

## The West African geological consultancy group

SEMS Exploration is the leading full-service mineral exploration and mining consultancy company in West Africa. We provide a full range of geological, mining engineering and environmental services; from grassroots reconnaissance exploration through to completion of feasibility studies and mine design.

With offices in Ghana, Burkina Faso, Côte d'Ivoire, Mauritania and Liberia and a workforce of more than 100 employees, we're a local company with a large regional footprint.

We offer a wide range of technical services including; geological consultancy, project management, due diligence reports & property evaluations, analysis laboratory audits, geophysical consultancy, ground geophysics, downhole geophysics, mineral resource estimations, ore reserve statements, open pit design and optimisations, scoping

studies for open pit & underground mines, mine audits, environmental baseline studies, land use surveying and classification, geospatial services, remote sensing, data capture and QAQC reporting, legal, financial & cultural advice, facilitating joint venture agreements, ground acquisition assistance, GIS software sales and support (MapInfo & Encom), software training and mine & exploration surveying.

Not only a gold explorer; SEMS Exploration is experienced in diamond, bauxite, iron ore, kaolin, manganese and water exploration in West Africa. Our Technical Services Team specialises in developing robust business plans for mining companies operating in a West African environment.

The company's successful commercialisation of mineral resources has gained us clients ranging from private investors to junior explorers and major mining companies.

### YOUR FEET ON THE GROUND IN WEST AFRICA



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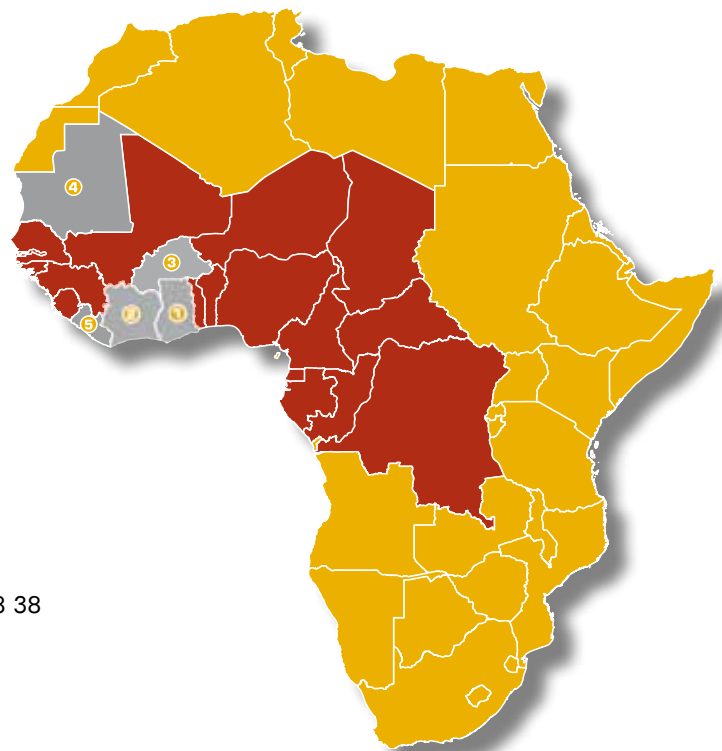
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EXPLORING IN WEST AFRICA CAN PROVIDE MANY UNIQUE CHALLENGES AS WELL AS THE UNIVERSAL NEED FOR QUALITY GEOLOGICAL DATA. LOCAL KNOWLEDGE IS A SIGNIFICANT TIME AND MONEY SAVER.

## YOUR NEEDS

- Geological consultancy
- Project management
- Due diligence reports & property valuations
- Laboratory audits



## OUR SERVICES

Bilingual, experienced geologists with a good understanding of mining and exploration conditions in West Africa.

Geological & regolith mapping, structural and lithological core logging.

Technical experience that will guide target generation and the formulation of exploration programs.

Implementation of quality control programs & QAQC reporting.

Independent technical reports by Competent Persons compliant with international reporting codes (JORC, PERC & NI43-101).

Managing large exploration programs or feasibility studies in both Francophone and Anglophone countries.

Large soil sampling, pitting and trenching programs to be completed within a limited timeframe.

Senior management staff that all have over twenty years experience handling large exploration projects.

Cost effective management of drilling programs (Auger, Air core, RC, DD).

Staff from a wide range of national and cultural backgrounds who will understand the cultural practices of a client's project area.

Mining and exploration project due diligence reports.

Property valuation reports to international standards.

Laboratory audits to satisfy Securities Commission requirements.

Audits of analytical laboratories and the selection of suitable sampling and analytical procedures.



GEOPHYSICAL SURVEY DESIGN, IMPLEMENTATION OF GROUND SURVEYS, DATA PROCESSING AND THE INTERPRETATION OF GEOPHYSICAL DATA ARE KEY COMPONENTS OF MODERN EXPLORATION.

## YOUR NEEDS

- Ground surveys: radiometric, electrical, electromagnetic, potential fields
- Quality control of ground and airborne surveys
- Processing, modeling, interpretation and second opinions
- Downhole wireline logging & analysis
- Determination of physical compositional and structural properties



## OUR SERVICES



Experienced geophysicists using best practices developed from experience gained in mining and exploration in West Africa since 1994.

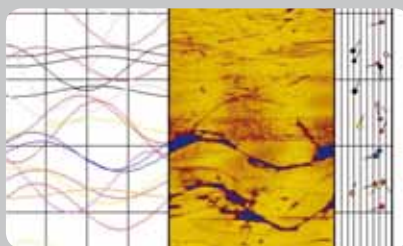
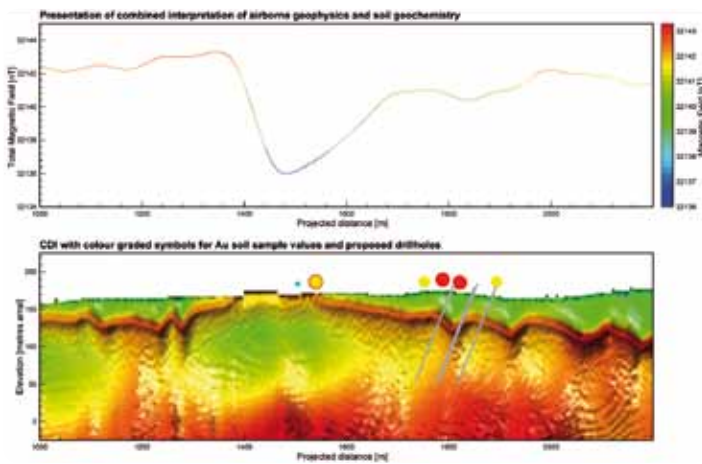
Quality control of ground and airborne surveys

Experienced in hard rock mining, oil & gas, hydrogeology and civil engineering applications.

SEMM Logging downhole tools , capable of surveying to 3000 m, include optical & ultrasonic imager, induced polarization, magnetic susceptibility, focused resistivity, in situ density and porosity and mineral analyzer.

Technical experience to guide selection of the best available geophysical method at lowest cost to help define and solve exploration, mining or environmental questions.

Field teams and equipment to execute ground truth studies and follow up of airborne geophysical target zones with seismic, magnetic, electric, electromagnetic, gravity and radiometric surveys. These surveys are often done concurrent with our soil sampling programs.



**SEMM Logging**  
mesures géophysiques en forages  
borehole geophysics

SEMM Logging down hole imagery tools offer a unique range of instruments to help you define insitu lithological and structural features of your target. SEMM Logging borehole images can replace core drilling to save client money or complement structural data from broken core.

A TEAM OF PROFESSIONALS THAT UNDERSTAND BOTH THE TECHNICAL AND OPERATIONAL CHALLENGES OF MINING PROJECTS IN WEST AFRICA AND HAVE PROVEN TRACK RECORDS OF ESTABLISHING SUSTAINABLE AND ROBUST MINING BUSINESS PLANS.

## YOUR NEEDS

- Mineral Resource Estimations
- Ore Reserve Statements
- Open pit design and optimisations
- Scoping studies for open pit & underground mines
- Mine audits



## OUR SERVICES

Mineral Resource Estimations by Competent Persons compliant with international reporting codes (JORC, PERC & NI43-101).

Advice on optimising management of advanced exploration projects and mine plans with regard to potential mining returns, mine development, pit designs, long term schedules and life of mine plans.

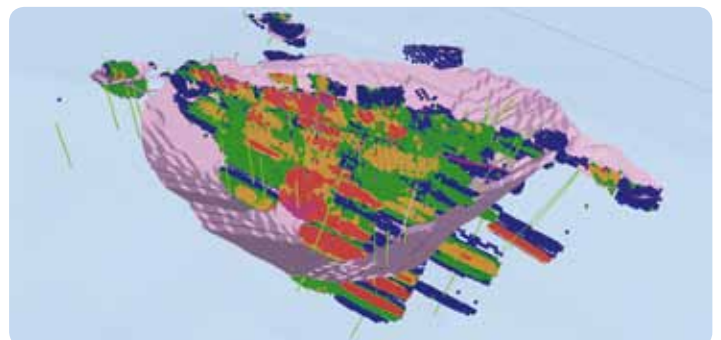
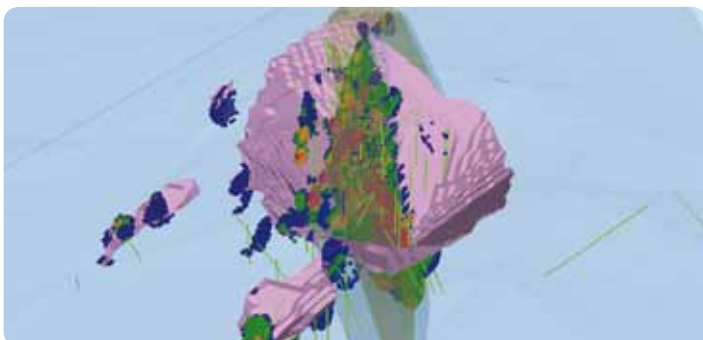
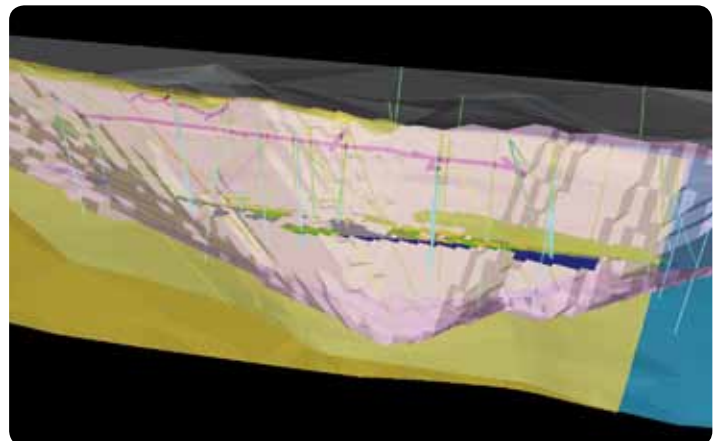
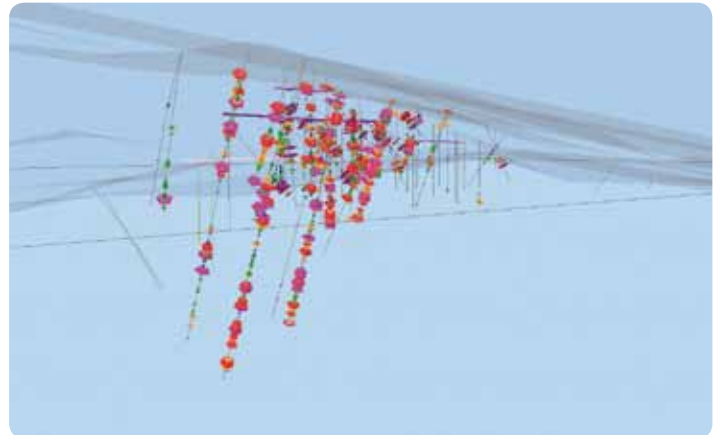
Data analysis for orebody, drill hole data, grade modeling, grade control & reconciliation, resource classification.

Open pit & underground mine planning, modeling, optimisation, design and scheduling using advanced techniques and methods and statistics with a direct relevance to the West African Mining environment.

A skills base that can analyse and integrate information from exploration, resource estimation, and mine modelling into sound business advice, including the re-engineering of business plans and the generation of ore reserves.

Mining engineering support, including NPV scheduling & cut-off grade analysis software.

Independent confidential audits or fatal flaw reviews of established and historical mining activities.



NEW INVESTORS TO WEST AFRICA ARE OFTEN NOT FAMILIAR WITH LOCAL GOVERNMENTAL PROCEDURES AND TRADITIONAL CUSTOMS.

## YOUR NEEDS

- Legal, financial & cultural advice
- Facilitating Joint Venture agreements
- Ground acquisition assistance
- Government & community relations assistance



## OUR SERVICES



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In-house legal and financial advice with access to our local legal and accounting partners.  
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Liaison with Mines Ministry officials.  
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Incorporation of locally registered companies.  
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Collection of the latest updated cadastral map.  
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Application on behalf of client for exploration permits or licenses.  
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Link with local holders of mineral tenements for possible JV.  
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Negotiation assistance and facilitating communication with JV partners.  
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Due diligence reviews to secure sustainable JV agreements.  
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Technical and financial reporting requirements.  
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Translation of French documents into English.  
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Translation of national mining codes.  
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ENVIRONMENTAL BASELINE STUDIES DETERMINE THE COMPONENTS THAT MAY REQUIRE FUTURE MONITORING TO PREVENT THE POTENTIAL IMPACTS OF MINERAL EXPLORATION AND EXPLOITATION.

## YOUR NEEDS

- Baseline & biodiversity studies
- Impact assessments and monitoring
- Mine closure and habitat rehabilitation planning
- Biodiversity offset area determination
- Landuse assessments and galamsy monitoring



## OUR SERVICES

Experienced environmentalists with a good understanding of mining and exploration in both Sahelian and coastal countries in West Africa, working closely with industry and governments to develop practices that meet current requirements and standards.

GIS, remote sensing and geo-hydrological capabilities to populate key evidence databases that are analyzed on policy options, benefits, costs, and effects.

Ground truth soil mapping and determination of groundwater quality, catchment & hydrological parameters, river flows and biota sampling. Air quality and noise measurements.

Assessment of environmental policies, perceptions, plans and efforts by governments to combat deforestation and desertification, including the Great Green Wall initiative.

Interviews with key informants and participatory community interviews documenting concerns about public health and water availability.

Complete biodiversity assessment programs that follow IFC's Performance Standard for Biodiversity Conservation and Sustainable Natural Resource Management, including vascular plants, primates, large, medium and small mammals (also bats), birds, reptiles and amphibians, several insect groups (e.g. butterflies, dragonflies).

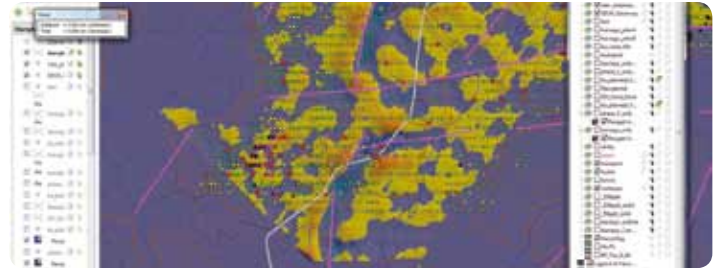
Assistance in habitat restoration or rehabilitation, reforestation and landscaping (indigenous material).



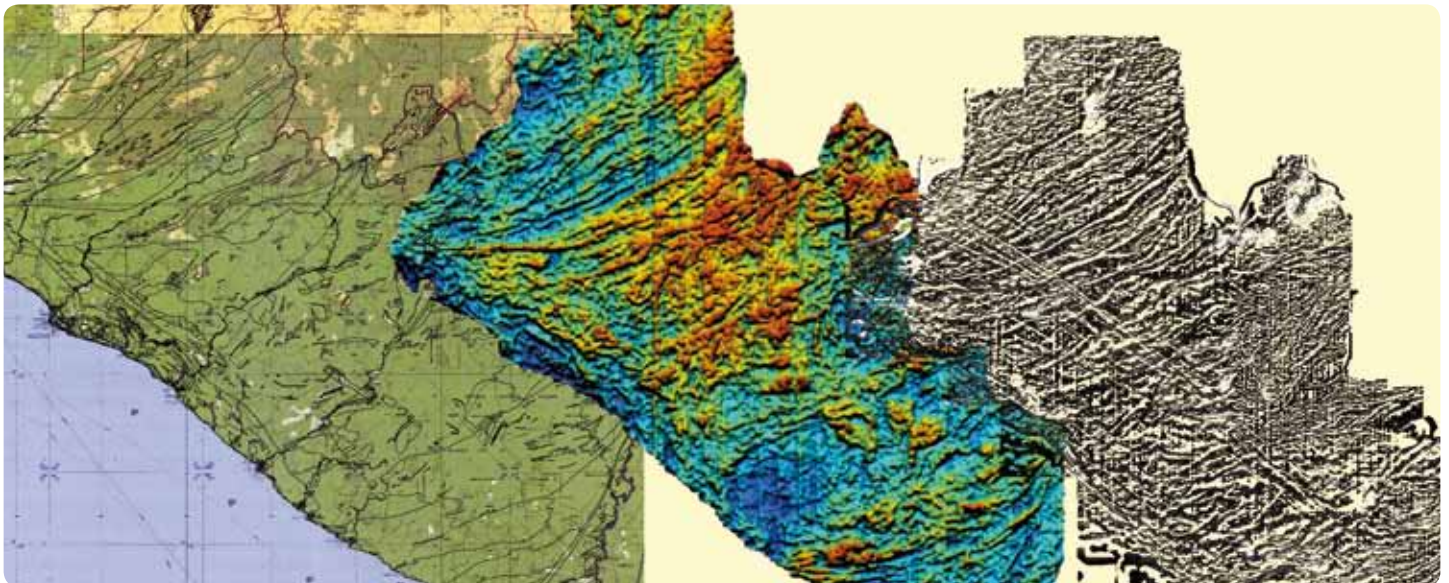
A RELIABLE AND WELL STRUCTURED DATABASE IS THE CORE OF ANY EXPLORATION AND MINING OPERATION. DATA IS VIEWED AND ANALYSED IN A GIS ENVIRONMENT TO ENABLE YOUR ORGANISATION TO CREATE NEW INSIGHTS FOR MAKING INFORMED DECISIONS.

## YOUR NEEDS

- Soil and core geochemistry
- Satellite & airborne imagery
- West African geology & resources
- 3D visualisation
- Digitization & QAQC



## OUR SERVICES



Access to cartographic and geological information held by Governmental Departments.

Scanning, digitizing and geo-rectification of hard copy maps and plans.

Interpretation and processing of airborne geophysical data, ASTER and Landsat images.

Compilation of maps and plans to accompany a client's press releases and public documents.

Assistance to clients wishing to establish structured, in-house databases.

Arrangement of datasets inherited by clients as part of their due diligence.

Data validation and presentation in a range of software such as: Micromine, Datamine, ArcGIS, Mapinfo, Global Mapper, ERDAS and Google Earth.

Data types include: soil sampling, trenching and drillhole assays, satellite, airborne and ground (hyper-) spectral imagery, airborne, ground and borehole geophysics.

Producing quality combined image/vector maps.

Change Detection, Registering data to ground control points, Selecting Control Points, Data Enhancement, Principal Components Analysis, Image Differencing, Crop Type Classification and Area Inventory, Multispectral classification, Multispectral sensing of crops, Spectral Reflectance Characteristics, Ground truth, Training Site Selection, Classification accuracy assessment.

Creation of 3D visualization GIS database from historic excavation records.

EXPLORATION, MINING ACTIVITIES AND MANY OTHER INDUSTRIES NEED GIS SOFTWARE TO HELP VISUALIZE AND ANALYZE SPATIAL DATA FOR A MORE STRATEGIC, TECHNICAL AND BUSINESS INSIGHT.

## YOUR NEEDS

- Pitney Bowes Business Insight (MapInfo & Encom)
- Full suite of PBBI softwares – sales, maintenance & support
- Training for all MapInfo & Encom software



## OUR SERVICES



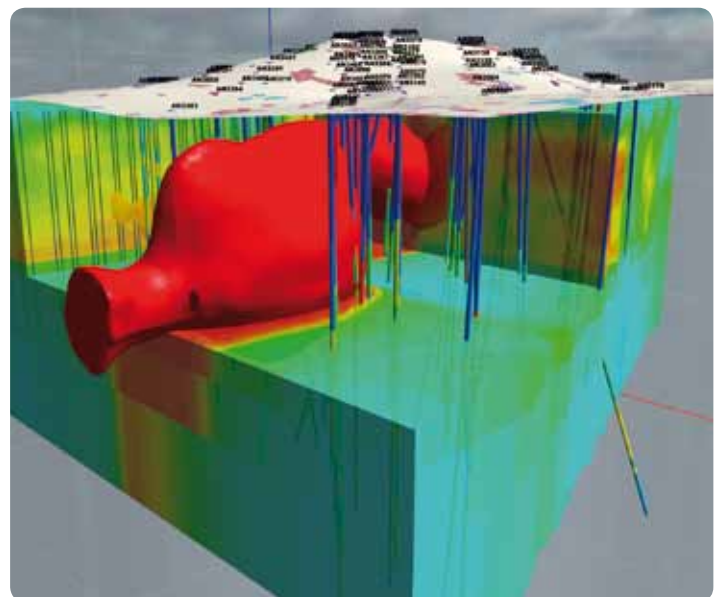
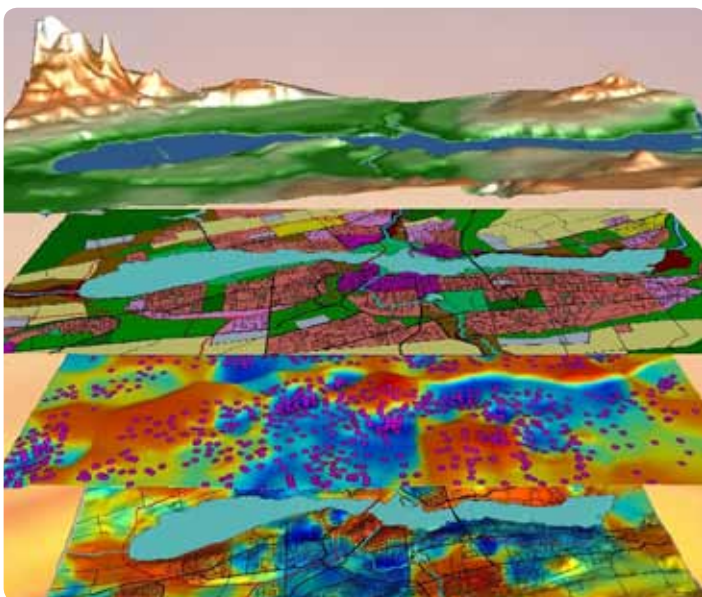
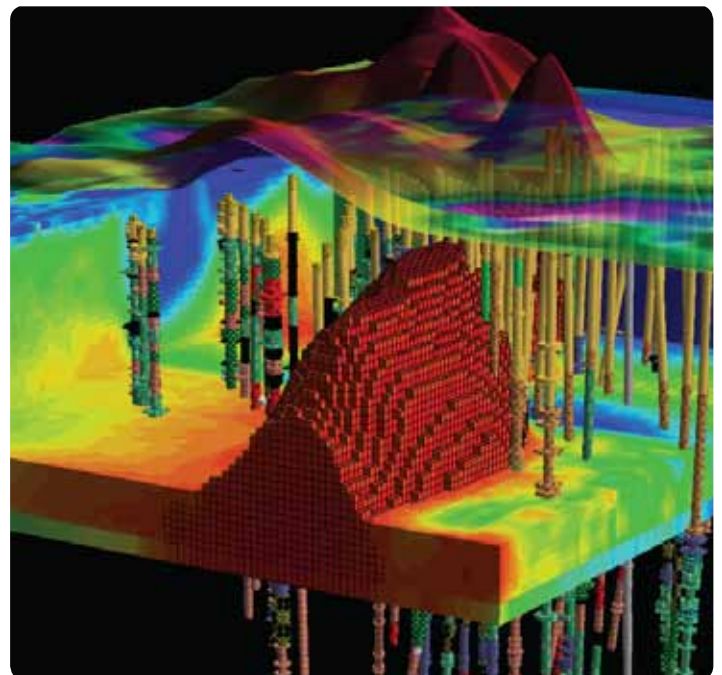
Pitney Bowes Business Insight provides more than 350 softwares different integrated products

from which MapInfo and Discover are part. PBBI has the most comprehensive set of solutions for maximizing the value of customer and location data. PBBI helps organizations more effectively locate, connect and communicate with customers in today's global market.

SEMS Exploration is the only Pitney Bowes Business Insight representative in Ghana, Ivory Coast and Burkina Faso.

Official reseller of PBBI suite of software (MapInfo, Discover, Discover 3D, Profile Analyst; EMFlow, etc...). Contact us to get a quotation, training and for enquiries about software maintenance issues.

We offer in-house designed accredited training courses throughout the African continent in both French and English.



ACCURATE SURVEYING DATA IS ESSENTIAL AT ALL STAGES OF MINERAL EXPLORATION OR EXPLOITATION PROJECTS.

## YOUR NEEDS

- Mine surveying
- Exploration surveying
- Land use surveying
- Survey audits



## OUR SERVICES

Precise in-pit volume calculations.

Software and GIS support to report survey data in any format required by the client.

Experienced mining background to handle end-of-month volume calculations for mining contractors and mine owners. Management of full pit surveys or independent mine audits.

Setting out of mine site development layout plans.

Transformation of local grid systems into UTM co-ordinates.

Surveying of adits and historical underground workings.  
Establishment of reliable exploration survey control.

Accurate topographic surveys for local digital terrain models.

Landuse mapping with precise survey points.

Audit of historical survey data and rectify to the client's preferred co-ordinate system.

Dispute resolution to licence boundary positions and mining contracts.

Recording of base station GPS information for LIDAR INS or airborne gravity surveys.



WEBSITE: [WWW.SEMS-EXPLORATION.COM](http://WWW.SEMS-EXPLORATION.COM)

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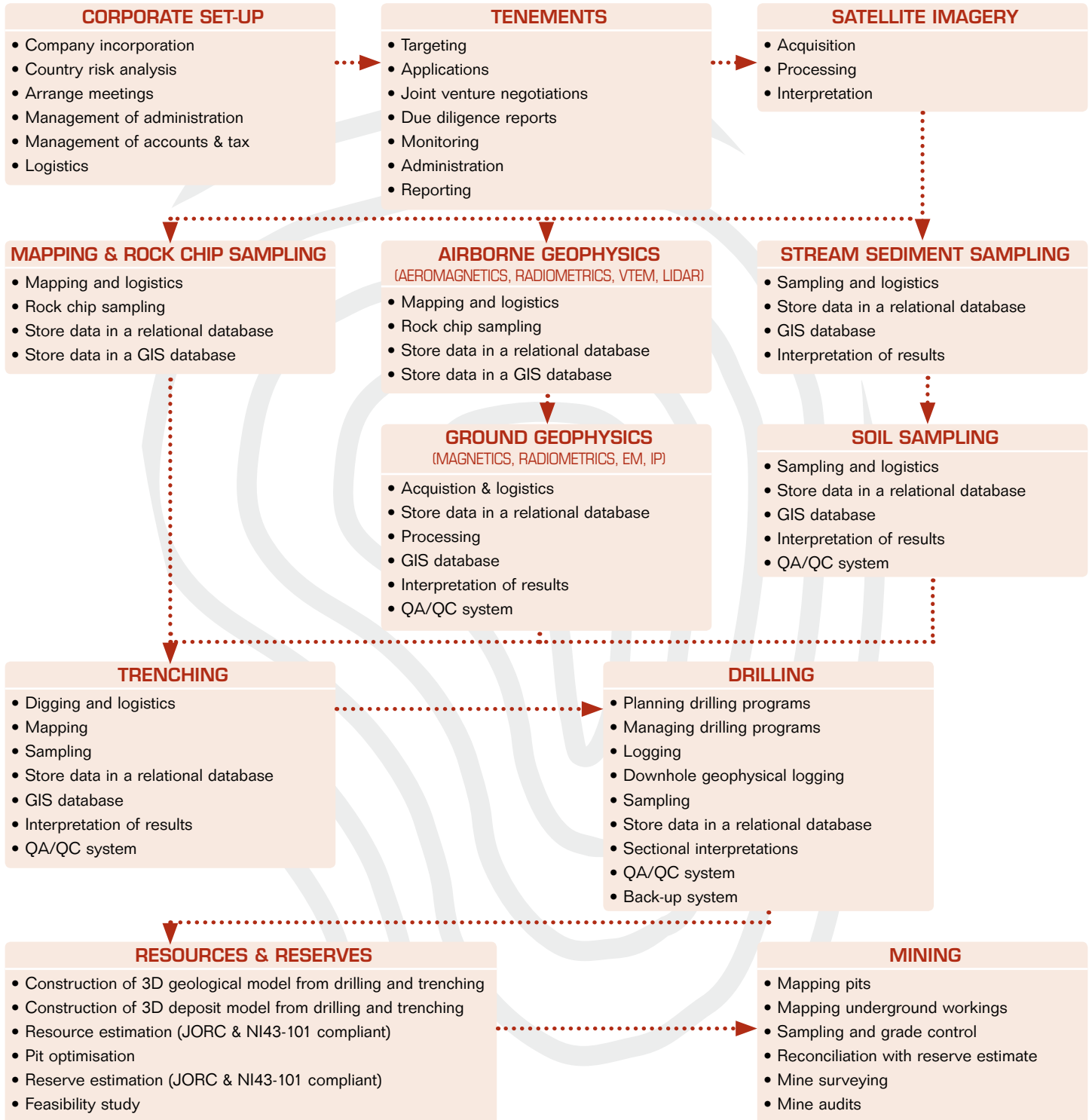
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### STANDARDS

- SEMS has staff qualified to compile reports according to **JORC and NI43-101 standards.**
- SEMS has staff qualified to undertake **audits of laboratories.**
- All work is performed **to internationally acceptable standards.**
- SEMS is a reseller of MapInfo and Discover and runs courses in GIS for mineral exploration.