



African-European Georesources Observation System in Africa: *Project Overview & Results*



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Mr./Mrs. Stakeholder: I wish I knew, in my language or English at least, which is the mineral sector investment framework, what data / information is available on georesources potential, in which format, and how to access it, its quality and if it is interoperable with our IT system...



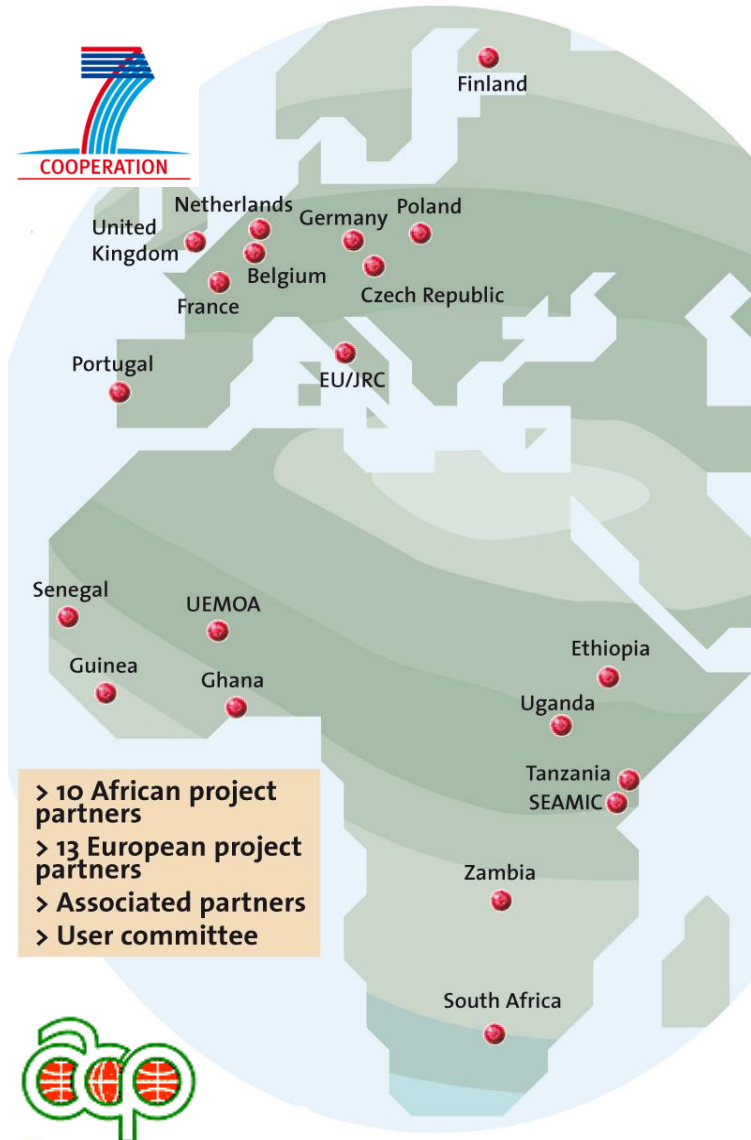
Objectives

African-European Georesources Observation System



- Strengthen the sustainable use of underground resources in Africa by **designing the SDI for Georesources** based on interoperable geoscience data and user-oriented services
- **Safeguard, share and valorise** the knowledge and data archived in African and European Geological Surveys
- **Support geoscientific communities** and **institutional decision-makers** for sustainable development public policies
- **Elaborate common strategies** for capacity building and training programmes

EU – ACP initiative in 7 Research institutions



- **Phase 1** (2008-2011 – 30 months): design of a multi-national georesources observation system
- **Coordination:** BRGM, French Geological Survey
- **9 European** geological surveys
- **8 African** counterparts: geological surveys, ministries of mines, school of mines
- **4 International** organisations : European Commission (Joint Research Centre), CIFEG, UEMOA, SEAMIC
- **Work package co-leadership** EU-Africa
- **Budget:** 2.4 MEUR
- Potential **contribution other programs:**
 - GEO – GEOSS
 - OneGeology (*Africa Chapter*)
 - *GMES & Africa*



Which are the benefits of AEGOS (from the beneficiary standpoint) ?

- **Fast and reliable distribution** of primary, processed and other derived data, incl. governance maps, conflict maps...
→ interest of the **government, data owners, administration,...**
- **By law enforced use of data:** governance maps
→ e.g. priority areas, preference areas,....
- **Access to data that was previously not / hardly available**
→ interest of the **data users: exploration companies, land owners, land developers, water supply, agriculture, administrations,...**
- **Time saving**
interest of the **data producers and data users**
- **Quick involvement of large communities** into decision-making processes (e-government)
→ interest of **administration, stakeholders**

Promoting the results of mining sector support programs and data access portals



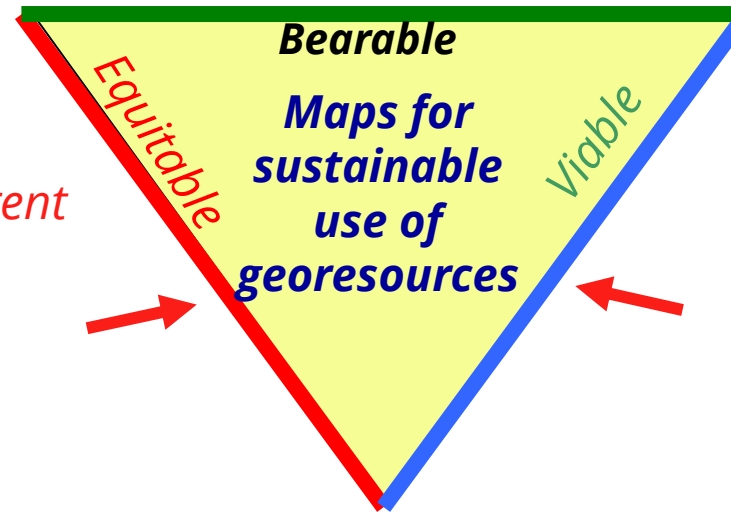
- Senegal, Ghana, Niger, Guinea, Mali, Burkina Faso, Tanzania, Madagascar...

Multidisciplinary: governance maps for sustainable use of georesources in Africa

Social acceptance:

Conflict maps where you value conflicts between different interest groups:

- groundwater vs mineral exploitation
- Fe vs Au exploitation
- small scale miners vs mining company
- existing/future mining sites vs other type of land use
- social acceptance of mining project (U)



Economical aspects: **Georesource maps, such as:**

- Minerals inventory
- Ground water resources
- Predictive map of mineral resources

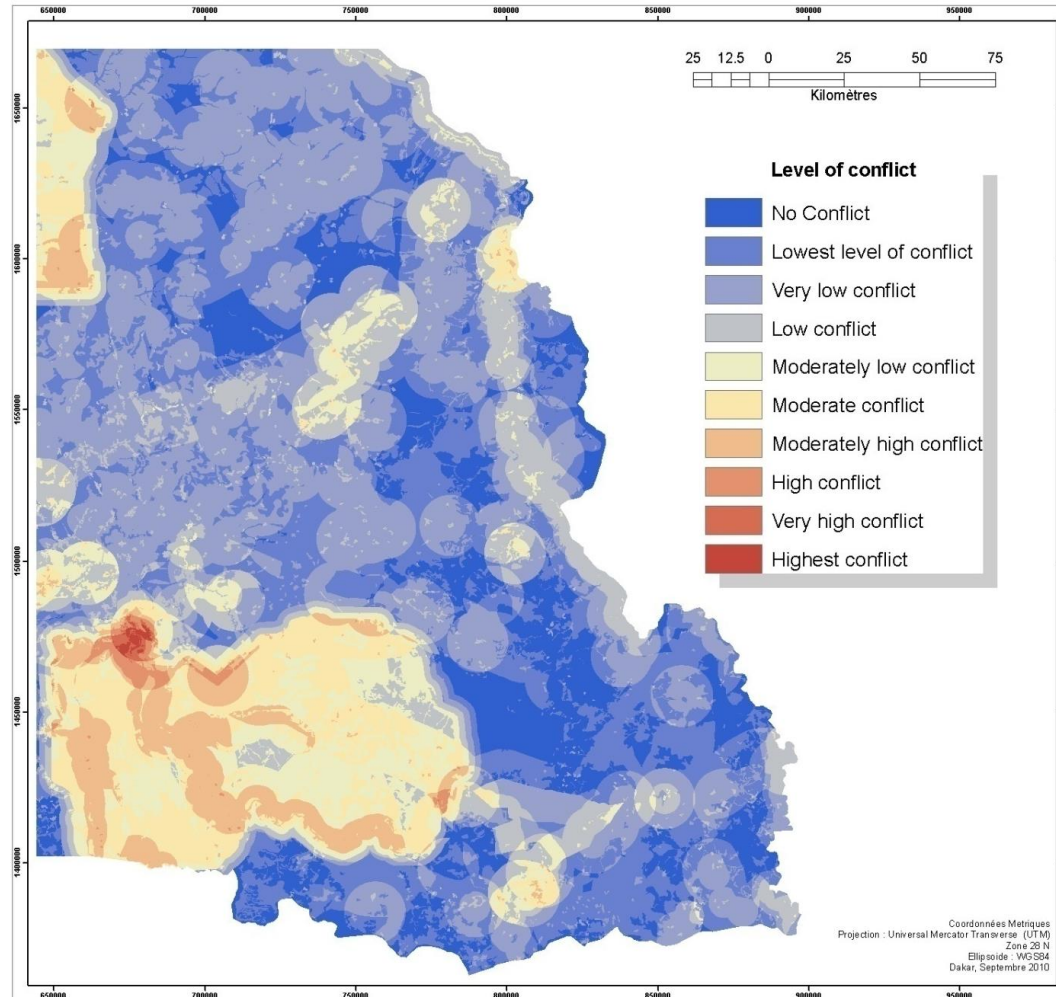
Respect of Environment:

Vulnerability or risk maps, such as:

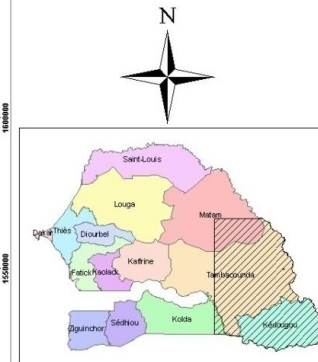
- mineral exploitation vs pollution of aquifer or soil contamination
- small scale mining vs landscape destruction (soil erosion prediction modeling)
- geothermal exploitation (plant) vs landscape destruction or discharge of effluent

Predictive map of potential conflicts between existing land activities in the eastern part of SENEGAL

- Developed methodologies for predictive modelling



PREDICTIVE MAP OF POTENTIAL CONFLICTS BETWEEN EXISTING LAND COVERS AND FUTURE MINING ACTIVITIES IN THE EASTERN PART OF SENEGAL

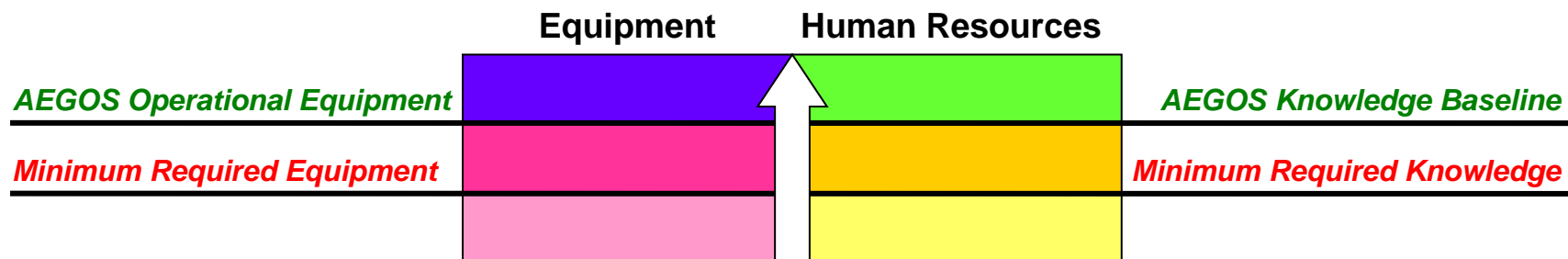


These could be used to:

- Identify areas of conflict between mining and other land uses
- Predict future conflicts
- Guidance for Decision making

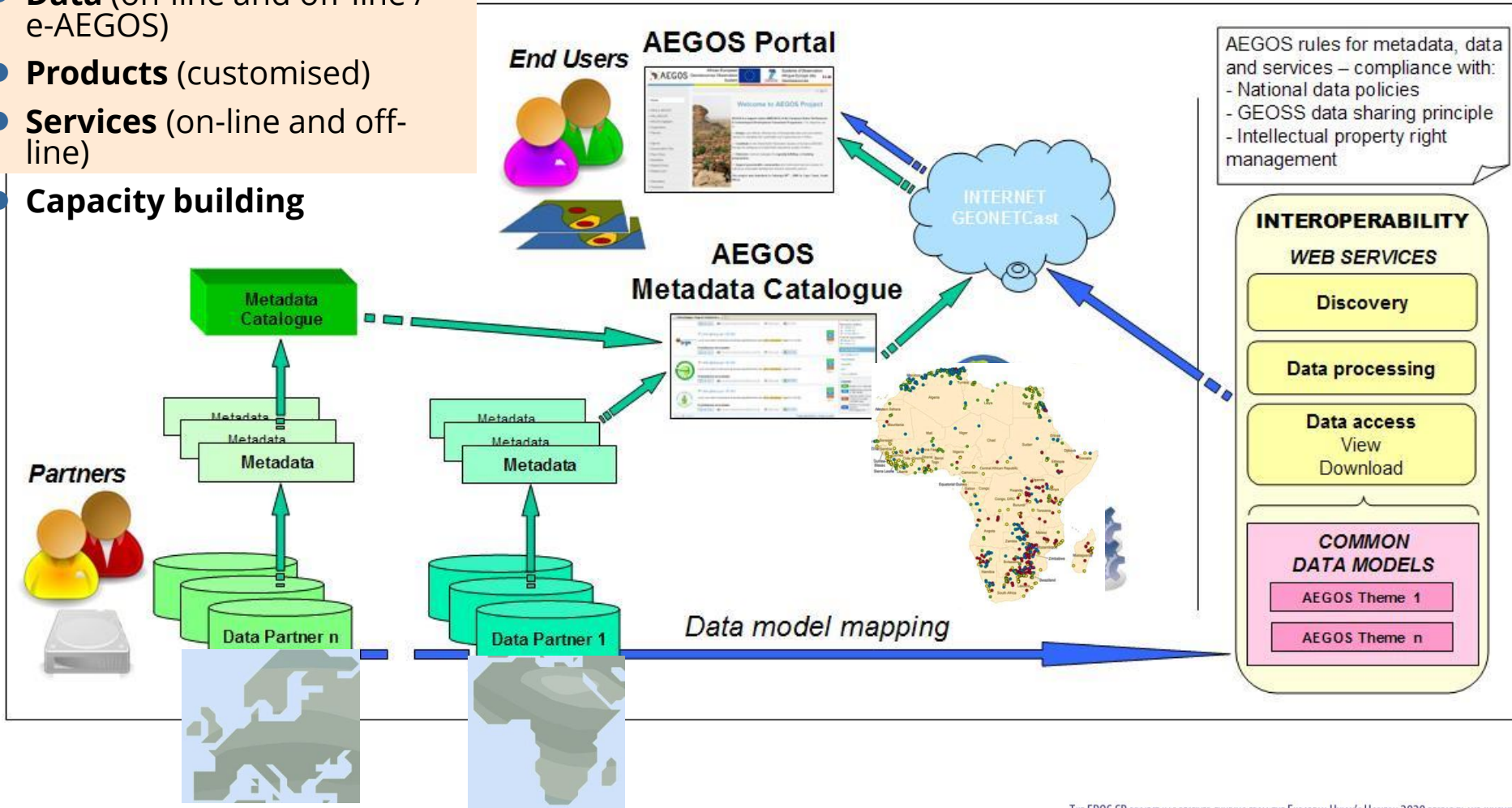
AEGOS Phase 1 achievements

- **Assessment of existing situation** in the partner organisations and associated geoscientific institutions from data producer and end-user point of view
- **Gap analysis** and **requirements identification**
- **Definition of data specifications** for the AEGOS SDI, a common Reference Model and metadata profiles
- Technical design of **systems architecture** (hardware, software, network) and **data flows + portal demonstrator**
- **Charter of Partnership** including data sharing recommendations (Property Right Management)
- **Plan for sustainable operation** of AEGOS as an organisation
- **Referencing AEGOS** in line with the European and African development policies on geological knowledge, and georesources information systems
- Proposals for **capacity building strategies, training programmes** and **reference institutions**



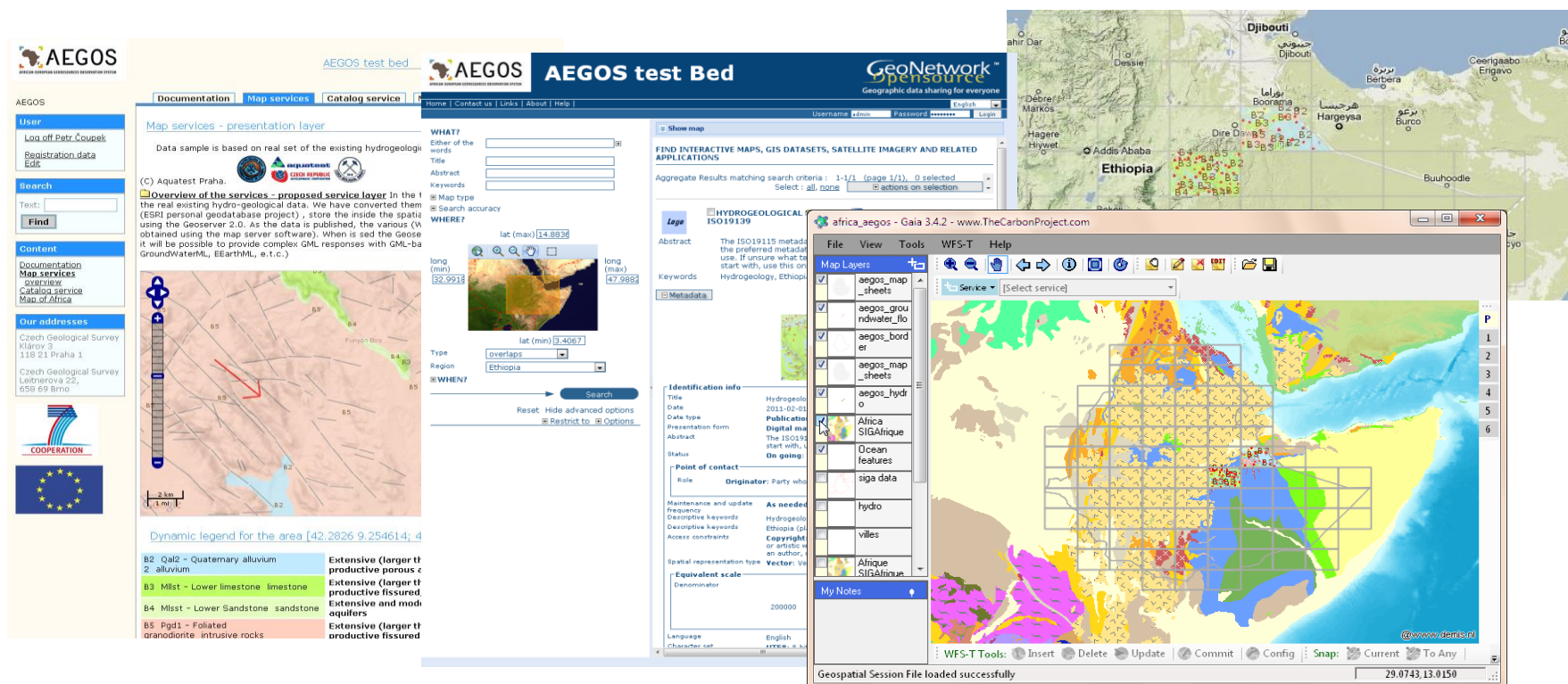
AEGOS distributed infrastructure

- **Metadata** on-line
- **Data** (on-line and off-line / e-AEGOS)
- **Products** (customised)
- **Services** (on-line and off-line)
- **Capacity building**



Web Portal for georesources in Africa

- AEGOS portal demonstrator
 - ISO compliant
 - Developed with Open-Sources software
 - Access to metadata catalogue and web services published by distributed providers in Europe and Africa

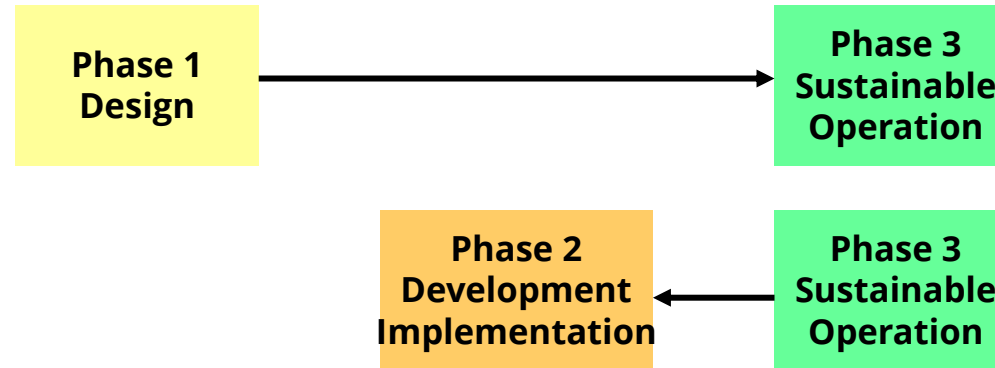


The screenshot displays the AEGOS portal demonstrator interface. On the left, the AEGOS logo and navigation menu are visible. The main content area shows the 'AEGOS test bed' interface, which includes a search bar, a map of Ethiopia, and a metadata viewer. The metadata viewer displays details for a specific dataset, including its title, abstract, keywords, and identification information. The map shows the geographical context of the data, with various locations marked. The GeoNetwork metadata viewer is overlaid on the map, providing a detailed view of the dataset's metadata.

Towards AEGOS Phase 2 and ... 3

AEGOS – Phase 1, 2008-2011

- **Design, Networking and Referencing**



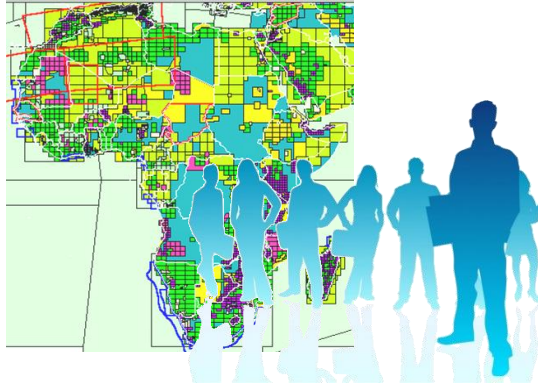
AEGOS – Phase 2, 2012-2016

- **Develop and implement**
 - AEGOS spatial data infrastructure
 - User-oriented products and services
 - Knowledge transfer & best practices
- **Facilitate** the data discovery & assess
- **Extend the network** of participants and beneficiaries at national and regional levels (Regional Economic Communities)
- **Set up / contribute** to spin-off projects as part of the development programmes in line with EU-AU partnership, WP programmes, etc.

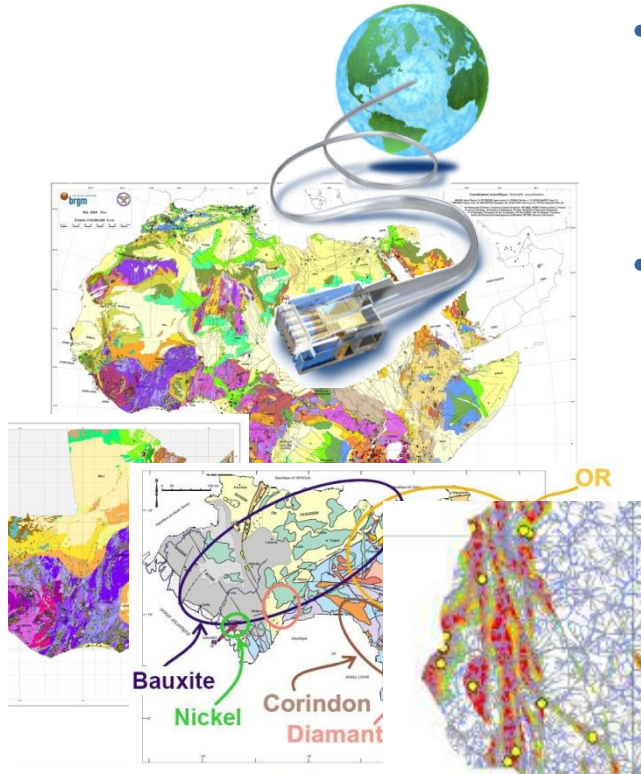
AEGOS – Phase 3

- **Operational**
- **Autonomous**
- **Permanent**
- **African-driven**

As a conclusion, AEGOS was to be...



- a **pan-African spatial data infrastructure** of public geology-related metadata, data and user-oriented services
- a **web-based multilingual portal** for controlled access to a network of interoperable databases distributed over Europe and Africa
- a **one-stop information point to unlock Africa's data in Europe and Africa**: maps, reports, data, added-value products and services, downloads, access conditions, contacts
- a **network of geoscientific institutions and skilled geoscientists** to support informed decision-making, investments and education



**After designing AEGOS in Phase 1,
Phase 2 could not be funded**

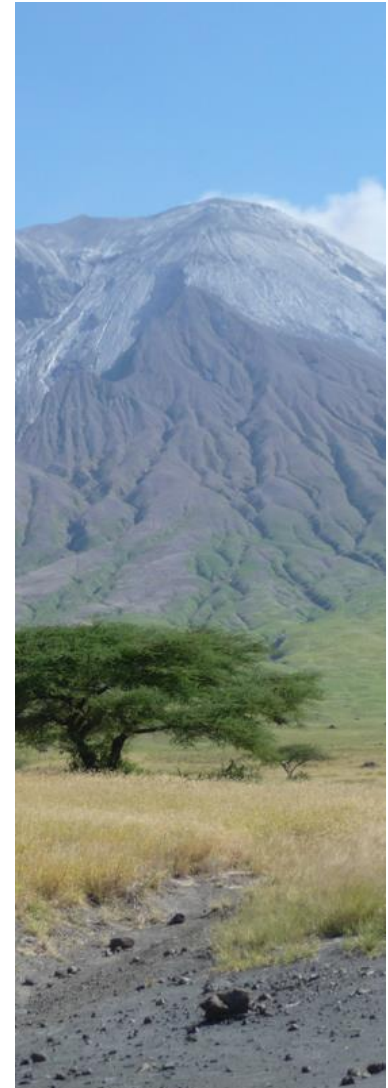
Strengths - Weaknesses

Strengths

- African-European (Transcontinental) Spatial Data Infrastructure: Innovative Concept
- Joint implementation of the project by African and European organisations
- Participants are the data producers and custodians
- Demand-driven project: sustainable development of georesources (focus on minerals)
- Favourable policy context
- Promotion of free access to public data in a context of data for sale

Weaknesses

- Portfolio of activities too large for a 30-month project :
 - User needs analysis, requirements, general design of the infrastructure
 - Detailed design of a multi-thematic & multi-level training programme
 - Interoperability with other similar initiatives
 - Operation and sustainability of the infrastructure



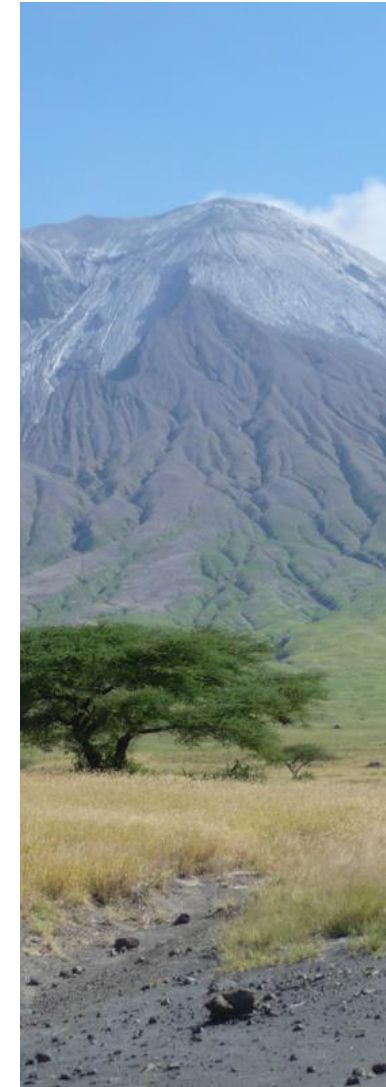
Lessons Learned - Challenges

Lessons learned

- Demand-driven project is essential to design a realistic system
- Political momentum is crucial as a favourable institutional framework
- Lobby and outreach actions are also essential
- The results of the proposed training program have been valorized in PanAfGeo (Ph. 1 & 2)
- Similarities in European and African institutional and organisational dynamics and difficulties at national, regional and continental levels
- Involve the Regional Economic Communities in future large endeavours

Challenges

- Build on the other AEGOS results to initiate the setting up of the African-European Georesources Observation System
- Build on the extended network of newly skilled geoscientists trained by PanAfGeo
- Take advantage of the present awareness and progress in design, methods and technologies
- Involve the research institutes with the geological surveys (e.g., MMG & IST, Senegal)
- set up communities with topics that mirror those of EPOS



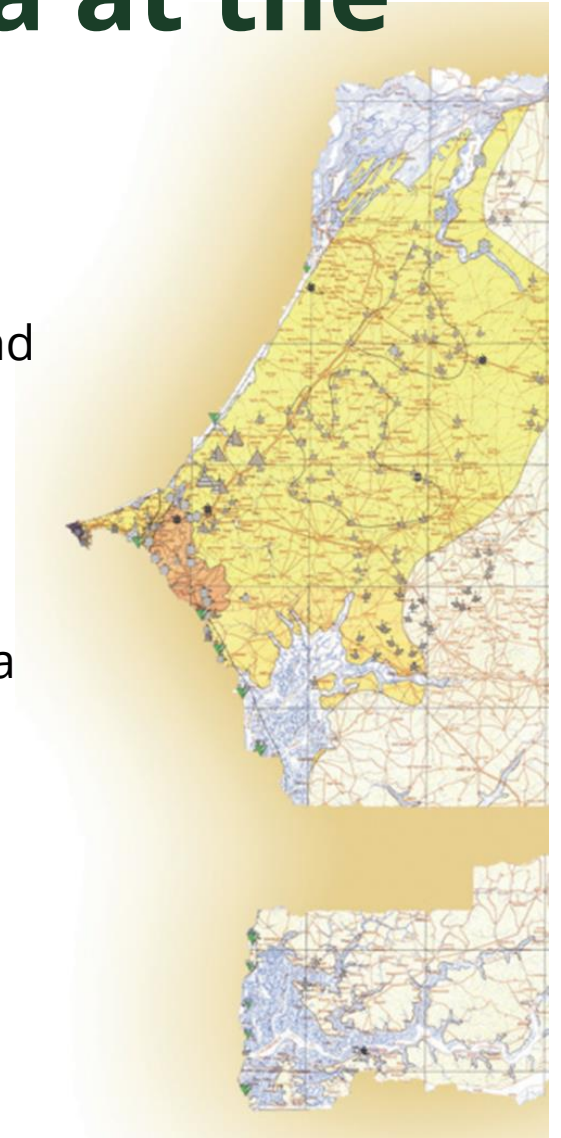
Existing geological and mining data at the Ministry of Mines and Geology

- Existence of geological, geological, geophysical and geochemical maps
- A geochemical database, activity reports of mining companies in the research and exploitation phase
- Data from the mining cadastre concerning the management of mining titles

Perspectives

- the creation of the National Geological Survey will allow to centralize all the data for a better valorization and to facilitate their access to the users
- The online publication of the MMG's documentary database of maps, reports, theses and studies on mining projects
- The recent creation of the Mining Cadastre web portal to consult basic information, visualize mining titles and also define areas of interest

www.cadastreminiersenegal.sn / www.documentation-miniére.sec.gouv.sn





Merci
Thank you
Obrigado