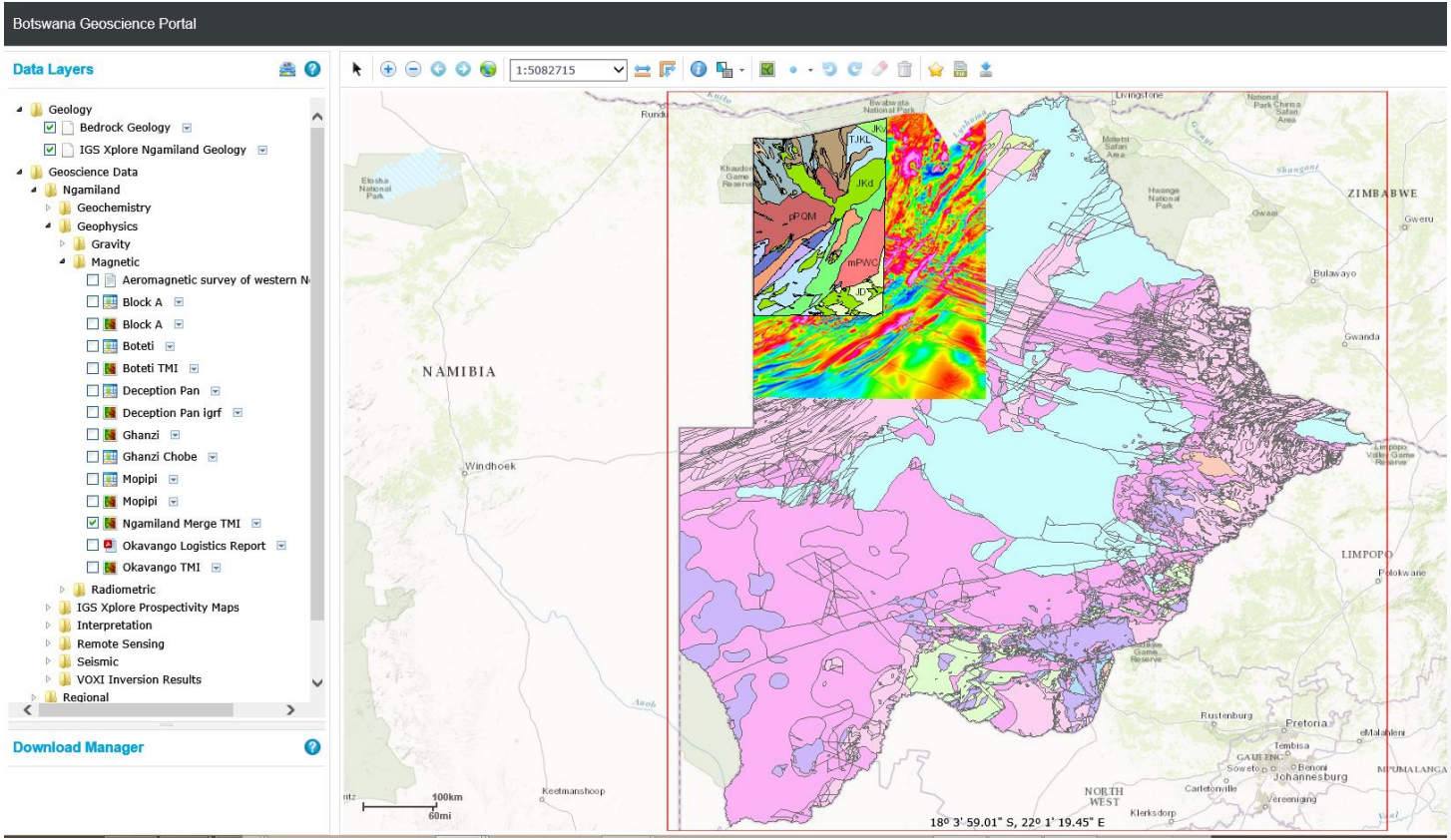


Derecho Minero
Landfolio

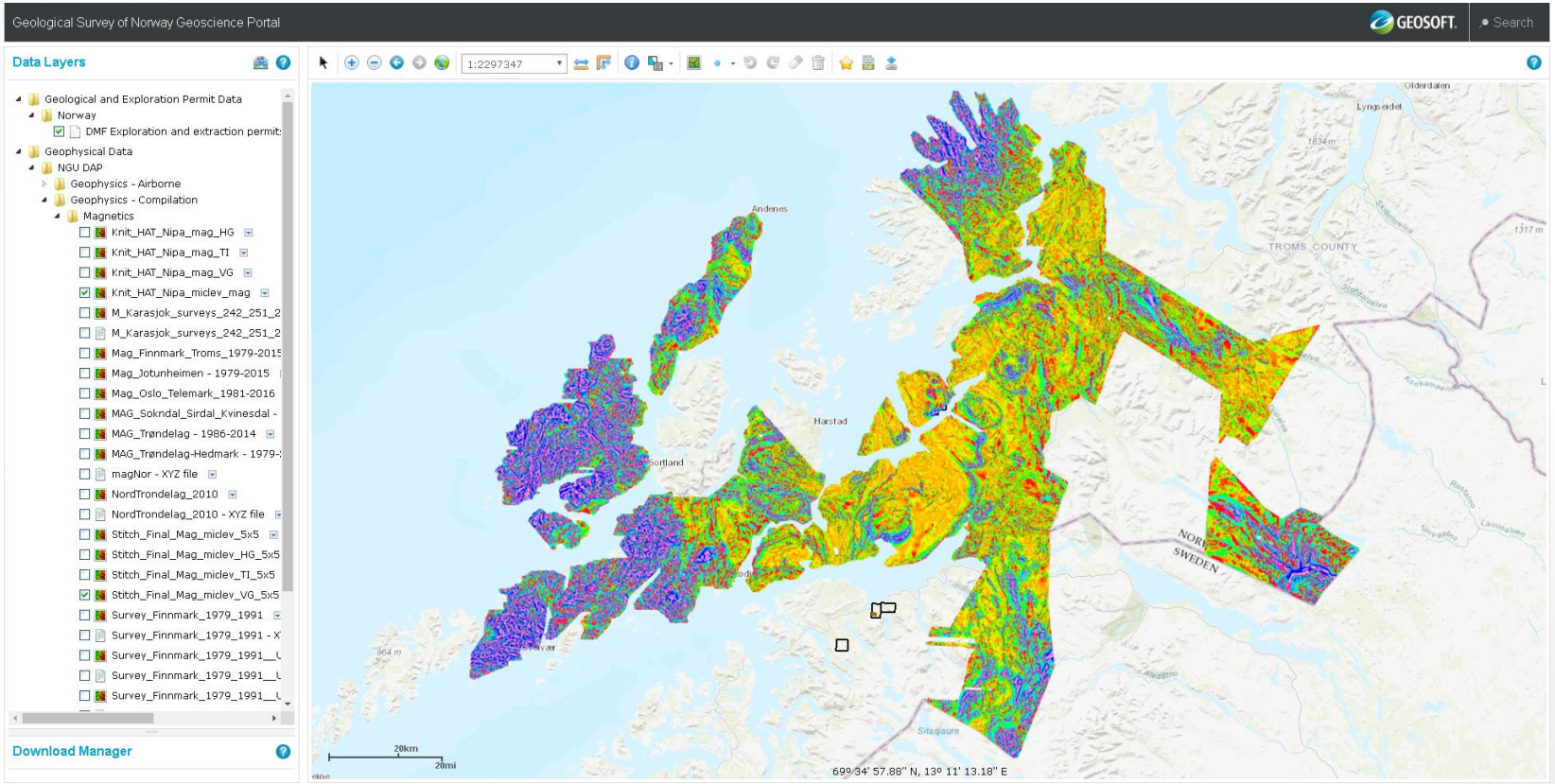
# Integración y Personalización



# Botswana Geoscience Portal



# Geological Survey of Norway Geoscience Portal



# Botswana and Norway Geoscience Portal - Conectores

GEOSOFT

Geoscience Data Portal

Search
Review
Analyze
Download
Reporting

REST Web Services

Geophysics & 3D Subsurface

GIS, Topo & Imagery

Asset Rights

Drillholes & geochemistry

Documents

GEOSOFT DAP

esri

WMS

Trimble Landfolio®

DEPOSIT acquire

SharePoint

# ¿Como podemos ayudarlos?

GEOSOFT

**Review & Analyze**
to identified
opportunities in the data


**Cleanse & Organize**
data to make it more
visible, searchable and
usable

**Deliver & Discover**
data quickly and easily
anywhere in the word

**Integrate & Customize**
you solution to meet strategic
business objectives

Data Services

Server Technology

- Geological
- Geophysical
- Geochemical
- GIS
- Drillhole/Well
- Reports & Documents
- Land Tenement

Integration Services

# Gracias!

# ¿Preguntas?

Telma.Aisengart@Geosoft.com

A nosotros nos encanta oír a nuestros clientes; entonces si tiene preguntas o sugerencias, entre en contacto con nosotros a través del correo explore@geosoft.com o visite nuestro sitio web www.geosoft.com

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# Links

Promoción  Inventario
http://www.geosoft.com/get-started/data-scan

Servicios de datos
http://www.geosoft.com/services/data-services

Hudbay – Ejemplo de Servicios de datos
http://www.earthexplorer.com/2014/Historical_data_finds_new_life_on_central_server.asp

DAP Server - Geospatial Server for Exploration Data and Metadata Repositories
http://www.geosoft.com/products/dap-server/overview

Queensland – Ejemplo de DAP
http://qdexdata.dnrm.qld.gov.au/flamingo

Geoscience Portal - Integrated data delivery
http://www.geosoft.com/professional-services/systems-integration

Public Geoscience Portal
- Botswana: http://geoscienceportal.geosoft.com/Botswana/search
- Norway: http://geo.ngu.no/GeosciencePortal/search

VOXI Earth Modelling
http://www.geosoft.com/products/voxi-earth-modelling/