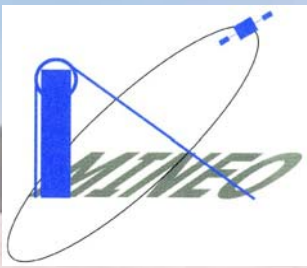


MINEO



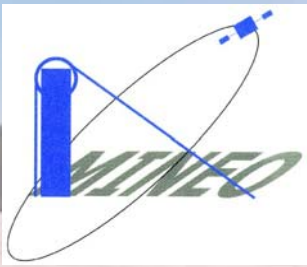
**Remote sensing and GIS-based
approach in environmental
services for decision-makers
an idealised view?**





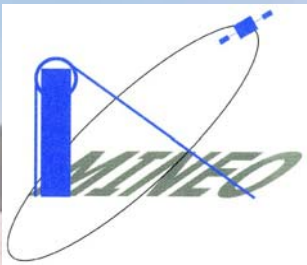
Environmental decision making

- **Environmental decision making today tends towards a partnership between national (even international) or local authorities, organisms in charge of controls and establishment of regulatory frameworks, and industrial companies following EMS.**
- **Environmental decision makers are faced with an ever growing amount of data on which to base their decisions, while taking environmental, economic and socio-political concerns into account.**
- **Population require right of information**



Introduction - Rationale

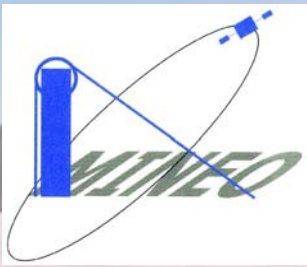
- **Decision makers need**
 - objective
 - reliable
 - affordable
 - interoperable
 - standardised ...
- **documents on the status of environment and on-going environmental processes**
- **on form of**
 - maps
 - reports
 - indicators, etc



Decision-maker requirements

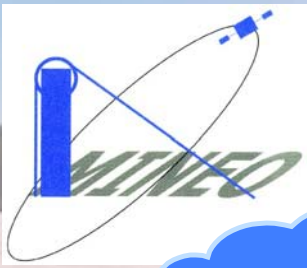
- **Access to information that allows to:**
 - act proactively
 - react to crisis situations
- **ideally “on-line” distribution**
- **multi-scale, multi-purpose functionality**

	<i>Individual Mines</i>	<i>Regional/National Authorities</i>
• <i>Management Plans</i>	• Mine Scale EMP and Mining Plan	• Regional EMP's, supported by regional EIA's and Environmental Status Reports
• <i>Compliance issues</i>	• Compliance with local, company wide or external standards (eg. ISO, EMAS)	• Legislation/Regulations • Control
• <i>Early warning and prioritisation</i>	• Local Warning System/ Predictive Tool	• Regional scale warning system /Predictive Tool

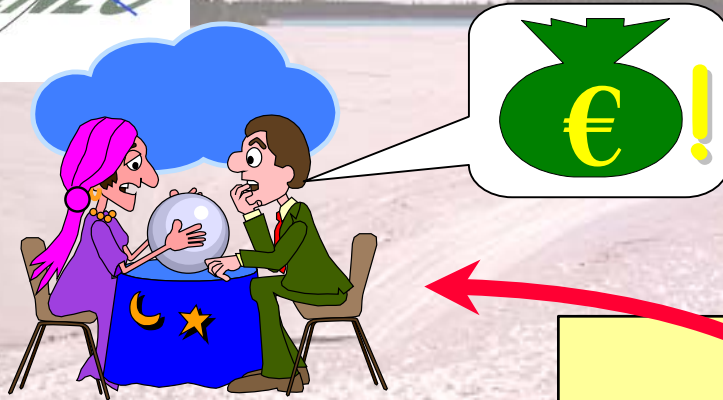


EMDSS concept

- **Environmental service for decision making requires a system able to:**
 - **locate, retrieve and manage** data relevant of:
 - environmental baseline
 - ongoing monitoring and environmental processes
 - legislative and regulatory framework
 - perform **automated** data combination or GIS queries relevant to decision processes, warning system and periodic reporting
 - perform **user-customised** data combination or GIS queries relevant to decision processes and indispensable in crisis management

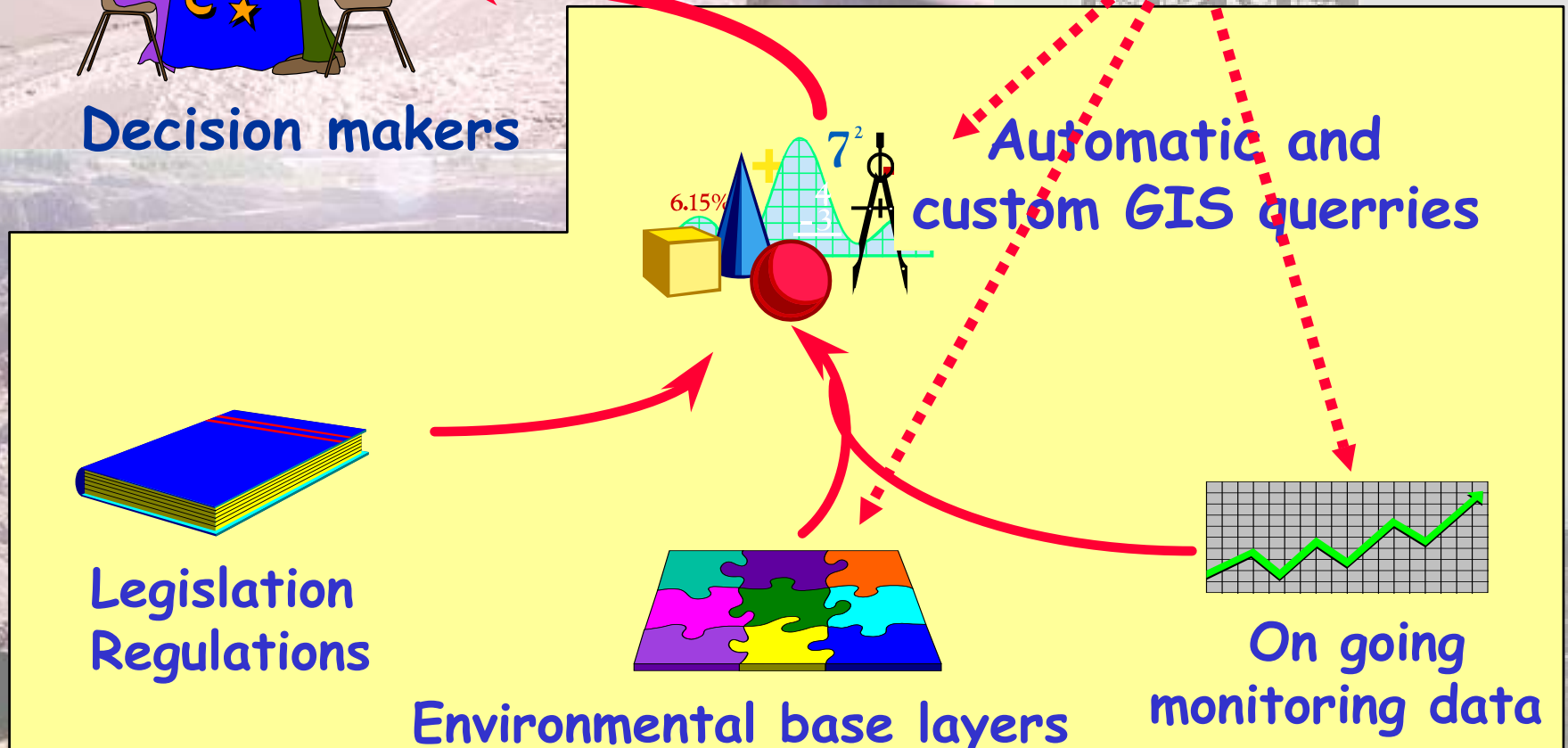


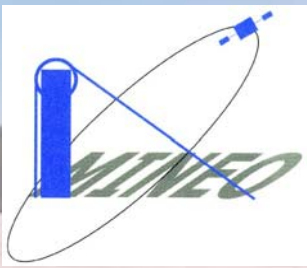
Environmental Management Decision Support System



Decision makers

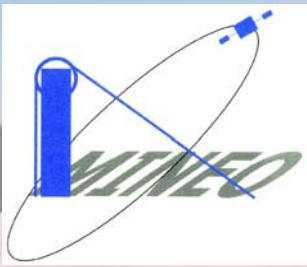
Remote sensing and GIS





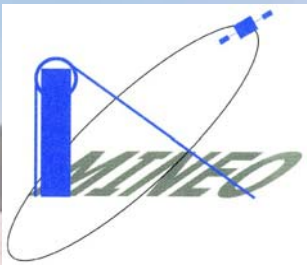
GIS and DBMS in decision-making

- **Decision-aiding documents take advantage of a cartographic representation.**
- **GIS and DBMS**
 - allow processing of data into a single cartographic projection, whatever is their origin and topology
 - enable simultaneous taking into account of many parameters, thus guarantying the quality of the result,
 - process data on a standard form based on homogeneous criteria over the whole of the study area, guarantee of homogeneity of the result.



Remote sensing in decision-making

- **RS presents many advantages**
 - low cost per surface unit
 - Synoptic coverage
 - repetitivity
 - multi-scale, multi-date, multi-sensor approach
 - versatility
 - easy to implement
- **but faces *a priori* reluctance**
 - “too expensive”
 - black box
 - “it does not work”



RS need in mining environments

- **input**
 - High spectral resolution
 - high spatial resolution
 - repetitivity
 - stereoscopy
- **output**
 - GIS layers (EO-based)

