

A Global Land Information System 'The Barrick Story'

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Overview

- Brief explanation of the Company and its organizational structure
- Establishment of Corporate Initiative
- Development of Enterprise Land System
- Challenges
- Path to Success
- Lessons Learned



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Barrick Gold Corporation

- The world's largest gold producer
- A young Company - much of its growth and many of its land assets obtained thru Corporate **acquisition**
- Holds land assets in Africa, Australia, Canada, Dominican Republic, Europe, Pakistan, Papua New Guinea, South America and the United States
- 27 producing mines, several development projects, many closure sites, extensive exploration holdings



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Regional Organization

- Headquartered in Toronto, Canada
- North American Region: Main business office in Salt Lake City, UT with Exploration and business support offices in Elko, NV
- South American Region: Main business office in Santiago, Chile with Jurisdictional offices in Lima, Peru – San Juan, Argentina – LaSerena, Chile and Antofagasta, Chile
- Australia-Pacific: Main business office in Perth, WA - a small Jurisdictional Office in Port Moresby, Papua New Guinea with the main operating office at the Porgera Mine.
- Africa: Main business office in Johannesburg, SA and its main operating office in Dar es Salaam, TZ



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Corporate Land Management Initiative – The Goals

- Establish standard land management practices
- Maintain a comprehensive inventory of land assets world wide
- Provide cost efficient management of land related assets
- Protect against loss of property interests and income generated from such assets
- Avoid litigation and other exposures that could adversely affect public perception of Barrick



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The Initiative

Risk Assessment - 2006

- Identified and reviewed Laws and Regulations governing mineral and land use rights in each Jurisdiction
- Identified current practices and procedures
- Evaluated current land systems if any



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The Initiative

Flexi Cadastre Pilot Project

- October 2006 – Pilot Project managed by the NAM Region covering US properties
- December 2006 – Flexi Cadastre software recommended as Barrick Enterprise Solution



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The Initiative

Corporate Policy - 2007

- Established standard of care
- Mandated development of Regional or Jurisdictional land systems utilizing enterprise software solution but uniquely customized to meet jurisdictional requirements
- Corporate funding of Global Flexi Cadastre implementation approved
- Regional implementations followed



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Enterprise Solution – Why?

- Comply with Corporate governness guidelines regarding global applications
- Better enable Corporate reporting
- Better enable standardization of maintaining land related information



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Standardization

- Standardized Agreements with SD
- Implementation contracts were Barrick standard with unique Jurisdictional requirements
- Licensing Agreement designed to cover Barrick affiliates
- Maintenance and Service Support Agreements standard within all Jurisdictions/Regions



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Standardization

- Created a generic Barrick User's Guide and Systems Administration Manual to be modified Jurisdictionally as needed
- Created a generic format of User Acceptance Testing to be modified Jurisdictionally as needed
- Created guidelines for development of training materials
- Created guidelines and examples of data entry manuals to be modified Jurisdictionally as needed
- Established guidelines for change control and security of the systems
- Established guidelines for hardware specifications



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Challenges to Success

- Complexity of communication – language barriers
- Cultural differences
- Resistance to change
- Land services provided by multiple departments
- Lack of human resources
- Rotational work schedules
- Remote satellite office locations
- Time differences



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Mitigate Communication Challenges

- Distribute and maintain minutes of meetings
- Work plans reviewed and revised at least bi-weekly
- Monthly status reports distributed to Steering Committee members
- Periodic conference calls with Steering Committee members
- Employ translators as needed and use written materials to support oral discussions



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Mitigate Cultural Differences

- Personal engagement
- Travel
- Enhanced participation with Team members



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Mitigate Resistance to Change

- Demonstrate results
- Travel and personal engagement
- Enhanced participation with Team members



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Barriers to Success

- Change in Corporate philosophy
 - Accountability
 - Leadership
- Lack of appropriate Corporate commitment
 - Funding
 - Leadership



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The Path to Success

- Mitigate and meet the challenges
- Break down the barriers
- Work hard - but work smart
- Build teams
- Be patient – but be persistent
- Encourage audit of implementation plan
- Deliver results



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North American Region

Mary Kay Coroneos

Manager Land Information Systems



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South American Region

Claudia Valdivia
FC Systems Administrator



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African Region

Sundi Malomo, Systems Officer



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Australia-Pacific Region

- Region encompasses Jurisdictions of Australia and Papua New Guinea
- Difference in laws, regulations and internal business processes required development of two jurisdictional land systems



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Flexicadaastre Implementation

Barrick – Australia Pacific



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Status of Implementation

- APRBU Started Q42008.
- Project completed UAT December 2009 and moved to Production
- Current Status
 - Production Version:4.1.0.2 (Beta) – Test and Dev Version 4.1.2.09 (Beta)
 - Hardware
 - 2 x CPU with 8GB memory 40GB System Disk , 200GB Data disk
 - Server 2008 R2
 - ArcGIS Enterprise license
 - SQL Server 2008
 - IIS7
 - Office 2003
 - Flexi System containing
 - 5,250 Licences
 - 1,300 Agreements
 - 226,800 Actions
 - 20 Business Units
 - 400 Projects
 - 110 reporting Groups
 - 4 Map services



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What Works

- **Business Processes**
 - Workflow Concept – lends itself to proactive rather than reactive actions
 - Formalisation of team structure/responsibilities with flexibility
- **Ability to have GIS/Spatial Data linked to tenement or land title**
 - Separate layers for Tenement and Real Property
 - Seeking to have mine layout, vegetation monitoring and other related layers included
- **Opportunity to allow transparency into the Tenement Management Process to our customers (i.e. Geologists, Environmentalist, Managers)**
 - Ability for internal parties to be able to view data for themselves whilst still having the support of the Land Team
- **Buy in by the RBU to have Flexi used by both the Legal and Tenement Management Groups as a united tool collaboratively managed by both groups.**
- **Continues the process started in LeaseControl (previous database) to include Land Act titles in the system and the private land titles held through the various sites.**
- **Opportunity to add in non land licences (i.e. Environmental & Water Licences) that are linked or related to the titles.**
- **After much deliberation, the ability to have the multi-layer approach to the reflect the management of the tenement title. I.e. Tenement, Project, possible larger Project, Budget Site, Internal Governance area and external government group**



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Remaining Issues

- Beta Bugs and Stability of Product
- Concern at dependency on SD in implementing changes to workflows as legislation changes as well as dependency with Custom Reports.
- Limited access for ad hoc reporting purposes to data within the system
 - MS Office Extracts only from a single Object
 - Custom reports can only be incorporated in Beta releases
 - Inability to access key data in “one off” reporting circumstances
- Inability within FlexiCadastre to restrict loaded Documents on the basis of access permissions
- Inability to run automated User Testing



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PNG Implementation History and Current Status

- Implementation commenced October 2008
- Numerous interruptions due to department reorganization and staffing issues
- On-going support provided by Corporate Team through-out
- Project back on track
- Proposed close out 3rd Quarter 2011



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PNG Land System Current Status

- Development Version 4.1.2.09 (Beta)
- Initially hosted Australian Server in Perth
- Server host scheduled for relocation to PNG
February 2011



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PNG Land System Business Drivers

- Nearly all payments made in cash
- Need for extreme transparency
- Legal requirement to compensate customary land holders is complicated
- Failure to compensate can result in loss of tenement



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PNG Challenges Generally

- Human Resources
- Rotational staff schedules
- Ad hoc and undocumented historic practices
- “Dirty” and incomplete source data
- Internet performance in-Country



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PNG Challenges

- Compensation activity is complex
- Relates to mineral tenure but not part of regulated 'License' work flow

Quantify the Challenge

- Less than 50 tenements in PNG
- Current inventory of 20,000 + compensation transactions – more daily

FC Solution

- Track all compensation transactions as Agreements
- Develop lengthy work flows for Compensation Agreements of all types
- Link all compensation activity to related License



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PNG Challenges

- Aggressive tribal society
- Complicated geneology
- Language – 750 plus individual dialects
- All payments under Statutory and Incentive Agreements and Ministerial Determinations are paid out to elected Agents of Clans and Sub Clans
- Agents change frequently

Quantify the challenge?

What's the FC solution?



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PNG Challenges

Quantify the Challenge

- 654 Clans
- 1,937 Sub Clans
- 3,511 Agents

FC Solution

- Clans and Sub Clans added as separate Groups
- Clans and Sub Clans added as Companies; Clans are set up as Holding Companies; Sub Clans are set up as Subsidiaries of the Holding Company
- Agents added as Company Staff; enables tracking of Active and Inactive status of the Agent and time period served by each Agent
- Development of special reports



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PNG Challenges

- Statutory Compensation Agreement with land holders is required prior to grant of Mining Tenement
- Multiple Clans and Sub Clans may hold land rights within the boundaries of one tenement
- Payments under Statutory and other Agreements are made to Agents of Sub Clans for their respective ownership interests

Quantify the challenge?

What's the FC solution?



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PNG Challenges

Quantify the Challenge

- Example: One Statutory Agreement covering a tenement comprising 64 hectares encompasses lands held by 44 different Sub Clans
- Example: One remote parcel encompassing less than 1200 linear meters of river frontage requires distribution of payment to 156 individual Agents of 8 different Sub Clans
- 3,511 Agents designated to receive payments under Statutory & Other Agreements

FC Solution

- Create one FC Record for the Statutory Agreement (Parent Agreement) to track terms and conditions of the Agreement plus one general payment
- Create one FC Record for each individual Clan/Sub Clan (Child Agreement) for the purpose of calculating and recording payments
- Relate the respective Agreements
- Clan/Sub Clan added as Party Type “Payee”
- Agents added as Party Type to populate custom report Cash Distribution Sheet



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PNG Challenges

Calculation of Payments

- Seven different types of payments required under most Statutory Agreements but paid out at one time; some cover same land area
- Each type of statutory payment must be documented
- Each base payment is tied to affected land area and calculated in hectares
- Each payment is subject of CPI adjustment annually (based on various indices)
- Other agreements require specific but different payment types and calculation
- Some payments are based on production amounts
- Some payments are based on tons of waste
- Some payments are subject to deductions for non-compliance by land holder
- Some deductible amounts are subject to payment upon cure of default

Quantify the challenge?

What's the FC solution?



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PNG Challenges

Calculation of Payments

Quantify the Challenge

- In 2010 approximately 2200 periodic payments were made
- In 2010 approximately 8 Million Kina were paid out in cash

FC Solution

- Create specific payment conditions (WF Categories) for use in calculating payments made under specific types of agreements
- Utilize parameter values to the maximum extent possible
- Develop complex payment algorithms and actions
- Upload spatial data to actions as part of payment calculation
- Develop specific reports to track requests for cash, acquittal of cash and return of cash not paid out



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Summary of PNG System

- Data base will become very large
 - All supporting documentation will be stored in FC
 - Each individual compensation transaction will include a minimum of four photos, Valuer General calculations, and survey data
- Current populated FC inventory includes
 - 17,000 Compensation Agreements
- - 3,500+ additional compensation agreements being prepared for impot
 - 14,000+ People
 - 2,600 Clans and Sub-clans
 - 3,500+ Agents



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Summary of PNG System

- Multiple map services will be required
 - Spatial data requirements are huge
 - Spatial data must be linked to payment actions
 - Nearly every compensation transaction requires full review of historic activity
- Financial tracking essential
 - Must link to spatial data
 - Must be able to track payments made to individuals, their Clan/Sub-Clan affiliation, Clans and Sub-Clans
 - Must be able to provide roll-up reporting of expenditures to identified Corporate Authorizations for Expenditures
 - Must comply with all accounting procedures



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SUMMARY

- Barrick operates five separate instances of Flexi Cadastre
- Four Implementation Projects are closed out
- One Implementation Project scheduled for Close Out 3rd Quarter 2011
- One system being modified for functional purposes and migration of data pursuant to corporate acquisition
- One system being modified to meet the requirements of new Mining Law



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Lessons Learned

- Be prepared for and investigate changes in technology
- Respond to audit findings
- Implementations require huge commitment of man hours
- Project Team must incorporate multi-disciplinary expertise
- Communication is vital
- Project Management is critical
- Functional leadership is mandatory
- Land System Managers/Administrators play key role during implementation and beyond



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THANK YOU

- Thank you to Spatial Dimension for your invitation to share Barrick's progress in its mission to create a reasonably standard global Land Information System.
- Thank you to the audience for your interest.
- We hope you have enjoyed each of our Team's individual presentations and wish you well in your endeavor.
- If I can be of any assistance to you please contact me via E-Mail: mwinselboorda@barrick.com

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