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**Planning, Implementation and Introduction  
of Information Management Systems (IMS)  
in the Geological Survey of Ghana**

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# Background

## Project Partners

- Financed by 8<sup>th</sup> EDF Fund, SYSMIN Programme (European Union)
- Participating Authorities:
  - Ministry of Lands and Natural Resources
  - Geological Survey Department (GSD)
  - Minerals Commission (MC)
  - Inspectorate Division of the Minerals Commission
  - Precious Minerals Marketing Company Ltd. (PMMC)



# Background

## Project Partners

- Realized by:
  - Beak Consultants GmbH Freiberg  
Design, Implementation, Training
  - IBIS Chemnitz  
Technical infrastructure
  - Accelon Accra  
Local partner for infrastructure



# Background

## Geological Survey Department (GSD)

The GSD was founded in 1913

The vision of the GSD is to be an internationally recognised organization contributing to the development agenda of the country through the provision of geoscientific data

GSD is the principal curator of the national geoscientific data, and has the main task to continuously generate, collect, store and archive relevant geoscientific data, and to disseminate data and information in a user-friendly way to the government, industry and the public at large.

The department has the responsibility to advice the nation to make informed decision on geoscientific issues concerning mineral and groundwater resources, environment, geohazards and land use planning

# Background

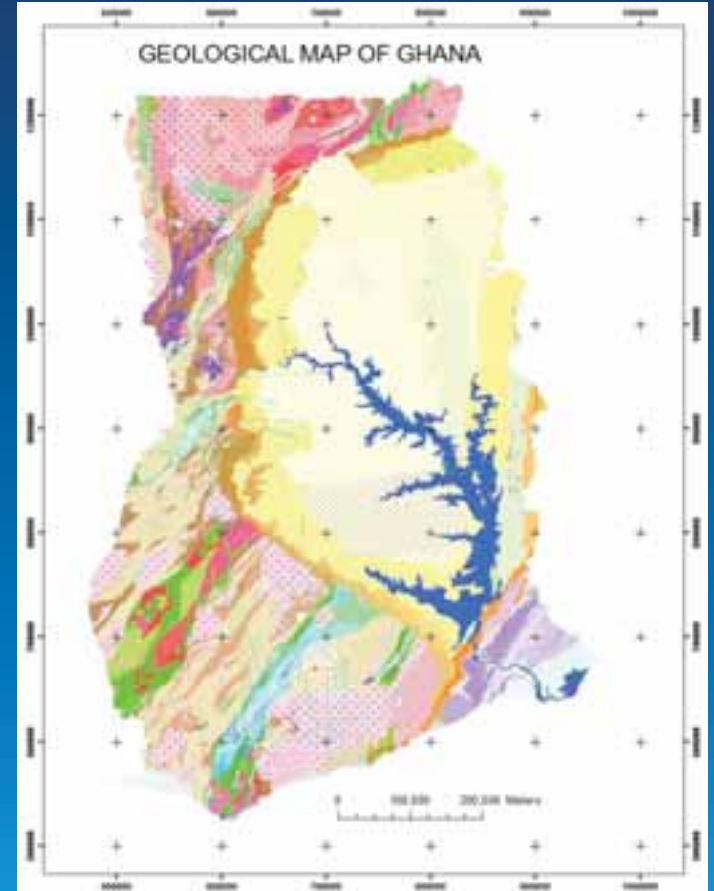
## Significance of Ghana Mining Sector

- Mining in Ghana: 39 % of total export value
- Mining sector employs directly > 36.000 people
- Mining accounts for 5% of Ghana's GDP
- Main commodities: Gold, Manganese, Bauxite, Diamonds
- Known reserves have depleted rapidly
  - Effective mining techniques
  - Lack of exploration funds

# Background

## Significance of Ghana geoscientific data

- Demand for data management to make exploration and licensing procedures more effective for investors
  - Efficient provision of geoscientific data
  - Up-to-date information about licences



# Background

## Main tasks

- The IMS project provides the Mining Sector of the MLNR and its agencies with
  - a new IT infrastructure,
  - a common web portal,
  - a powerful customized database / GIS software.



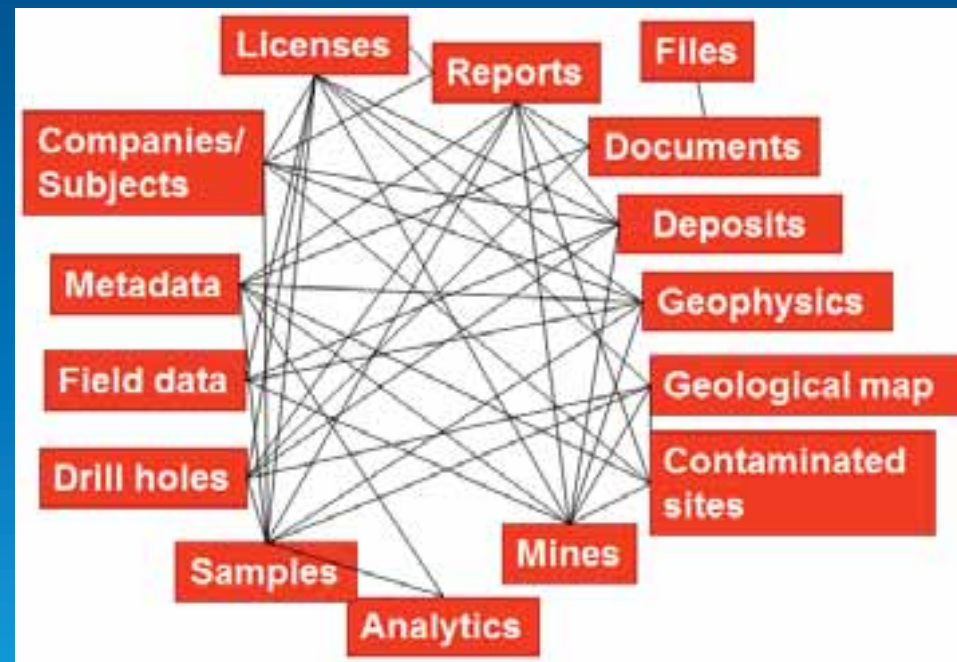
The IMS project is essential for the further development of one of the most promising economic sectors in Ghana.

# Implementation of the System

## Database

Systematic storage, handling and provision of data:

- mineral licence data,
- mineral deposit data,
- geoscientific maps,
- geoscientific primary data,
- drillhole data,
- analytical data, ...





# Implementation of the System

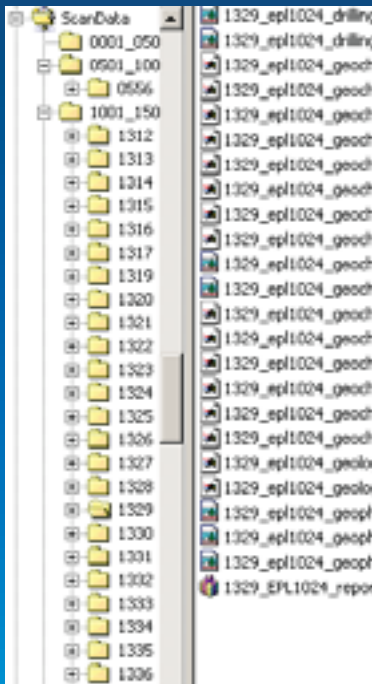
## Functions

- Data entry,
- Inquiries,
- Import and export (flat tables for further processing),
- Compilation of reports, statistics and maps for frequent data evaluations,
- Fast and easy printing of user defined maps,
- Alert functions for selected important events (e.g. expiry of licences).

# Implementation of the System

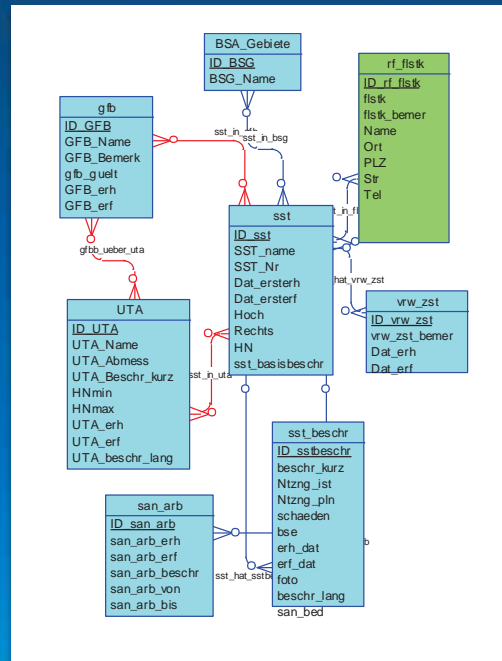
## General Database Structure

### Reports & Documents



File System

### Factual Data & Metadata



Database

### Spatial Data

Geometrical data with relationship to the database <sup>1)</sup>

- Deposits
- Drill holes
- Geology
- ...

Topographical base data <sup>1)</sup>

- Topographic maps
- Satellite images
- ...

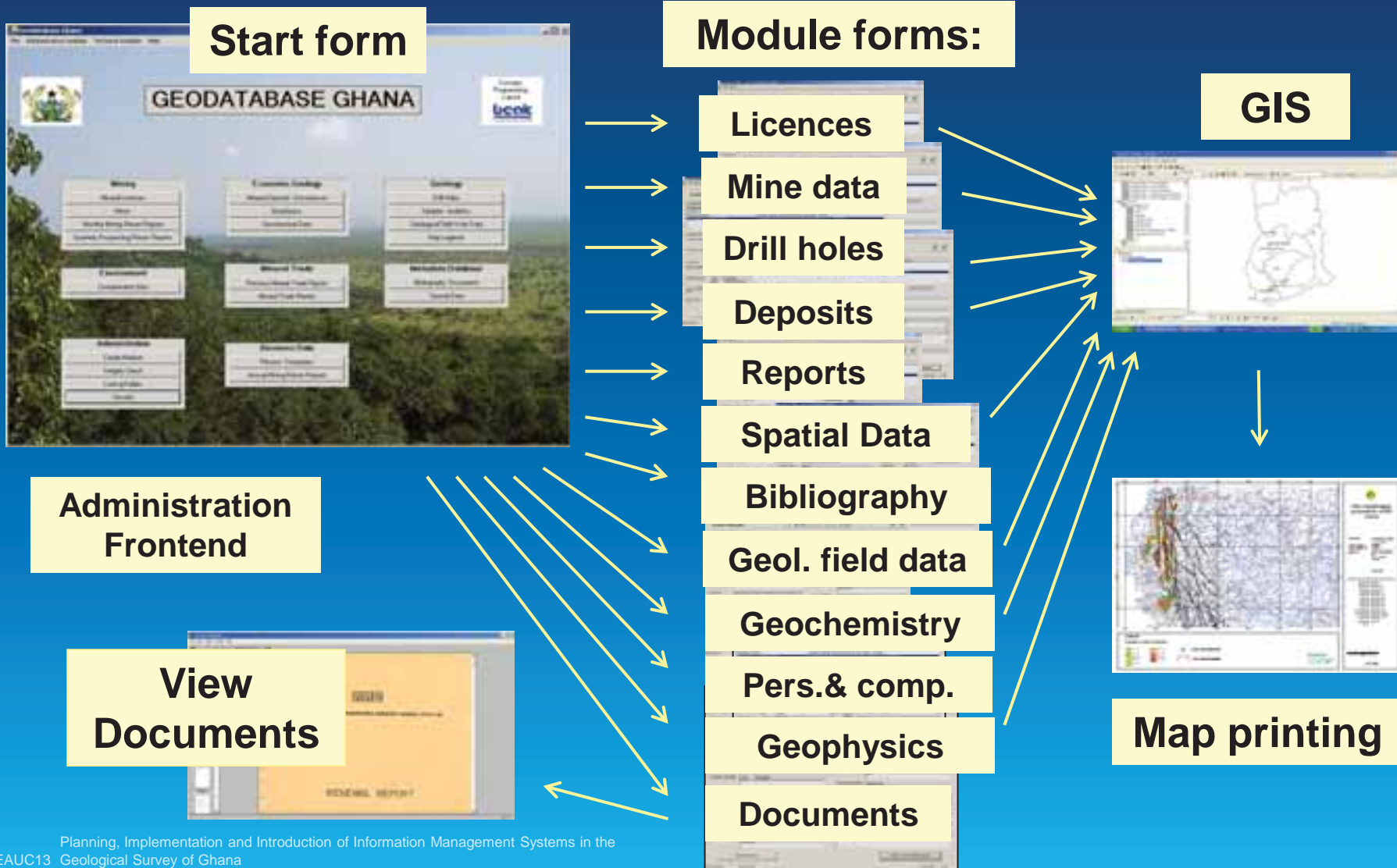
Other spatial data <sup>2)</sup>

- Scanned maps from reports
- ...

Database <sup>1)</sup> / File System <sup>2)</sup>

# Implementation of the System

## Functions



# Implementation of the System

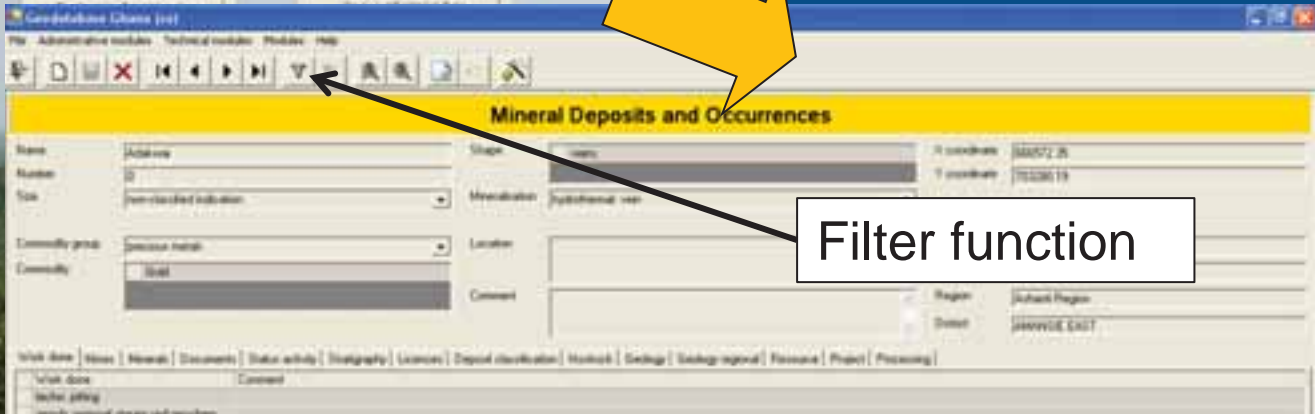
## Technical background

- GIS:
  - ArcGIS
- Database:
  - MS SQL Server
  - ArcGIS Server
- Programming languages/libraries:
  - VB.net
  - ArcObjects

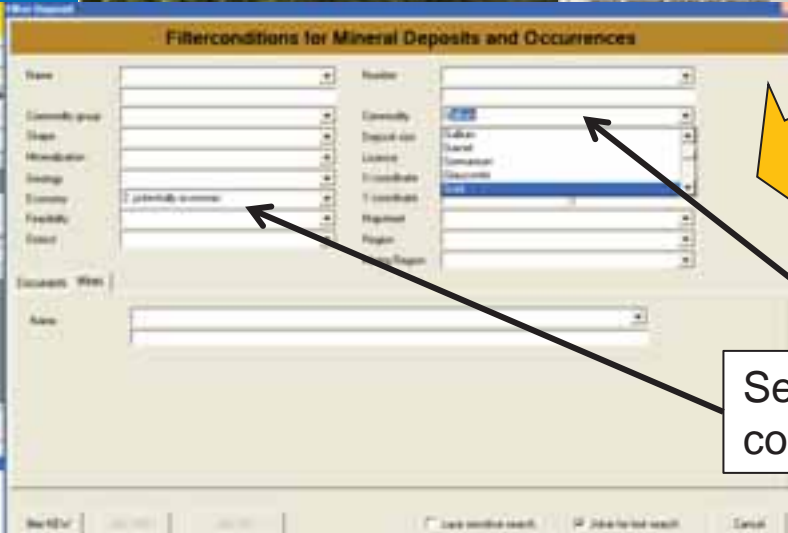
# Workflow: Example mineral deposits



Mineral deposit module



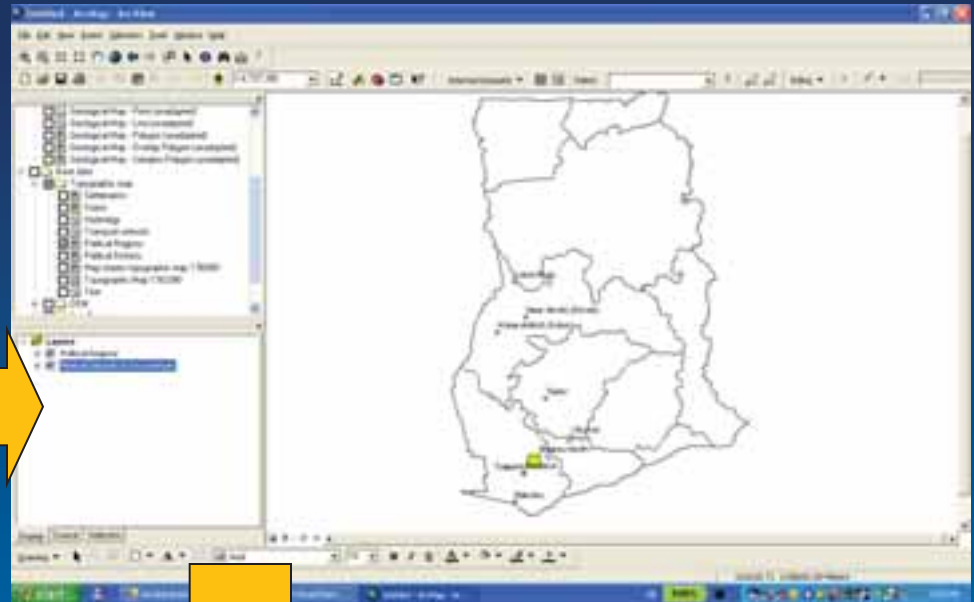
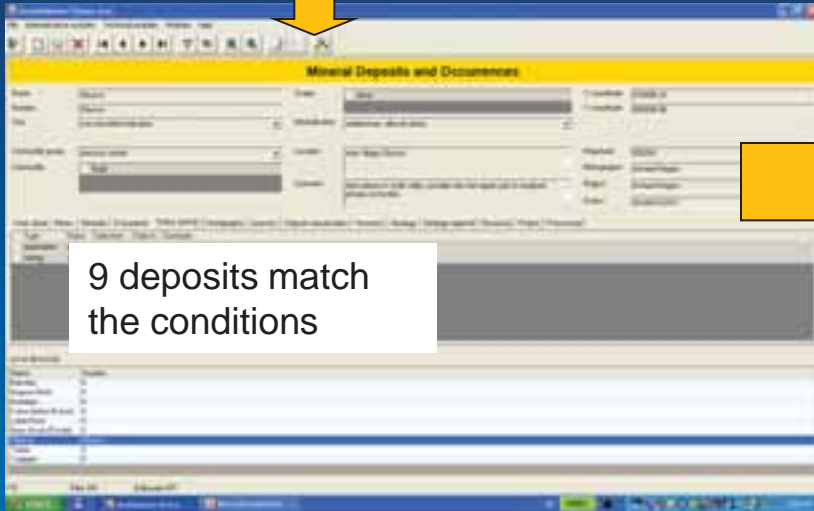
Filter function



Setting of conditions

# Workflow: GIS

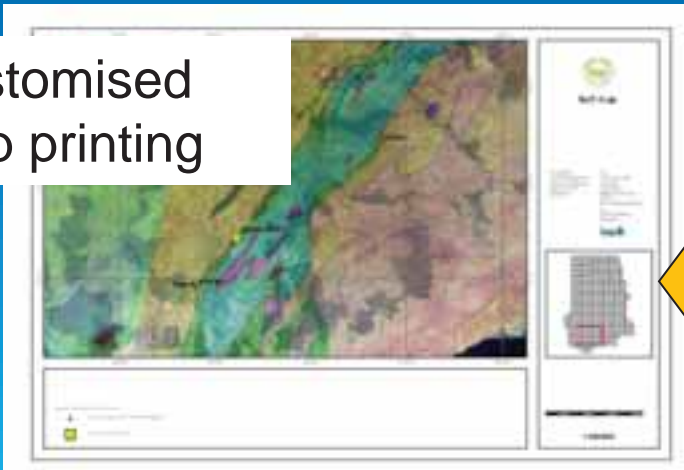
GIS



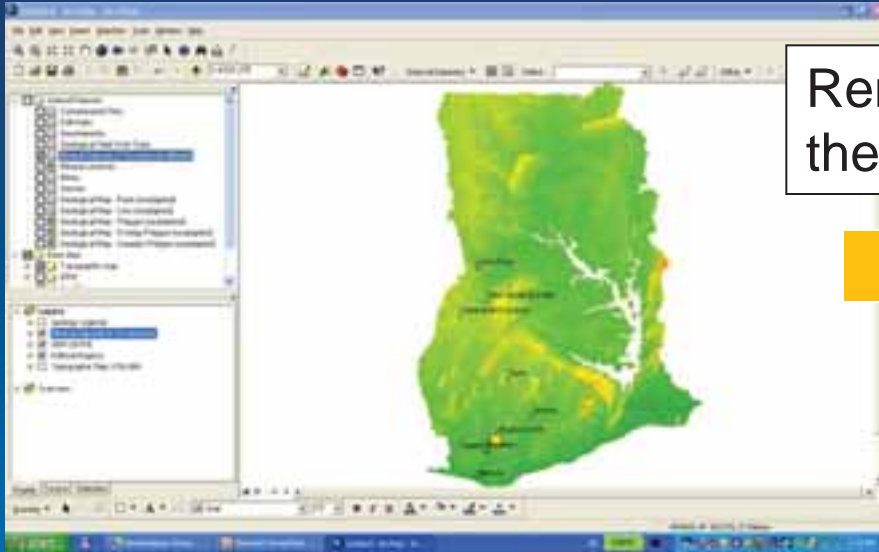
Addition of background data



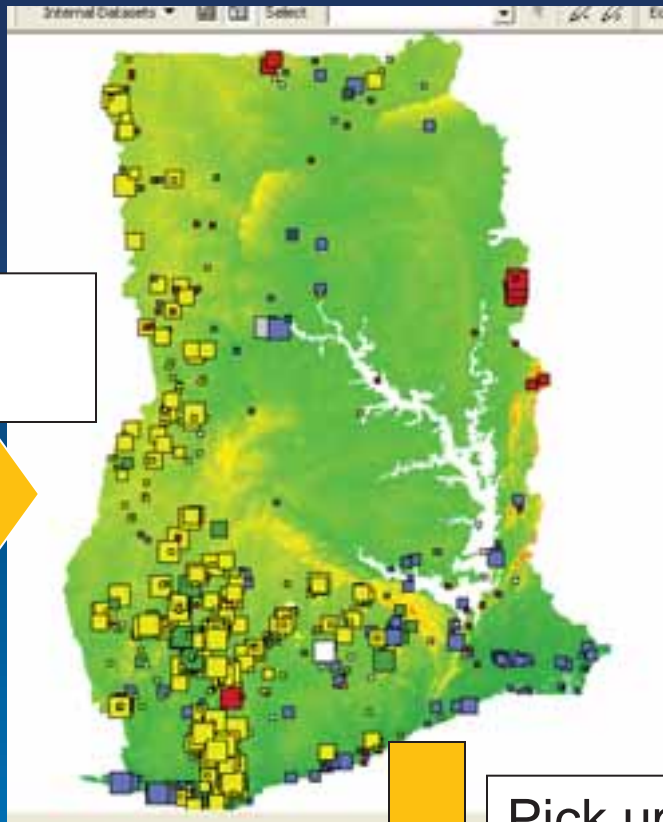
Customised map printing



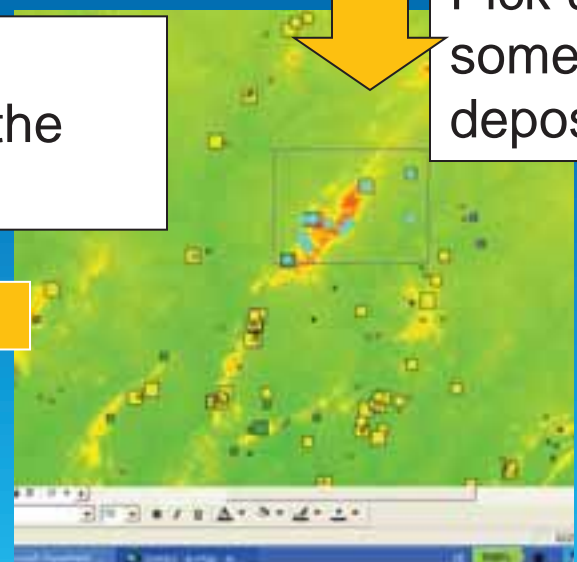
# Workflow: GIS



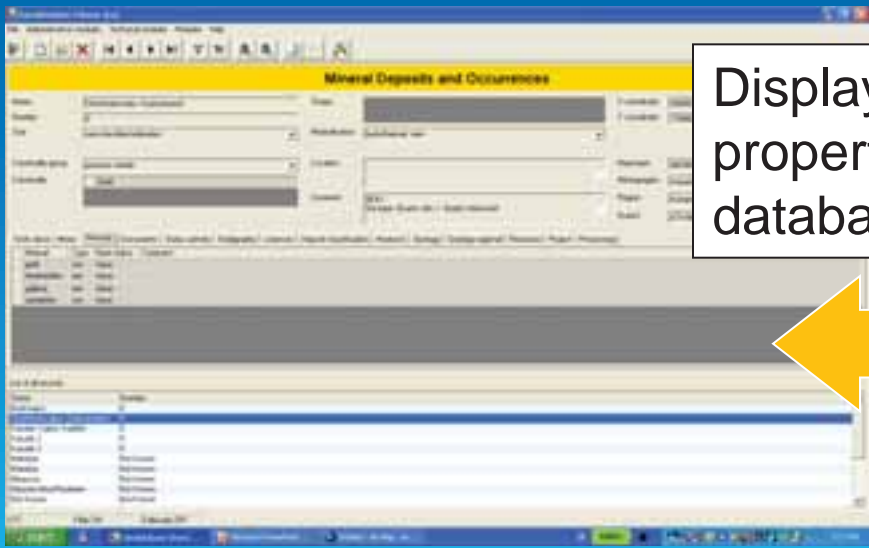
Remove the filter



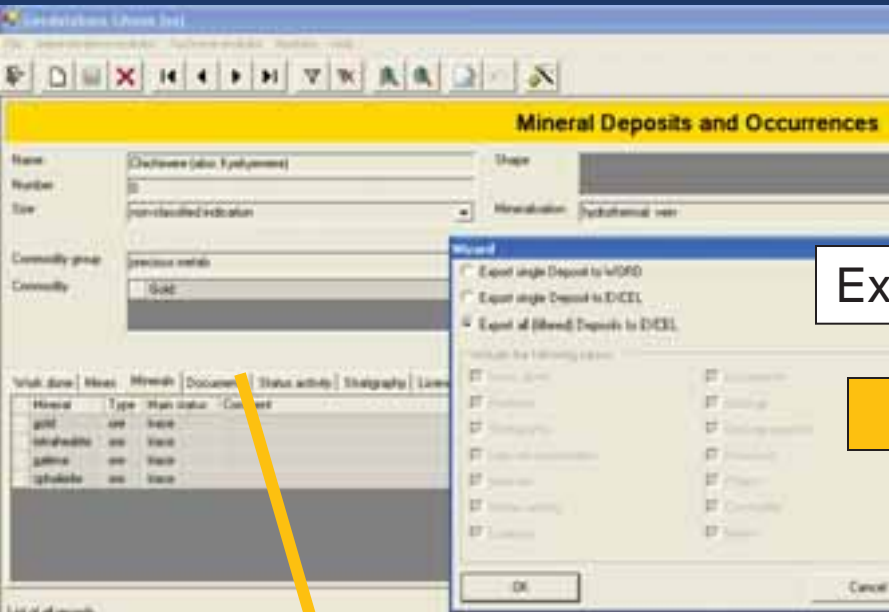
Pick up some deposits



Display their properties in the database

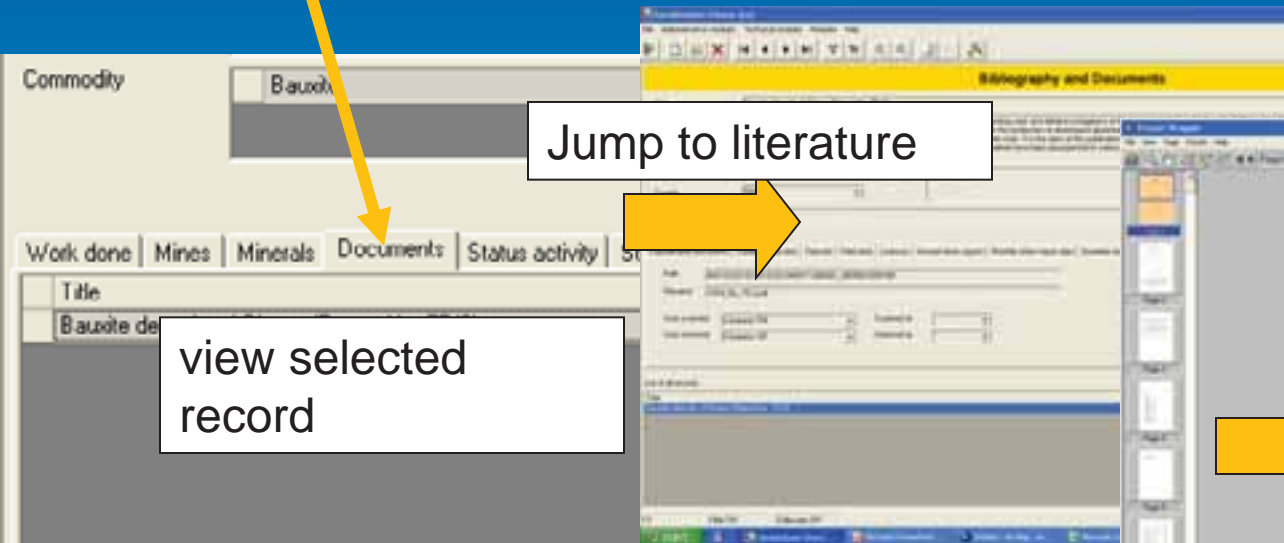


# Workflow: database functions



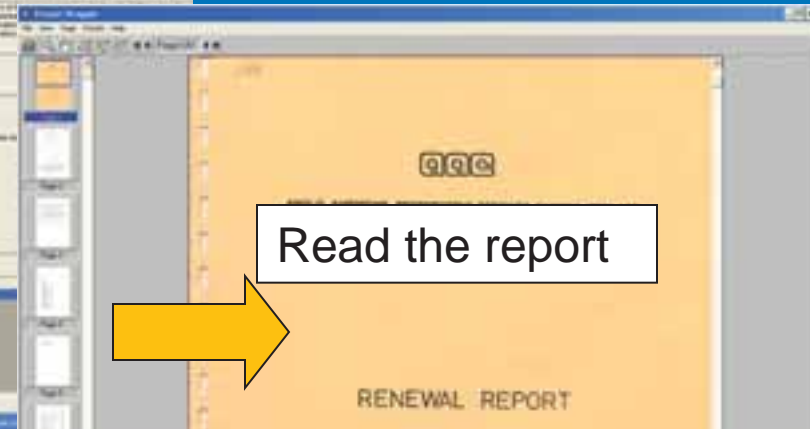
Export data to EXCEL

Name	Number	X coordin	Y coordin	Size	Commodi	Commodi	Shape	Mineralis
Bonkwaso	0	617942.6	747535.7	non-classif	precious m	Gold	veins	hydrotherm
				2.3	non-classif	precious m		hydrotherm
				8.2	non-classif	precious m		hydrotherm
				4.4	non-classif	precious m		hydrotherm
Kasutle 3	0	588971.5	742590.6	non-classif	precious m	Gold		hydrotherm
Mal...	Not known	596170.3	746503.4	small	base meta	Bauxite		unknown,
	Not known	589537	747597.5	small	base meta	Bauxite		unknown,
	Not known	591747.5	747601.2	medium	precious m	Gold		unknown,
...a M	Not Knowr	621065.4	734723.3	non-classif	precious m	Gold		hydrotherm
11	Not known	Not Knowr	600042.3	744520.4	non-classif	base meta	Bauxite	residual
12	Nynahin	0	585117.3	736561.4	large	base meta	Bauxite	residual. l
13	Osaakrom	Not known	601696.5	746513.5	non-classif	ferrous me	Manganese	unknown,



Jump to literature

view selected record



Read the report

RENEWAL REPORT



# Thank you for your attention



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