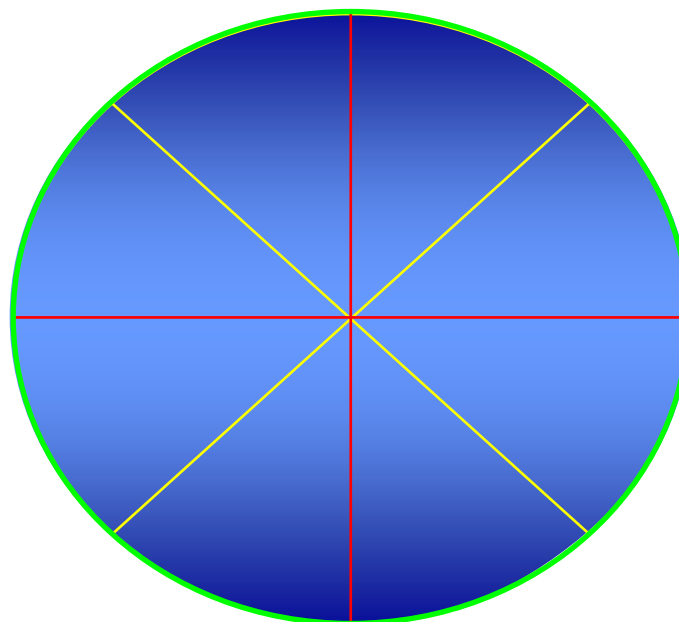


FlexiCadaastre's Implementation Overview



An Anglo Coal Case Study

Part of the Anglo American plc group of companies

Technical System's Usage and Maintenance Expectations

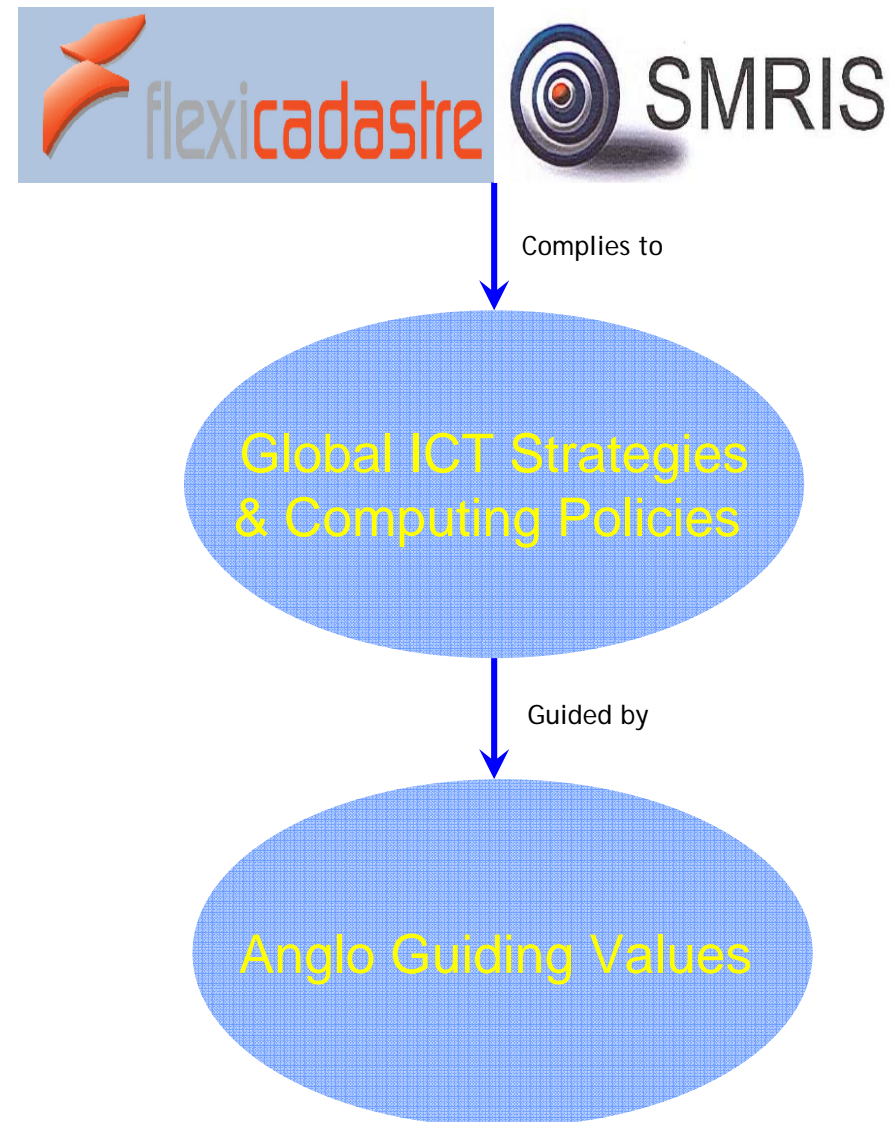
Project Managers Accountability



- Project Motivation, Business Requirements and Project Scoping Documentation
- The overall implementation of the technical systems which are wholly owned by Anglo Coal and the only person with the exception of IM with Administrator rights on the Maintenance and Administration libraries of these systems.
- Receive all requests for access and assign appropriate access rights level and ensure that all granted privileges are in accordance with the user's job functions, in cases where an access procedure exists all requests can be serviced through the normal IM support procedures.
- Compile necessary access support and maintenance procedures documentation for IM.
- Ensure systems delivery, availability and hold service providers to account.
- Facilitate continues improvement of the Technical Systems, through the development on an integrated and interoperable computing environment.
- Maintain documentation versions.

- Business and User Case Requirements:
 - Be applicable across different business divisions operating in diverse jurisdictions. The system should cater for all commodities, all countries in a single software package.
 - Retain all aspects of the historical Mining Law & Property database in respect of rights, leases, contracts and payments. No loss of historical data.
 - Provide ongoing land management capability in respect of surface rights, servitudes and other rights.
 - Provide management capability for mining, prospecting (production / exploration etc.) issued in all countries in which the relevant business division is operating.
 - Provide workflow process management.
 - Integrate seamlessly with other software applications such as Document Management Systems (DMS), Enterprise Resource Systems (ERP), Customer Relationship Management Systems (CRM), Reserve and Resource Reporting System (R³), Environmental Management System (EMS), and 3D Geographical Information Systems (GIS).

- Aim
 - Surface and Mining Rights Management
 - Accounting
 - Reporting and Cadastral Information Management
- Type of application
 - Web based Database and Spatial Management System
- Progress Report
 - Workflow testing.
 - Reporting management functionality testing
 - System GO live earmarked for sometime soon.
 - Phase 1-4, have been signed-off.
 - Training and new functionality is beign defined



Information Systems Design Principles

Business Case for Applying Group's Guiding Values



- Use systems that ensure the safety of users at all times
- Empower users to be accountable of their actions through information audits
- Develop reliable data systems which decisions can be based on.
- Foster a spirit of information collaboration to empower user's knowledge base
- Create systems that evolves with technology and inspires users to be innovative
- Respect use, distribution and confidentiality of the data and information processes.

Understanding FlexiCadastre

Implementation Components

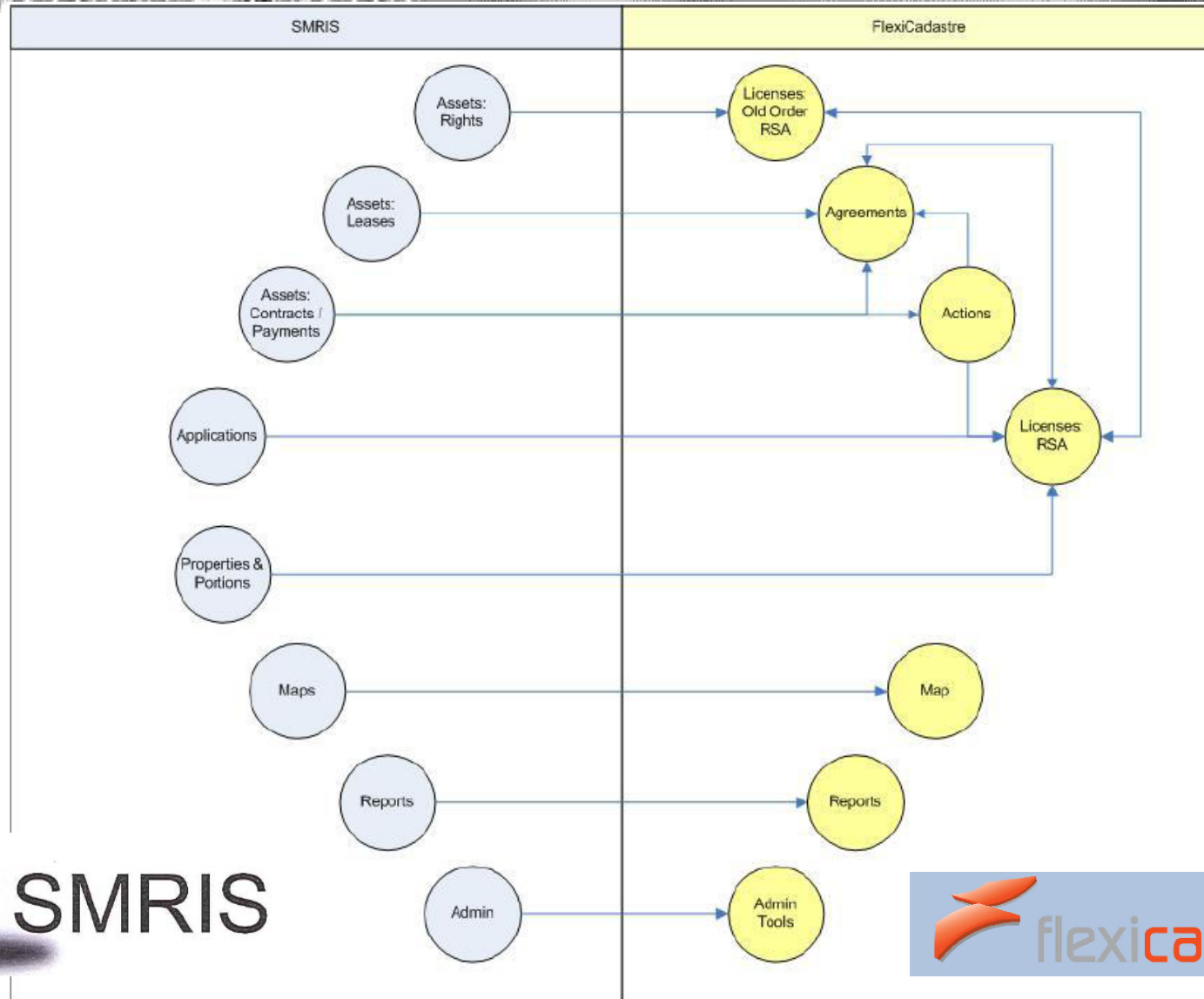


- People
 - Systems Administrators
 - Application Developers
 - Database Administrators
 - Geodata Specialists
 - End Users
 - Sponsors
- Processes, Methods and Procedures
 - Data Modelling
 - Database Entity's Relationship Diagramming
 - Workflows
- Technology
 - Web Server
 - Database Server
 - Spatial Database Infrastructure
 - Document Management Systems

- **Systems Administrator**
 - This is the system's anchorman, whose role is to setup end user's workstations, implement the system's roll-out plan and interacts with the service provider in ensuring a that there's a high reliability and availability of communication services (i.e. enforce provisions of the SLA)
- **Application Developer**
 - This is someone with insights into universal development frameworks or paradigms, he ensures that there are known APIs between various systems which can be used for system integration purposes.
- **Database Administrator**
 - Eventually everything is organised into a database, this administrator understands the data architecture of the system and ensures that there are regular, full and operational backups of the system's database.
- **GIS Specialists**
 - These are the people responsible for the GIS Data Management, including publishing vector, raster and process services over the web for end users.
- **End Users**
 - This are the custodians of the system, they do routine data updates, reporting, and error detection.
- **Sponsors**
 - These are the project's initiators, they institutionalise the user requirements and set aside resources for implementation.

Process, Methods and Procedures

Data Modeling and Migration



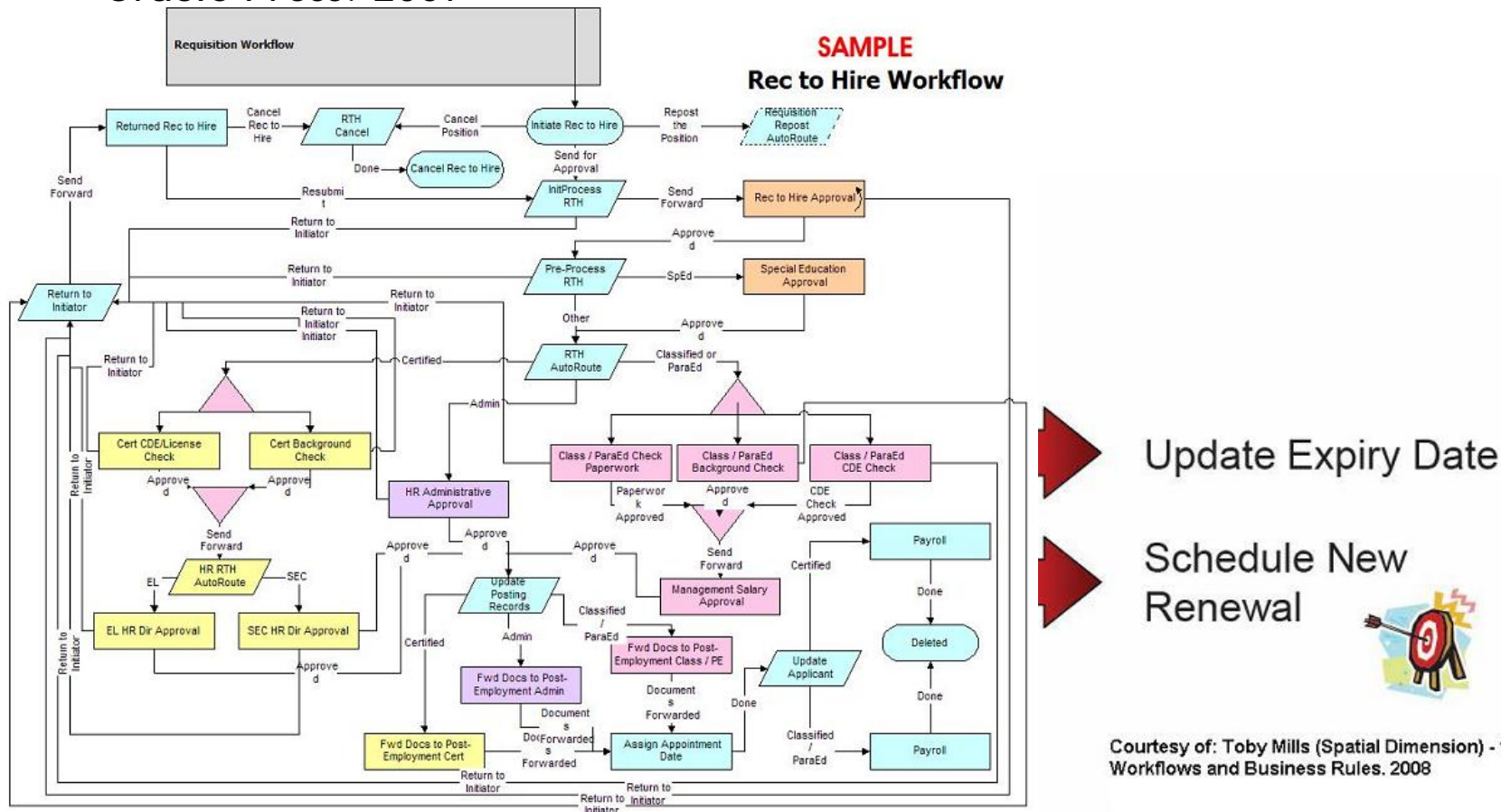
Process, Methods and Procedures

Workflow



What is workflow?

“ is a flow of dependent actions (steps) that must be executed one after the other in a predefined sequence to complete a certain task” Hogendoorn, R. Oracle Press. 2007



Courtesy of: Toby Mills (Spatial Dimension) - 18 Workflows and Business Rules. 2008

Technology

Spatial Database Infrastructure



Stored in SQL Express, PostgreSQL and Oracle, read using ArcSDE or ArcGIS Server

Use these layers to define

- Symbology
- Display Properties
- Viewing Scale
- Selection Formats
- Table connections
- Feature Labeling
- Projections etc.

The screenshot shows the ArcMap interface with a map of South Africa. The map is overlaid with a grid and various colored regions. The Layers panel on the left is highlighted with a red box, and a red arrow points from it to a yellow text box. A purple text box points to the same area. A list of properties is shown in a yellow box. The map shows labels for various provinces: Northern Cape, Western Cape, Eastern Cape, Free State, Northern West, Gauteng, Mpumalanga, Limpopo, and KwaZulu-Natal.

Technology

Web Server and WebGIS Publishing



The screenshot shows the flexicadastre web application running in Microsoft Internet Explorer. The interface includes a navigation menu on the left, a toolbar at the top, a map content list, and a central map area. A red box highlights the toolbar, and another red box highlights the map content list. A red arrow points from the toolbar to a list of features on the right. A yellow box highlights the map content list with the text 'Legend Control for Switching Layers On/Off'. A white box on the right lists various map features.

flexicadastre

Maps

Map Contents

- AOL
 - Lat/Long Meridians
 - UTM Zones
 - SADC_Countries
 - Int. Countries & Prov
 - Republic of South A
 - Raster Visualization
 - Land Mass
 - Ocean

- Zoom In & Out
- Feature Info Query
- Pan
- Find
- Selection
- Clear Selection
- Magnify
- Print
- Full Extent Zoom

Legend Control for Switching Layers On/Off

Copyright ©
Spatial Dimension
2005 - 2009

Technology

WebGIS Feature Editing



flexicadastre

License > Details

License Code: 3701 45 GT -/TEST/ License Type: PROPERTY PORTION License Ownership: Expiry Date:
License Name: 3701 45 GT -/TEST/ Status: Active

General Parties Agreements Conditions Reference Codes Shape Map References Commitments Actions Open Actions Closed Documents Groups Resources Related Licenses Roles History

Shape Area
Official Area: 255.8047 Hectare GET AREA
Calculated Area: 267.3210 Hectare
Coordinate System: World_Equidistant_Center Reproject

Shape Parts
Edit, Del, Type, Part
Part 1

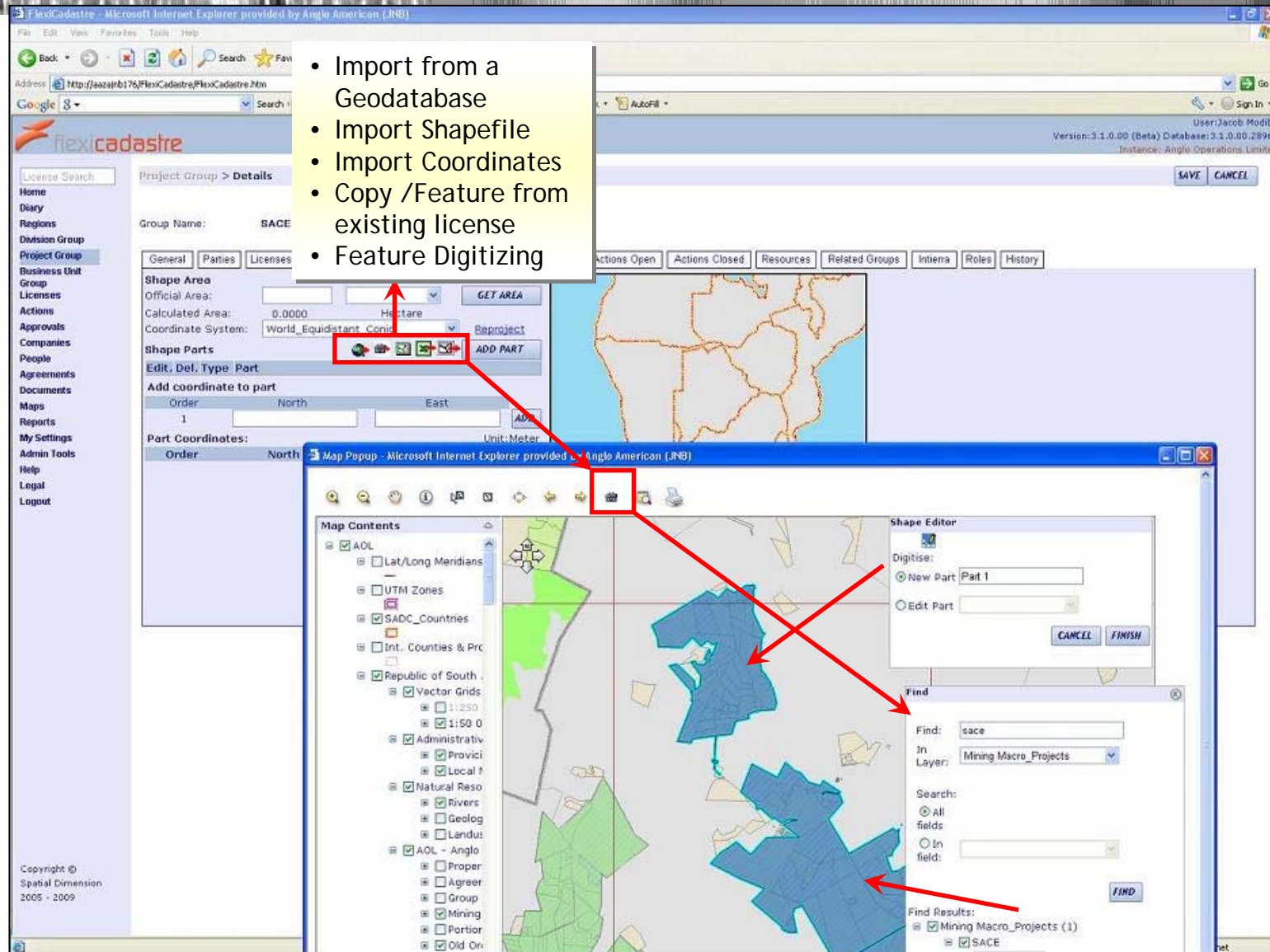
Add coordinate to part
Order: 5 North East ADD

Part Coordinates: Unit: Meter

Order	North	East
1	-3,443,157.6331944	1,758,640.0593353
2	-3,444,141.3674948	1,758,004.2276146
3	-3,444,815.8742229	1,756,255.8884081
4	-3,442,910.1057235	1,757,150.3483030

Technology

WebGIS Feature Importing



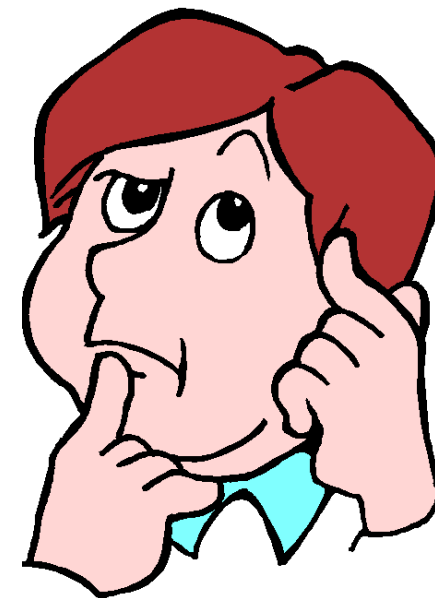
The screenshot displays the FlexiCadastré web application interface. A yellow callout box lists the following import methods:

- Import from a Geodatabase
- Import Shapefile
- Import Coordinates
- Copy /Feature from existing license
- Feature Digitizing

Red arrows point from these list items to specific UI elements: 'Import from a Geodatabase' points to the 'GET AREA' button; 'Import Shapefile' points to the 'ADD PART' button; 'Import Coordinates' points to the 'ADD PART' button; 'Copy /Feature from existing license' points to the 'Map Popup' window; and 'Feature Digitizing' points to the 'Shape Editor' window.

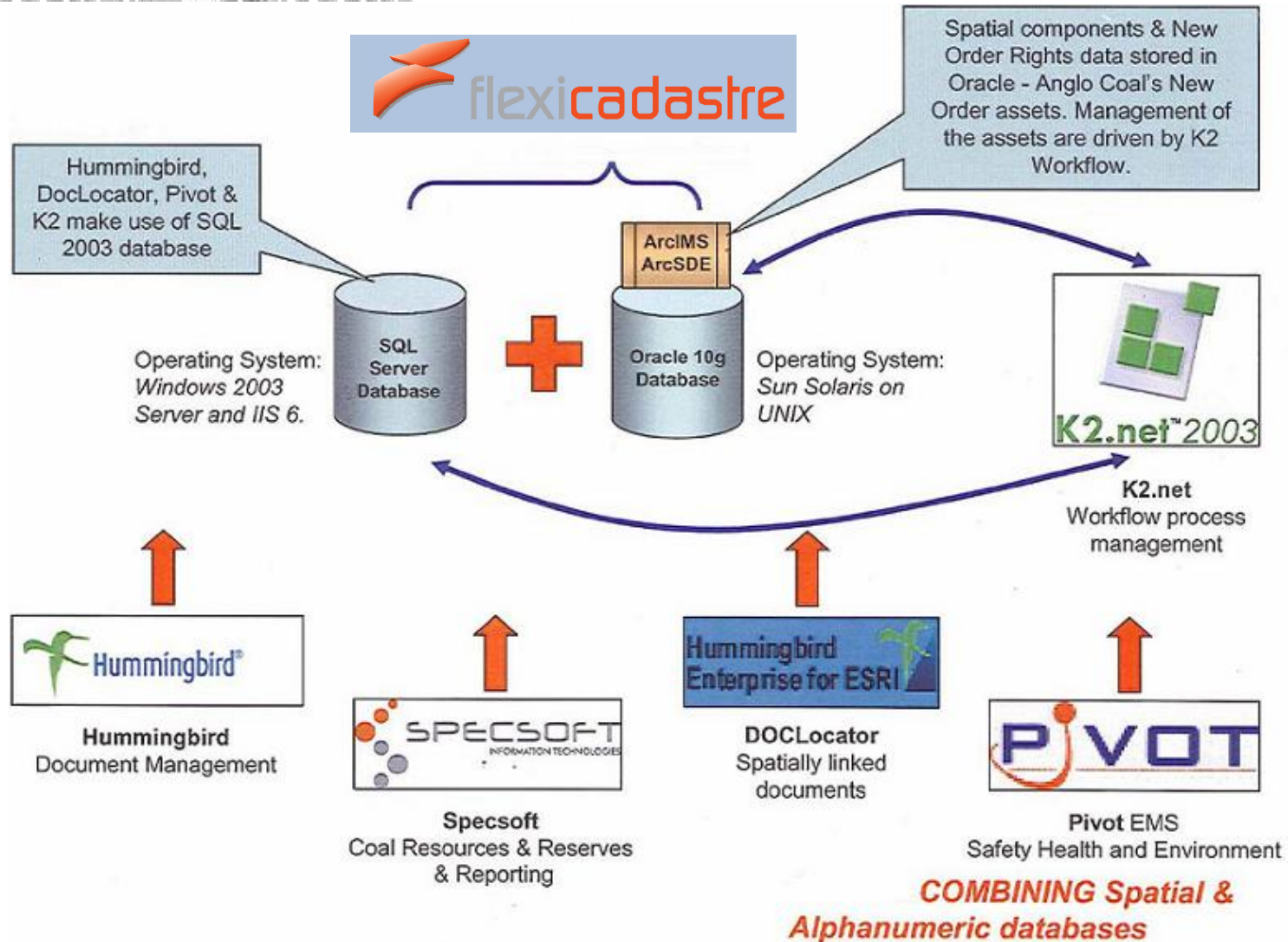
The 'Map Popup' window shows a search for 'sace' in the 'Mining Macro_Projects' layer, with results including 'Mining Macro_Projects (1)' and 'SACE'.

Why is there so much
emphasis on GIS?

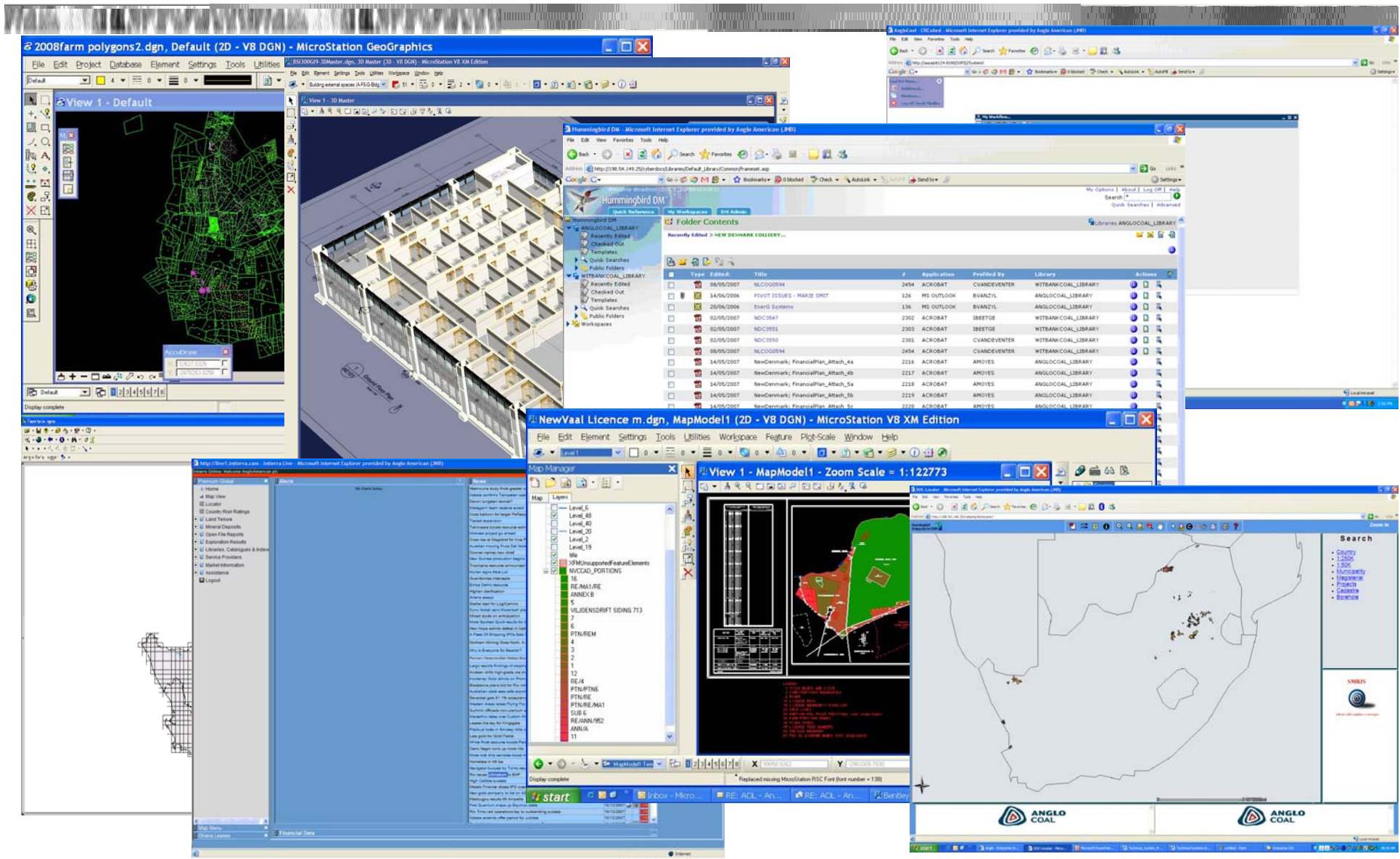


Technology

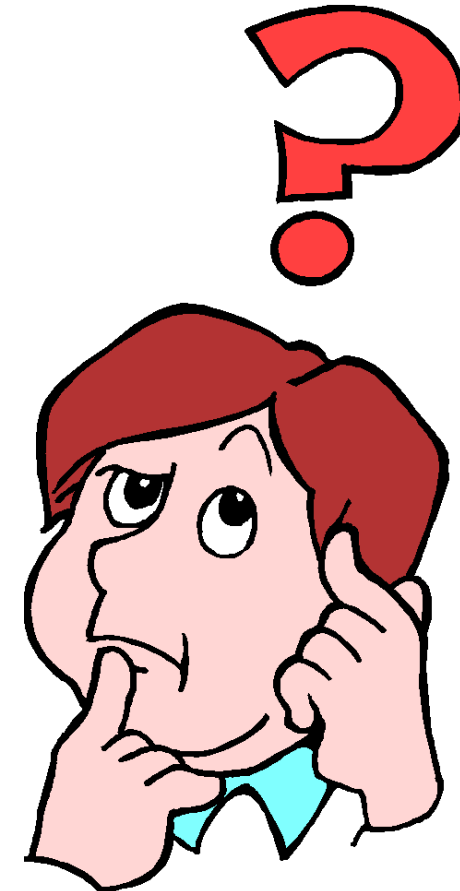
The Fabric of our Technical Systems



Third-Party Applications API Integration Plan



Why go to such lengths?



Conclusion

Our Answer



To never again spend days and weeks on end seeking information from mining operations and regional offices, located in different States or Provinces, across countries and continents for the purpose of reporting recommendations for questions such as:

- What is the environmental cost of our various global mining activities?
- How has our Mine Safety and Health policies changed they way we mine?
- Where are the improvements in safety, production and cost efficiency within our various global mining activities?
- Where and how are we meeting the provisions of our mining concessions for the different jurisdictions?
- Where are our shareholders, customers, employees, suppliers, competitors and communities?
- Do we have the right people, in the right places, with the right skills to be innovative and cement our growth?
- As a company, are we profitable in respect to the environment, communities, capabilities (human and machine) and the market?

Thank You!

Questions?