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Spatial Dimension User Conference

2011

South African Jurisdiction: Surface Rights vs. Mineral Rights

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Overview

- Introduction
- Problem
- Objective
- Solution
- Implementation
- How the Data Model was derived
- Resultant Data Model
- Pitfalls
- Conclusions

Who, What, Where...

- Worlds largest Platinum Group Metals mining company
- Production per annum (2010)
  - ~2.55 Million oz Platinum
  - ~1.44 Million oz Palladium
  - ~4.93 Million oz PGMs (Platinum, Palladium, Rhodium & Gold)
- Operations & projects located in Southern Africa
- Employ 45,000 people directly and use 8,000 contractors
- 15 individual mining operations
- Either wholly owned or in joint venture
- Socially & environmentally responsible company

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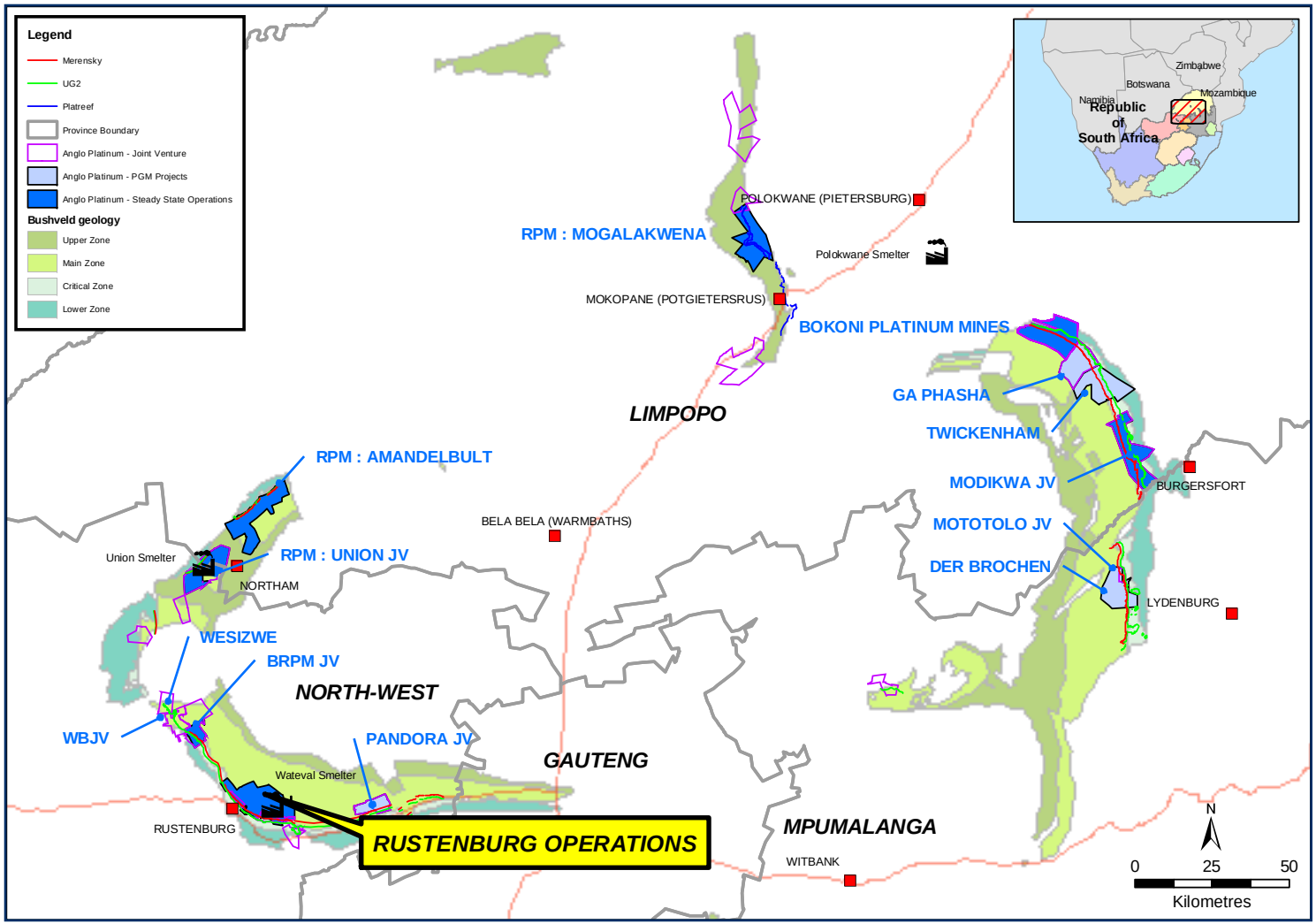
Regional Location



Rights / Assets /Licences

- **Surface**
  - Freehold – Residential (3846)
  - Freehold – Farmland (143)
  - Freehold - Industrial (9)
  - Freehold – Business (0)
  - Real Rights (14)
  - Servitude (81)
  - Surface Lease (24)
  - Surface Right Permit (567)
- **Mineral**
  - Mineral Lease (60)
  - Prospecting Right (44)
  - Mining Right (23)
  - Reconnaissance Right (0)
  - Old Order (413)
  - Water Right (1)

The Problem

- Legacy System
- In-house
- Still required development to accommodated new legislation
- Inefficient – required significant development costs
- Inflexible – not user friendly
- Governance -not workflow driven

Objectives

- Determine Best Practice
  - Identify suitable system
  - Implement
  - Design Data Model
  - Attempt to determine cost effectiveness

- Implement Best Practice
  - incorporate into Group Procedures

Identified Solution Requirements

- Needs to address internal & external governance
- Needs to become a Group Standard
- Needs to be efficient and flexible
- Needs to be scalable
- Needs to address DMR requirements within the SA jurisdiction
- Needs to be cost effective

The Solution Was…

- Flexicadastre…of course!
- Which was derived from
  - Presentations
  - Demonstrations
  - Existing user interviews
  - Acceptable proposal that was in budget
  - Adherence to AA PLC policy
    - "*Flexicadastre is the preferred solution within the land-use/mineral rights management space*"

    …Dave Drinkwater (Manager: Mining Systems & Information)

Implementation-project overview

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- Installation
- Workshop – familiarization
- High Level work Flow
- Internal Business mapping
  - Client driven
  - Vendor driven
- Follow up Workshop and sign-off
- Flexicadastre Configuration based on signed-off workflows
- Migration and integration with existing systems
- Pre SAT/UAT Training
- UAT & SAT
- Final Configuration based on results of UAT & SAT
- Go live

Data model generation

- Due to time & budget constraints it was decided to model a single right/asset/licence group
- Focused on most important group of rights to manage
  - Prospecting rights
- In depth work- flow modelling produced the required data model
- Combined effort between client & vendor

Platinum - Group Procedure

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GROUP PROCEDURE

ACQUIRE PROSPECTING RIGHT

VERSION: Version 1.00

LAST REVISION DATE: 03/11/2010

FIRST IMPLEMENTATION DATE: 01/12/2010

DOCUMENT REFERENCE NUMBER: <Not Allocated>

PROCESS REFERENCE NUMBER: GP.01

DRAFT

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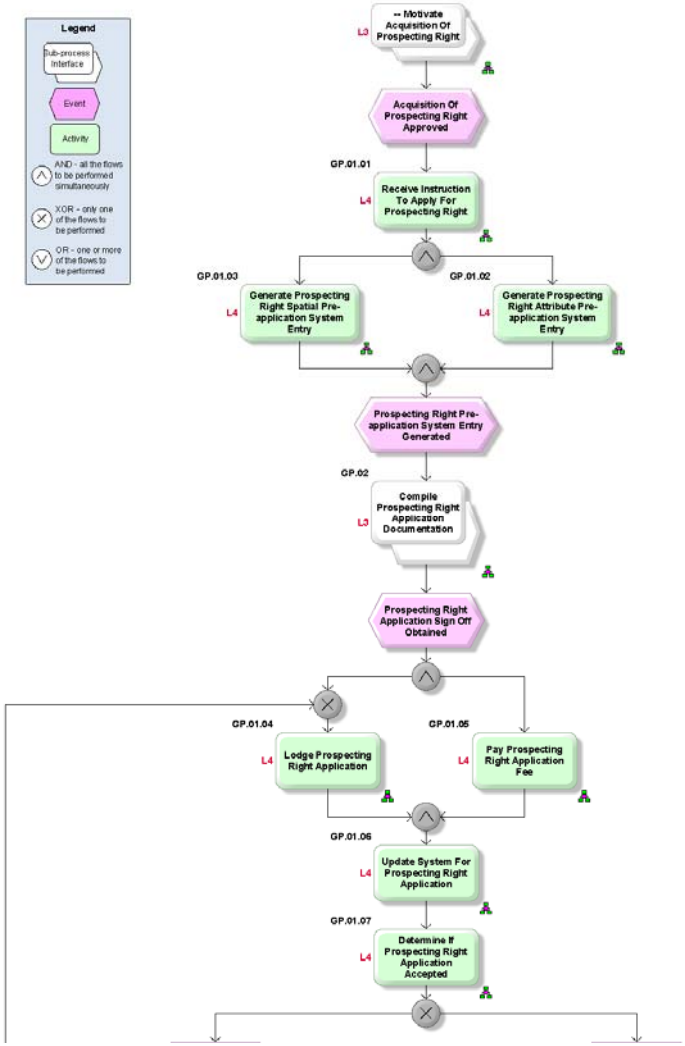
Aris Work Flow Model 1



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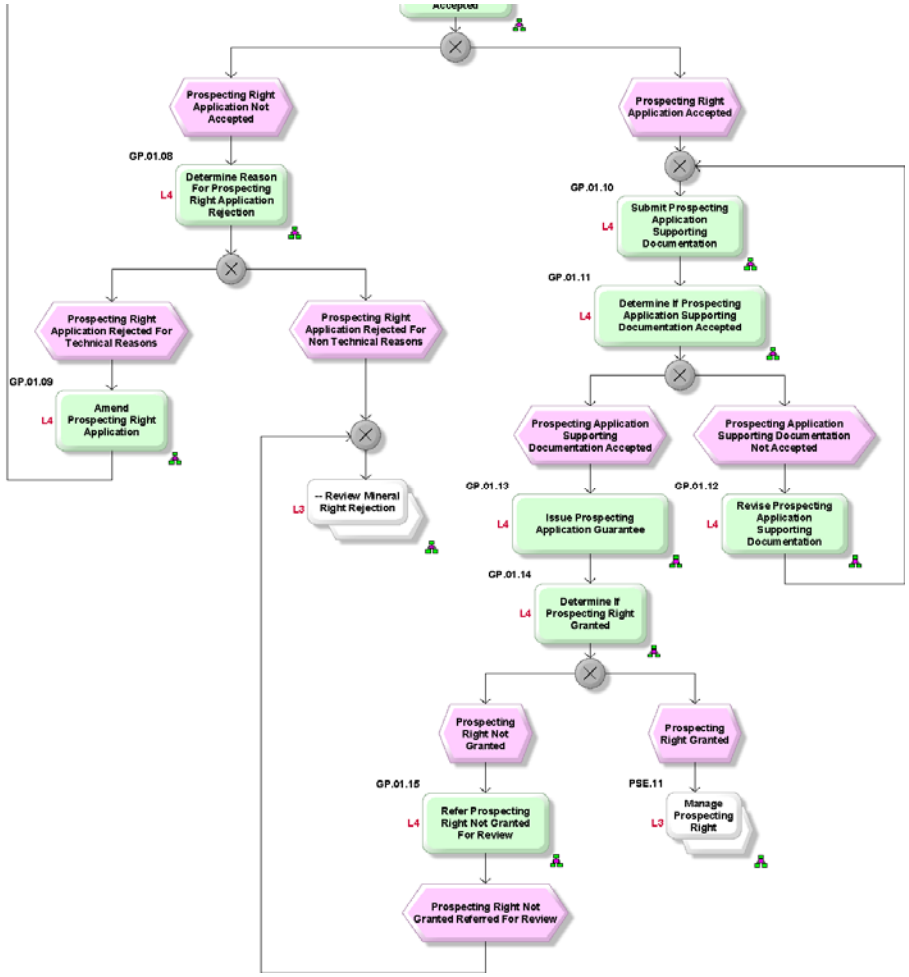
Aris Work Flow Model 2



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The Data Model

- Key concepts were:
  - Majority of rights/assets/licence shapes based on surface freehold shape (>90%)
  - Flexicadastre designed to work efficiently with coordinate entry licence shape
  - Needed to create alternative licence shape generation concept
  - Loaded generic group of licences (property) from which other rights/asset/licences could be built
  - The property licences were derived from the same source the DMR used for their management system

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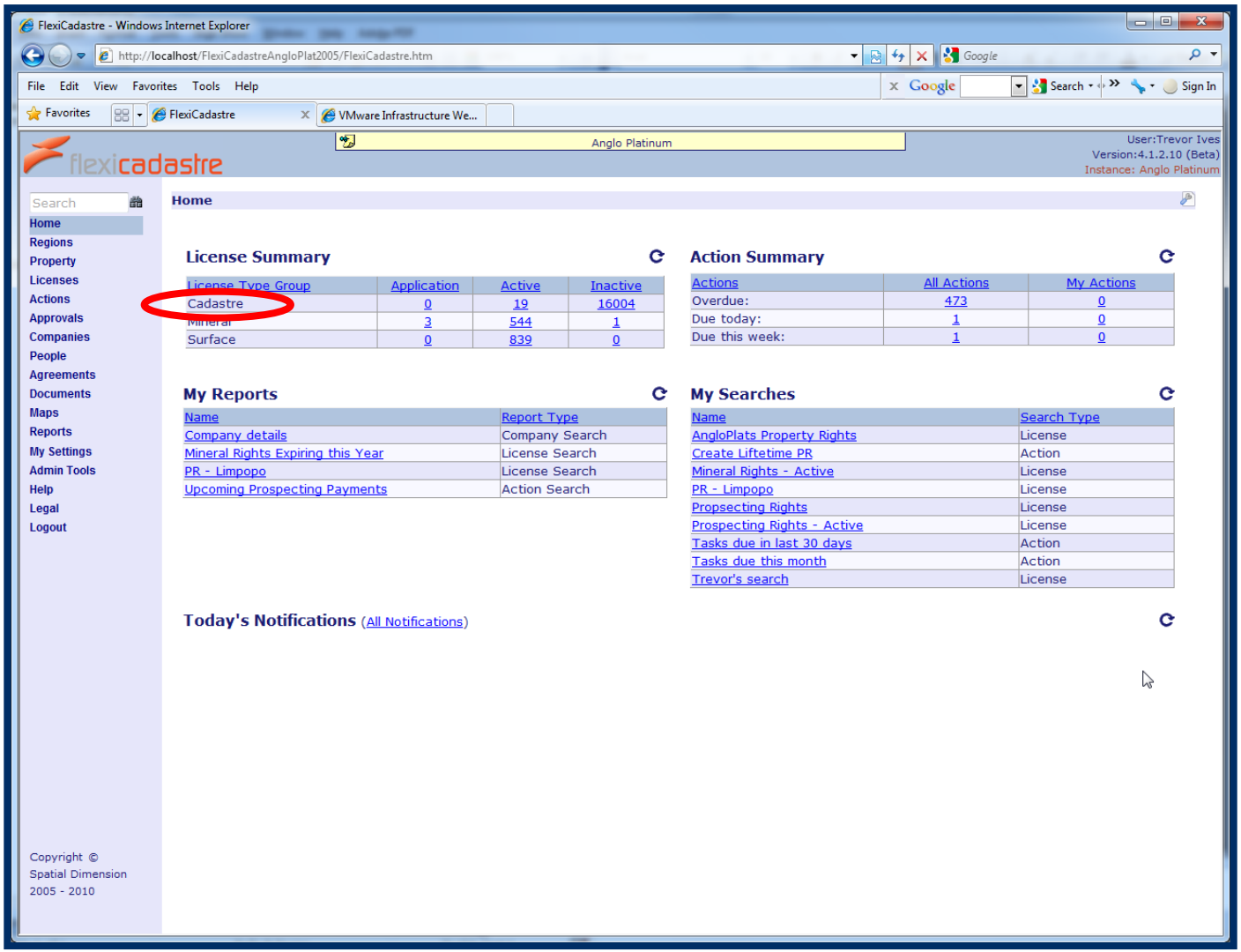
Flexi Home Page



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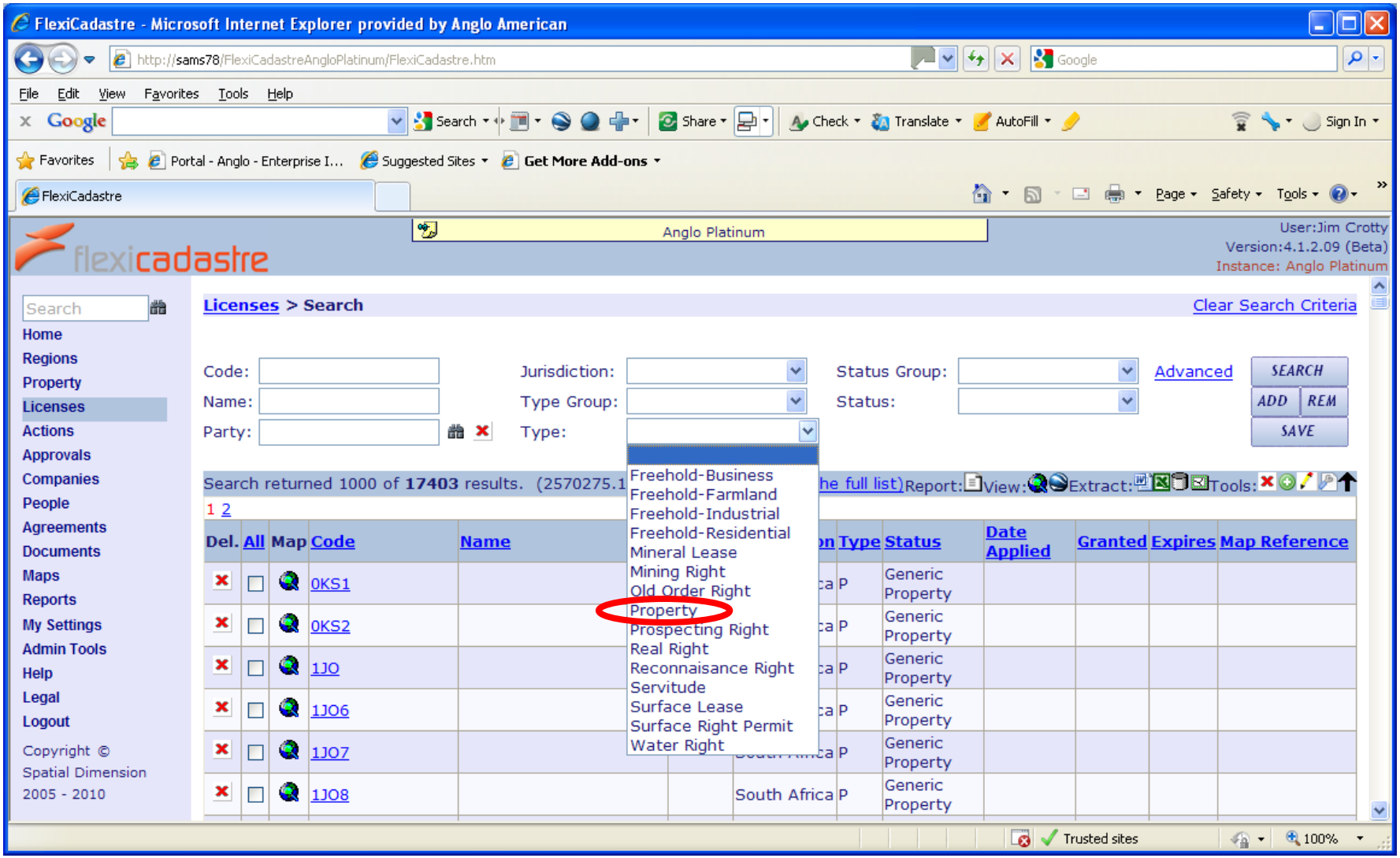
All Rights



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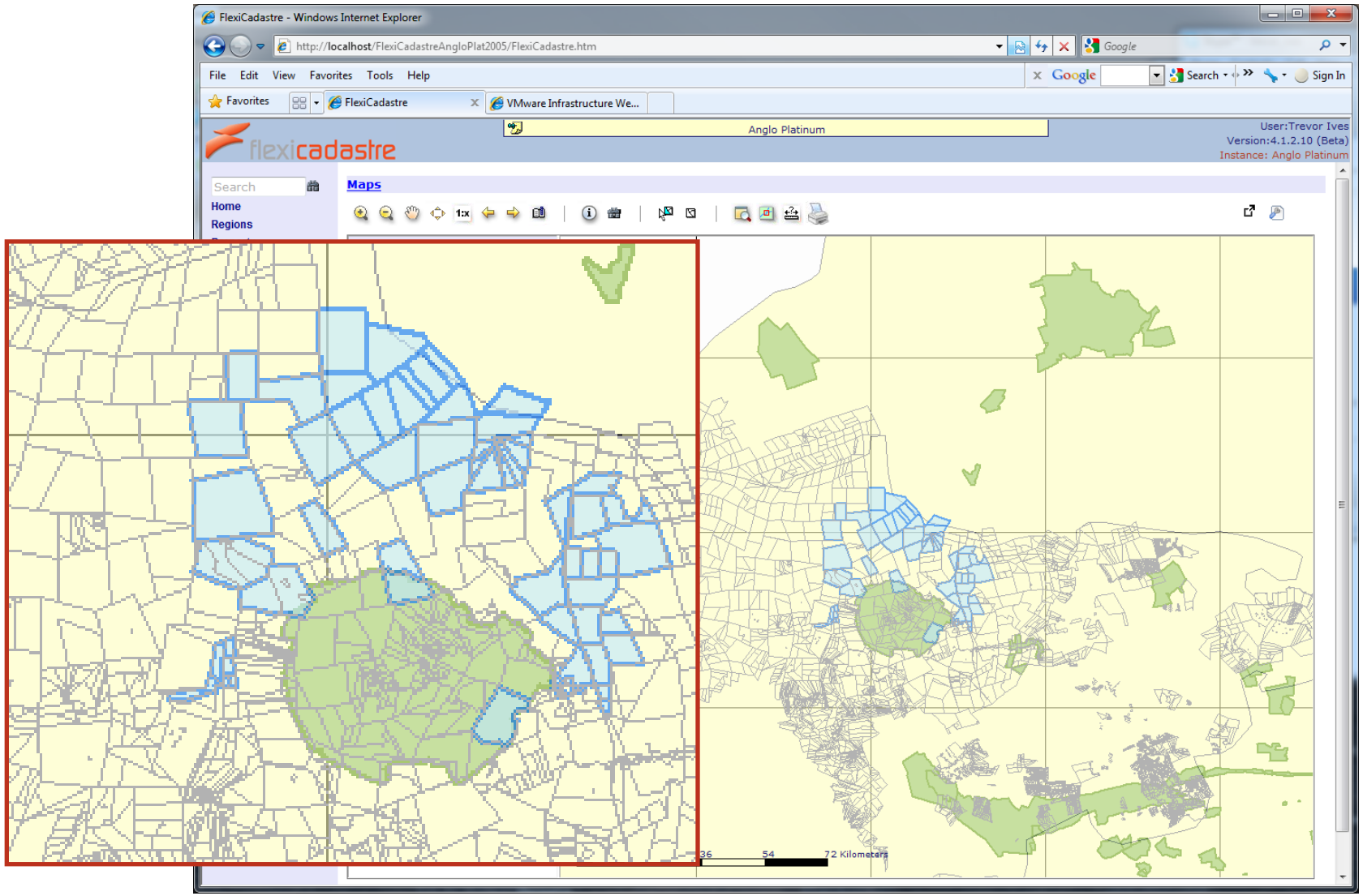
Map Screen Shot



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Data Model

- Management of Mineral Rights linked spatially to Surface Rights
- Workflows had to strictly adhere to:
  - internal requirements (governance and audit)
  - external requirements (DMR legislation)
- Resultant model combined both surface and mineral right management by referencing them to third group of licences referred to as generic properties…through the related licence tab

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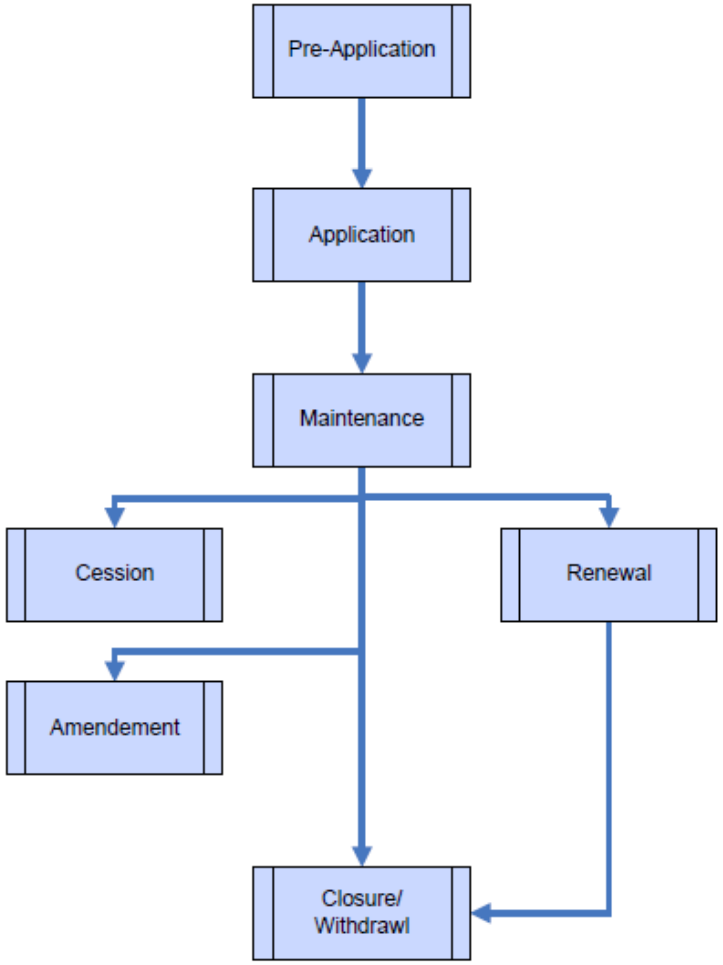
Prospecting Right
High Level Work flow



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Prospecting Right Detailed Work flow

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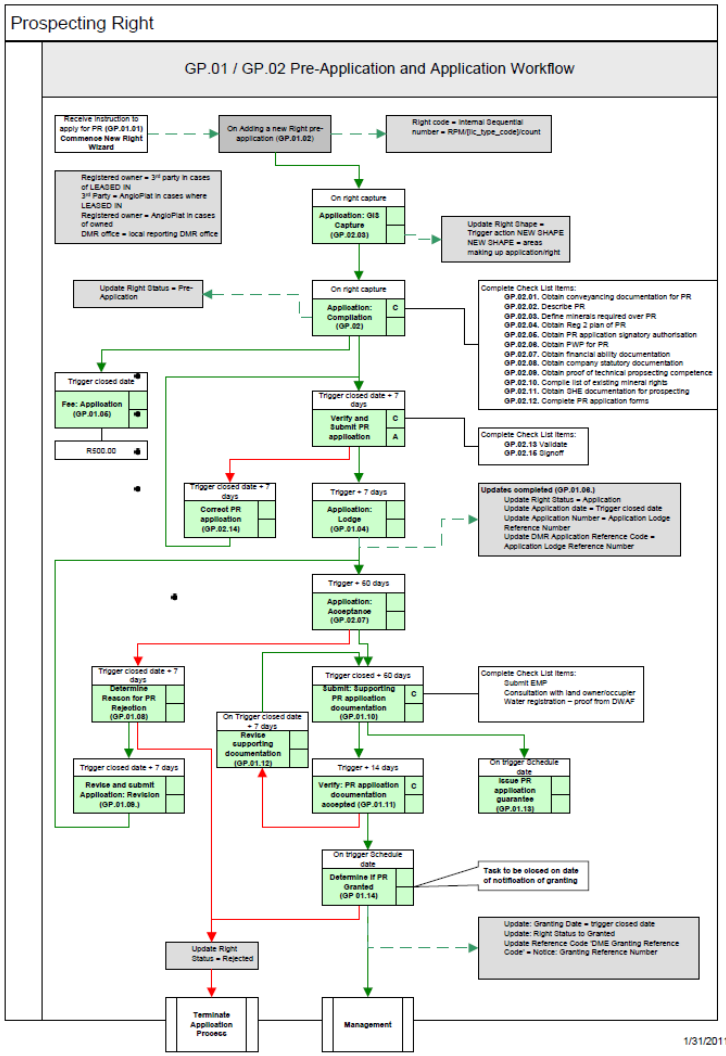

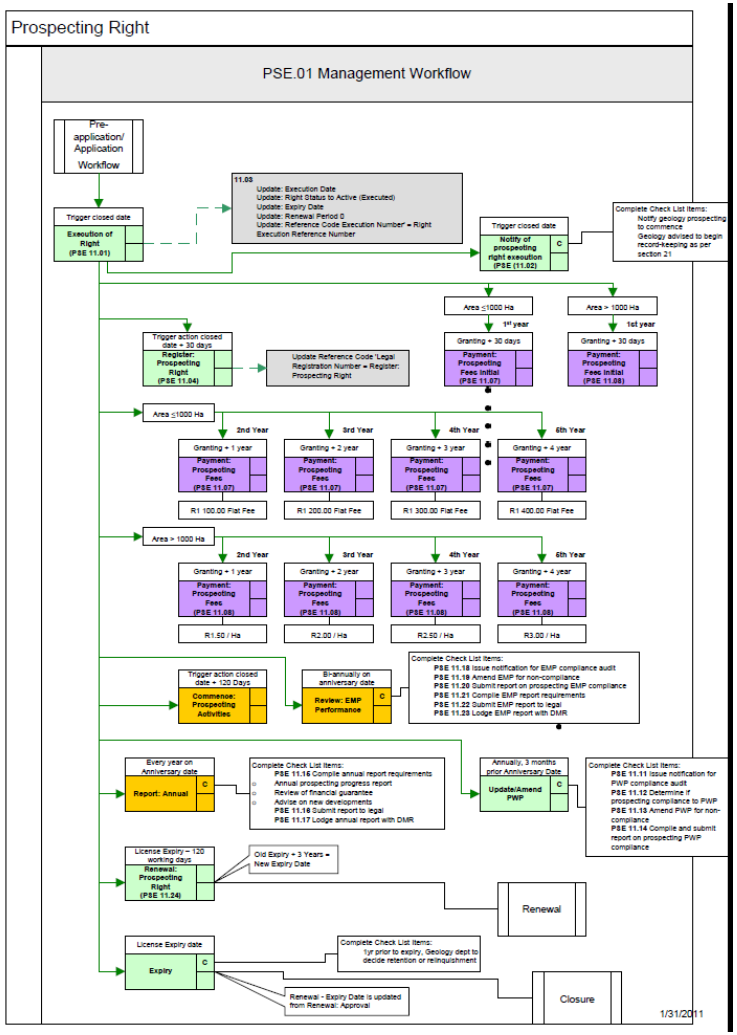

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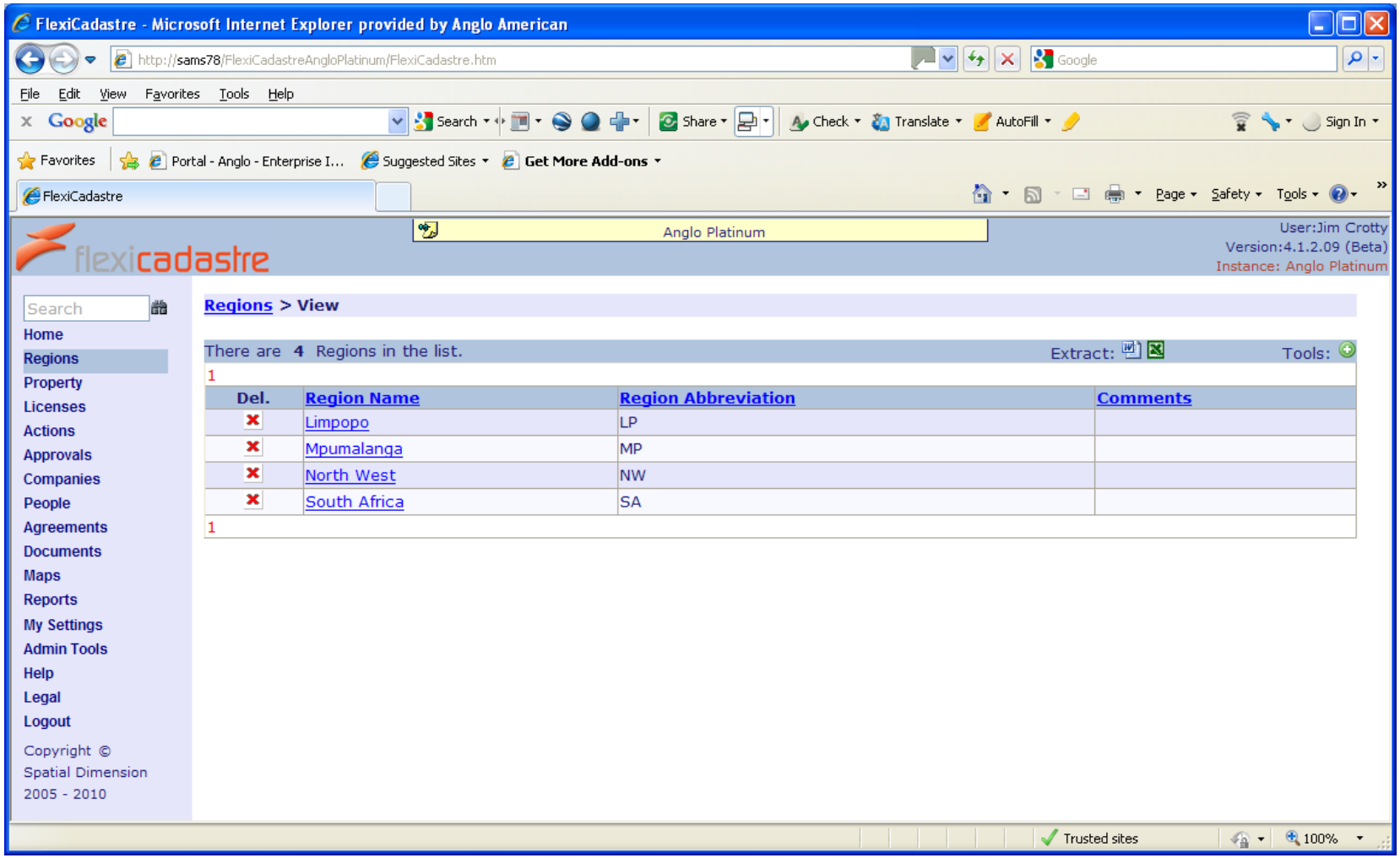
Regions



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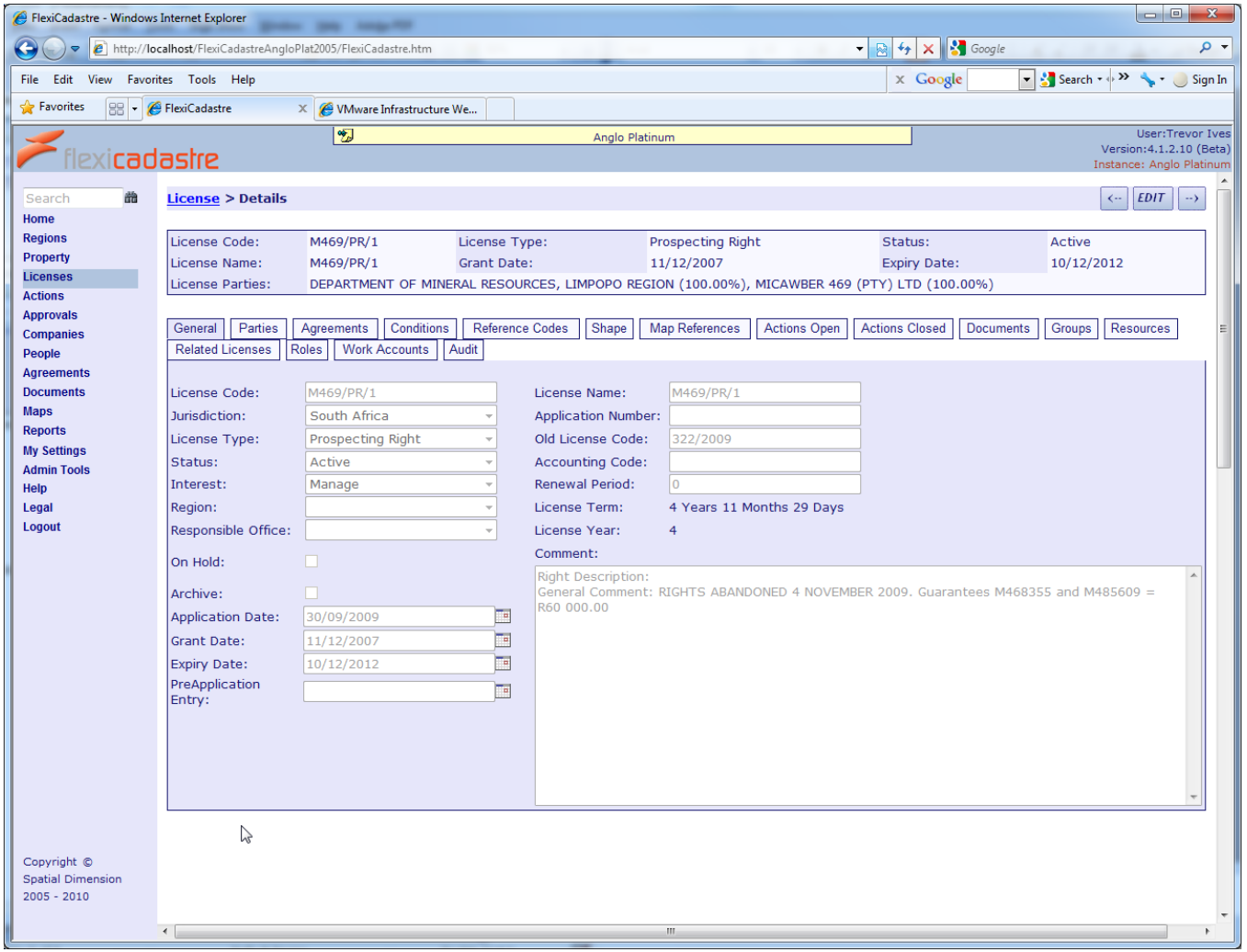
License Details



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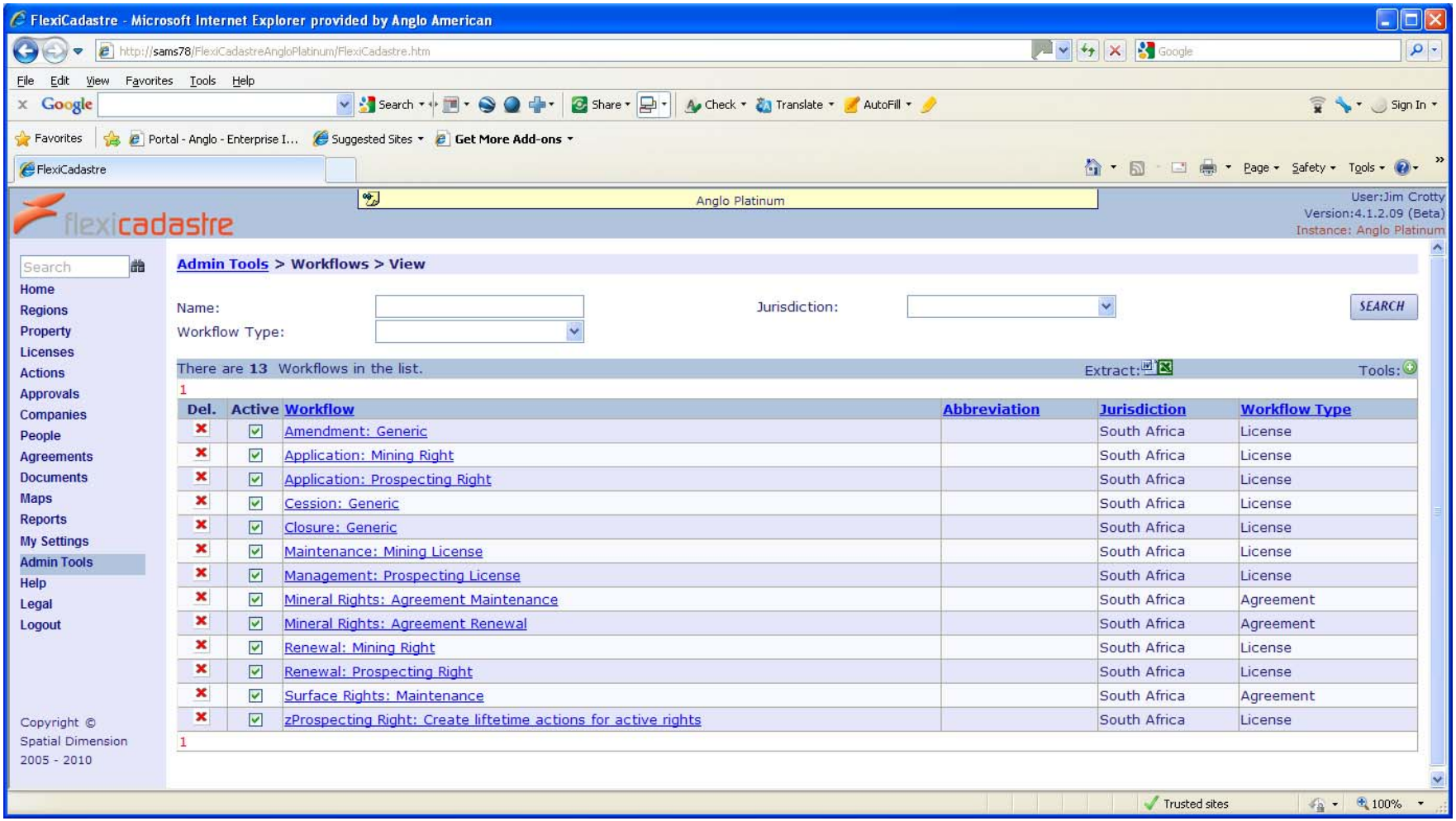
Workflows



Del.	Active	Workflow	Abbreviation	Jurisdiction	Workflow Type
✗	☑	Amendment: Generic		South Africa	License
✗	☑	Application: Mining Right		South Africa	License
✗	☑	Application: Prospecting Right		South Africa	License
✗	☑	Cession: Generic		South Africa	License
✗	☑	Closure: Generic		South Africa	License
✗	☑	Maintenance: Mining License		South Africa	License
✗	☑	Management: Prospecting License		South Africa	License
✗	☑	Mineral Rights: Agreement Maintenance		South Africa	Agreement
✗	☑	Mineral Rights: Agreement Renewal		South Africa	Agreement
✗	☑	Renewal: Mining Right		South Africa	License
✗	☑	Renewal: Prospecting Right		South Africa	License
✗	☑	Surface Rights: Maintenance		South Africa	Agreement
✗	☑	zProspecting Right: Create liftetime actions for active rights		South Africa	License

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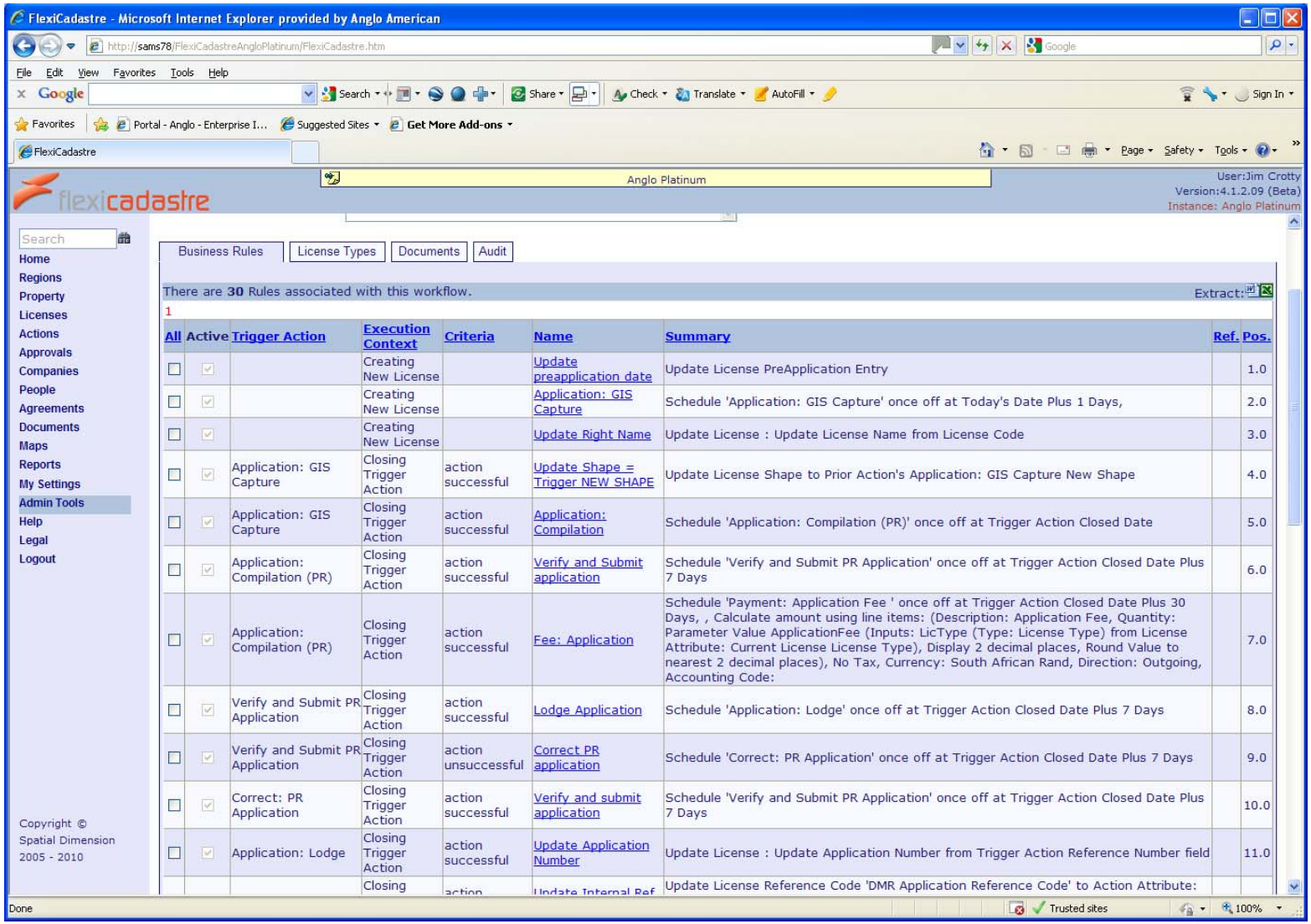
Business Rules 1



All	Active	Trigger Action	Execution Context	Criteria	Name	Summary	Ref.	Pos.
☐	☑		Creating New License		Update preapplication date	Update License PreApplication Entry		1.0
☐	☑		Creating New License		Application: GIS Capture	Schedule 'Application: GIS Capture' once off at Today's Date Plus 1 Days,		2.0
☐	☑		Creating New License		Update Right Name	Update License : Update License Name from License Code		3.0
☐	☑	Application: GIS Capture	Closing Trigger Action	action successful	Update Shape = Trigger NEW SHAPE	Update License Shape to Prior Action's Application: GIS Capture New Shape		4.0
☐	☑	Application: GIS Capture	Closing Trigger Action	action successful	Application: Compilation	Schedule 'Application: Compilation (PR)' once off at Trigger Action Closed Date		5.0
☐	☑	Application: Compilation (PR)	Closing Trigger Action	action successful	Verify and Submit application	Schedule 'Verify and Submit PR Application' once off at Trigger Action Closed Date Plus 7 Days		6.0
☐	☑	Application: Compilation (PR)	Closing Trigger Action	action successful	Fee: Application	Schedule 'Payment: Application Fee ' once off at Trigger Action Closed Date Plus 30 Days, , Calculate amount using line items: (Description: Application Fee, Quantity: Parameter Value ApplicationFee (Inputs: LicType (Type: License Type) from License Attribute: Current License License Type), Display 2 decimal places, Round Value to nearest 2 decimal places), No Tax, Currency: South African Rand, Direction: Outgoing, Accounting Code:		7.0
☐	☑	Verify and Submit PR Application	Closing Trigger Action	action successful	Lodge Application	Schedule 'Application: Lodge' once off at Trigger Action Closed Date Plus 7 Days		8.0
☐	☑	Verify and Submit PR Application	Closing Trigger Action	action unsuccessful	Correct PR application	Schedule 'Correct: PR Application' once off at Trigger Action Closed Date Plus 7 Days		9.0
☐	☑	Correct: PR Application	Closing Trigger Action	action successful	Verify and submit application	Schedule 'Verify and Submit PR Application' once off at Trigger Action Closed Date Plus 7 Days		10.0
☐	☑	Application: Lodge	Closing Trigger Action	action successful	Update Application Number	Update License : Update Application Number from Trigger Action Reference Number field		11.0
			Closing	action	Update Internal Ref	Update License Reference Code 'DMR Application Reference Code' to Action Attribute:		

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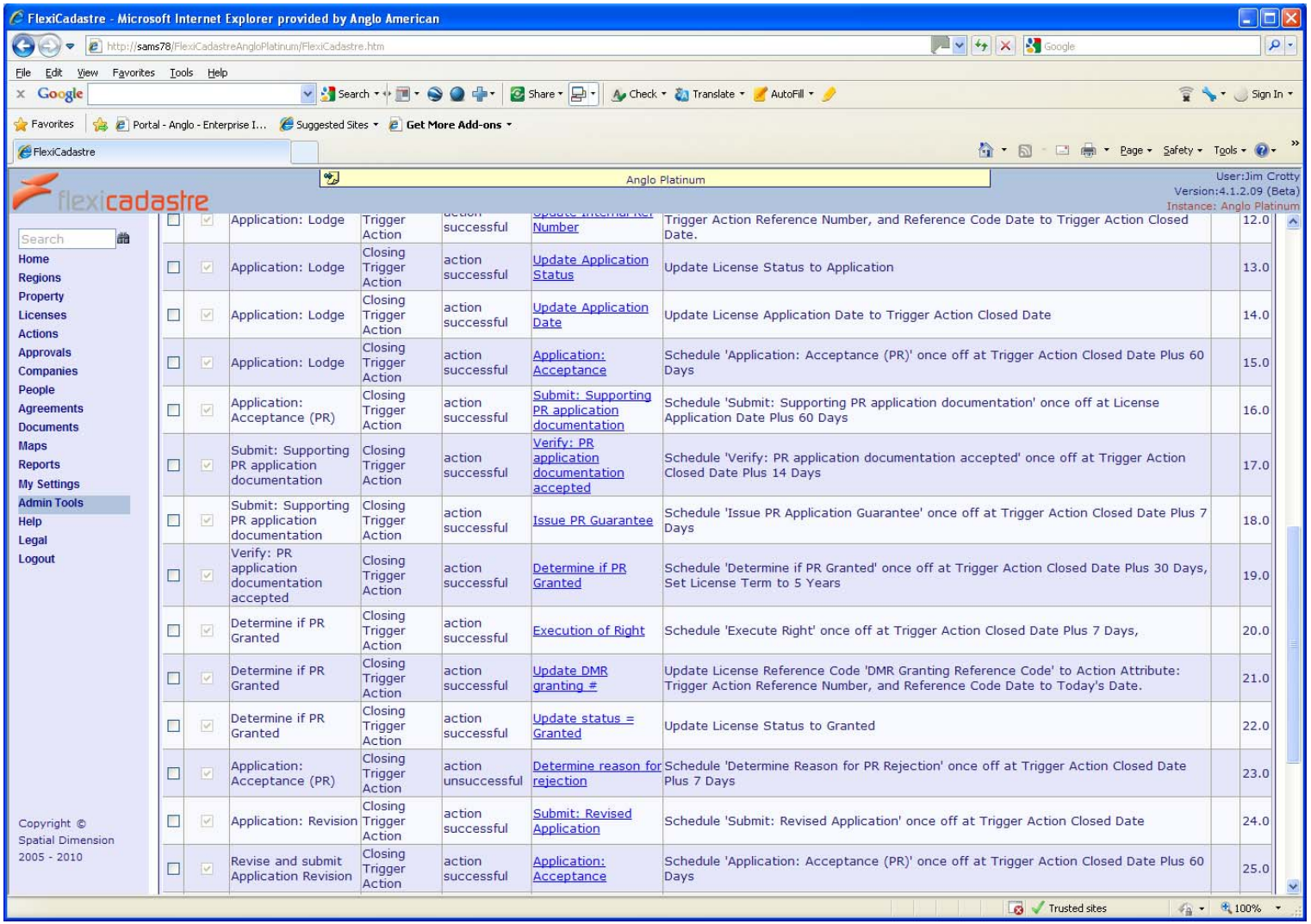
Business rules 2



		Application: Lodge	Trigger Action	successful	Number	Trigger Action Reference Number, and Reference Code Date to Trigger Action Closed Date.	12.0
		Application: Lodge	Closing Trigger Action	action successful	Update Application Status	Update License Status to Application	13.0
		Application: Lodge	Closing Trigger Action	action successful	Update Application Date	Update License Application Date to Trigger Action Closed Date	14.0
		Application: Lodge	Closing Trigger Action	action successful	Application: Acceptance	Schedule 'Application: Acceptance (PR)' once off at Trigger Action Closed Date Plus 60 Days	15.0
		Application: Acceptance (PR)	Closing Trigger Action	action successful	Submit: Supporting PR application documentation	Schedule 'Submit: Supporting PR application documentation' once off at License Application Date Plus 60 Days	16.0
		Submit: Supporting PR application documentation	Closing Trigger Action	action successful	Verify: PR application documentation accepted	Schedule 'Verify: PR application documentation accepted' once off at Trigger Action Closed Date Plus 14 Days	17.0
		Submit: Supporting PR application documentation	Closing Trigger Action	action successful	Issue PR Guarantee	Schedule 'Issue PR Application Guarantee' once off at Trigger Action Closed Date Plus 7 Days	18.0
		Verify: PR application documentation accepted	Closing Trigger Action	action successful	Determine if PR Granted	Schedule 'Determine if PR Granted' once off at Trigger Action Closed Date Plus 30 Days, Set License Term to 5 Years	19.0
		Determine if PR Granted	Closing Trigger Action	action successful	Execution of Right	Schedule 'Execute Right' once off at Trigger Action Closed Date Plus 7 Days,	20.0
		Determine if PR Granted	Closing Trigger Action	action successful	Update DMR granting #	Update License Reference Code 'DMR Granting Reference Code' to Action Attribute: Trigger Action Reference Number, and Reference Code Date to Today's Date.	21.0
		Determine if PR Granted	Closing Trigger Action	action successful	Update status = Granted	Update License Status to Granted	22.0
		Application: Acceptance (PR)	Closing Trigger Action	action unsuccessful	Determine reason for rejection	Schedule 'Determine Reason for PR Rejection' once off at Trigger Action Closed Date Plus 7 Days	23.0
		Application: Revision	Closing Trigger Action	action successful	Submit: Revised Application	Schedule 'Submit: Revised Application' once off at Trigger Action Closed Date	24.0
		Revise and submit Application Revision	Closing Trigger Action	action successful	Application: Acceptance	Schedule 'Application: Acceptance (PR)' once off at Trigger Action Closed Date Plus 60 Days	25.0

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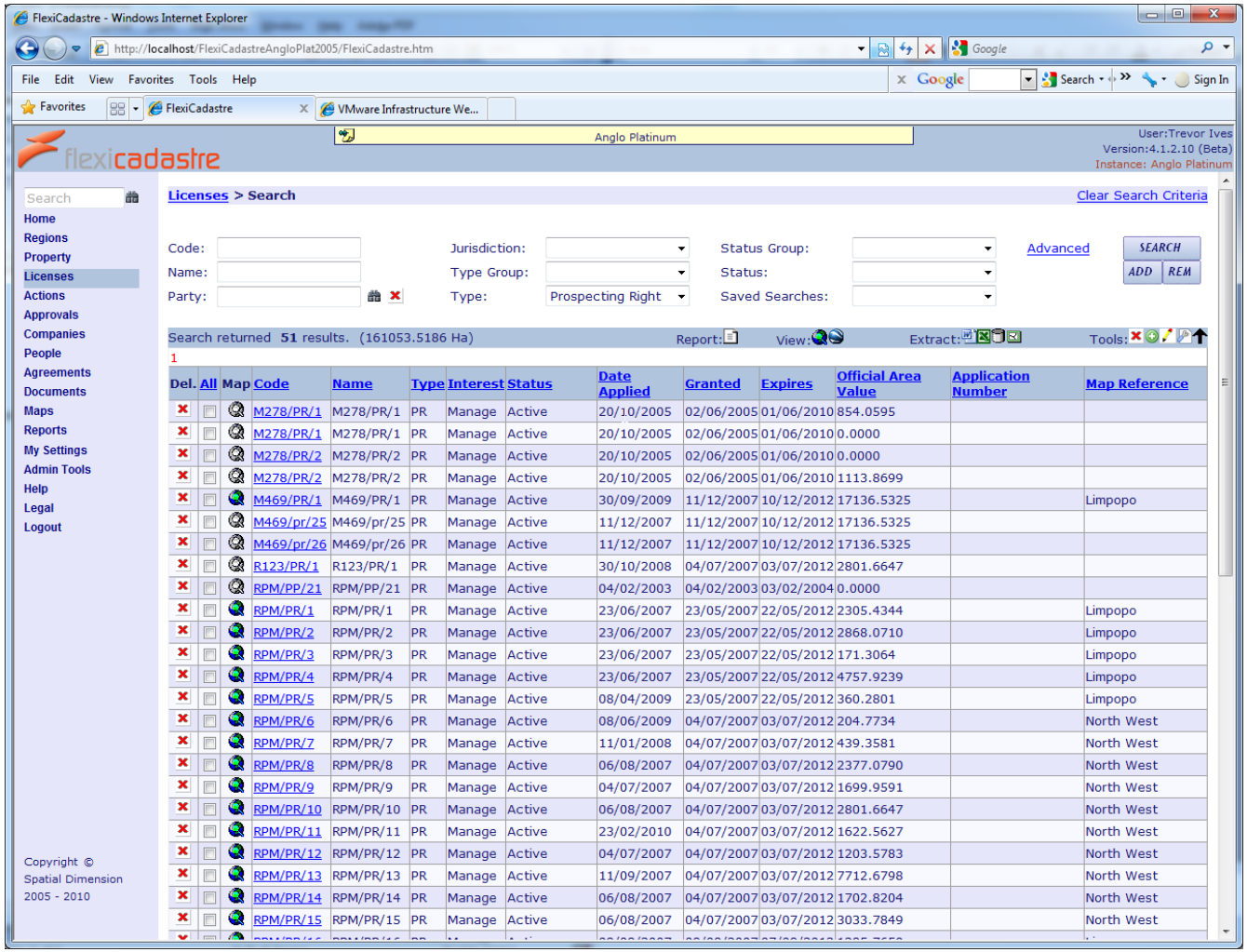
License Search Page



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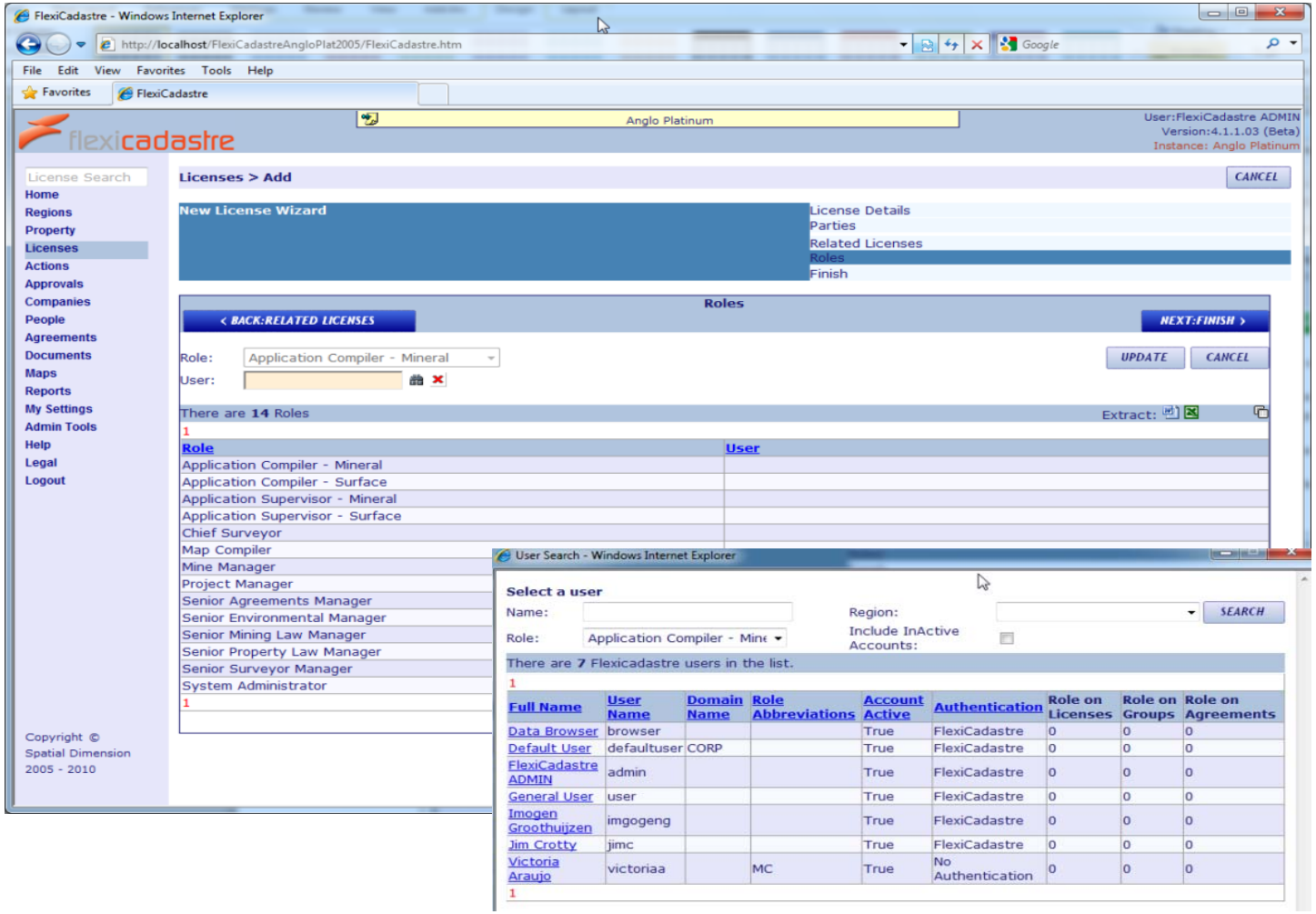
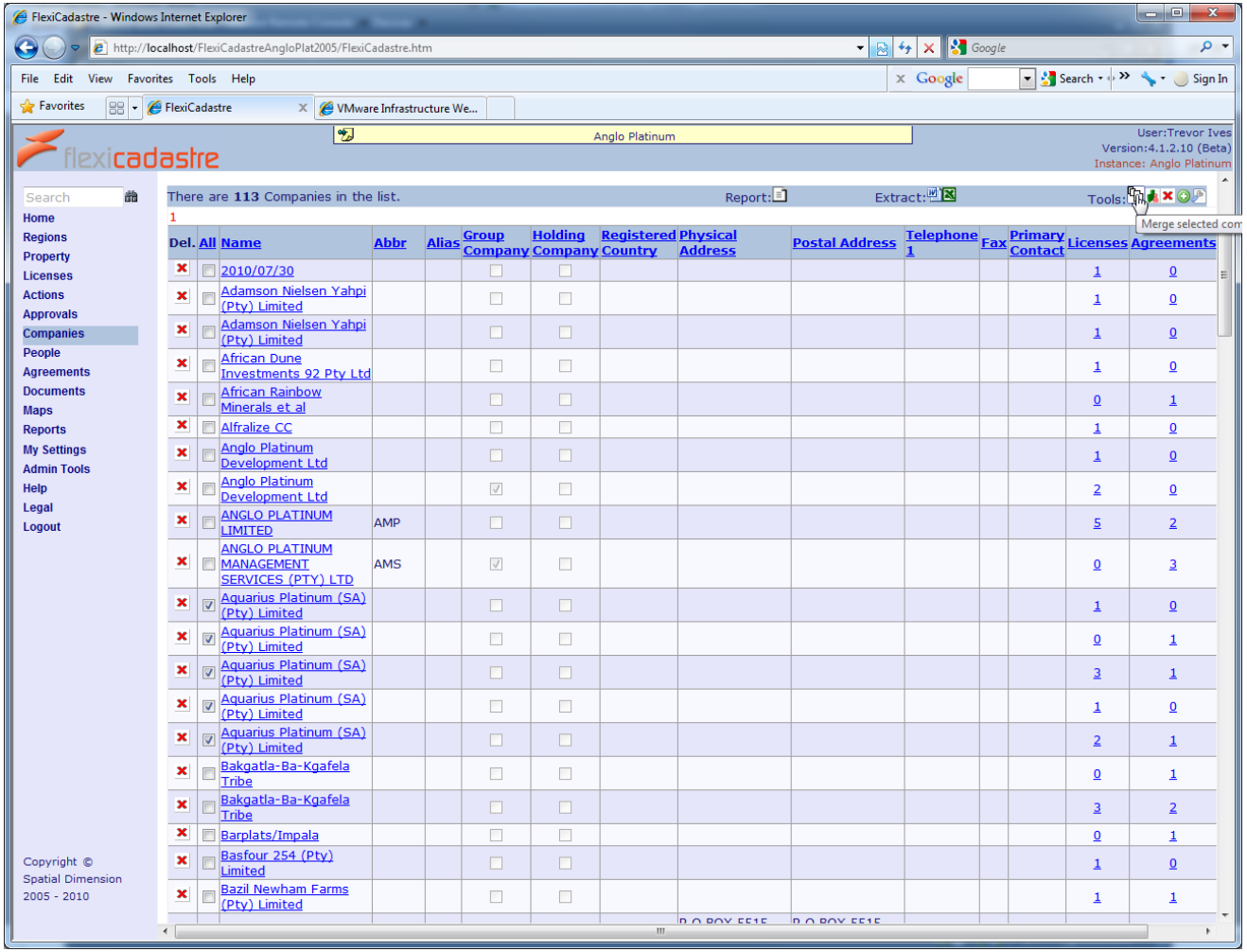
License roles



Company search list



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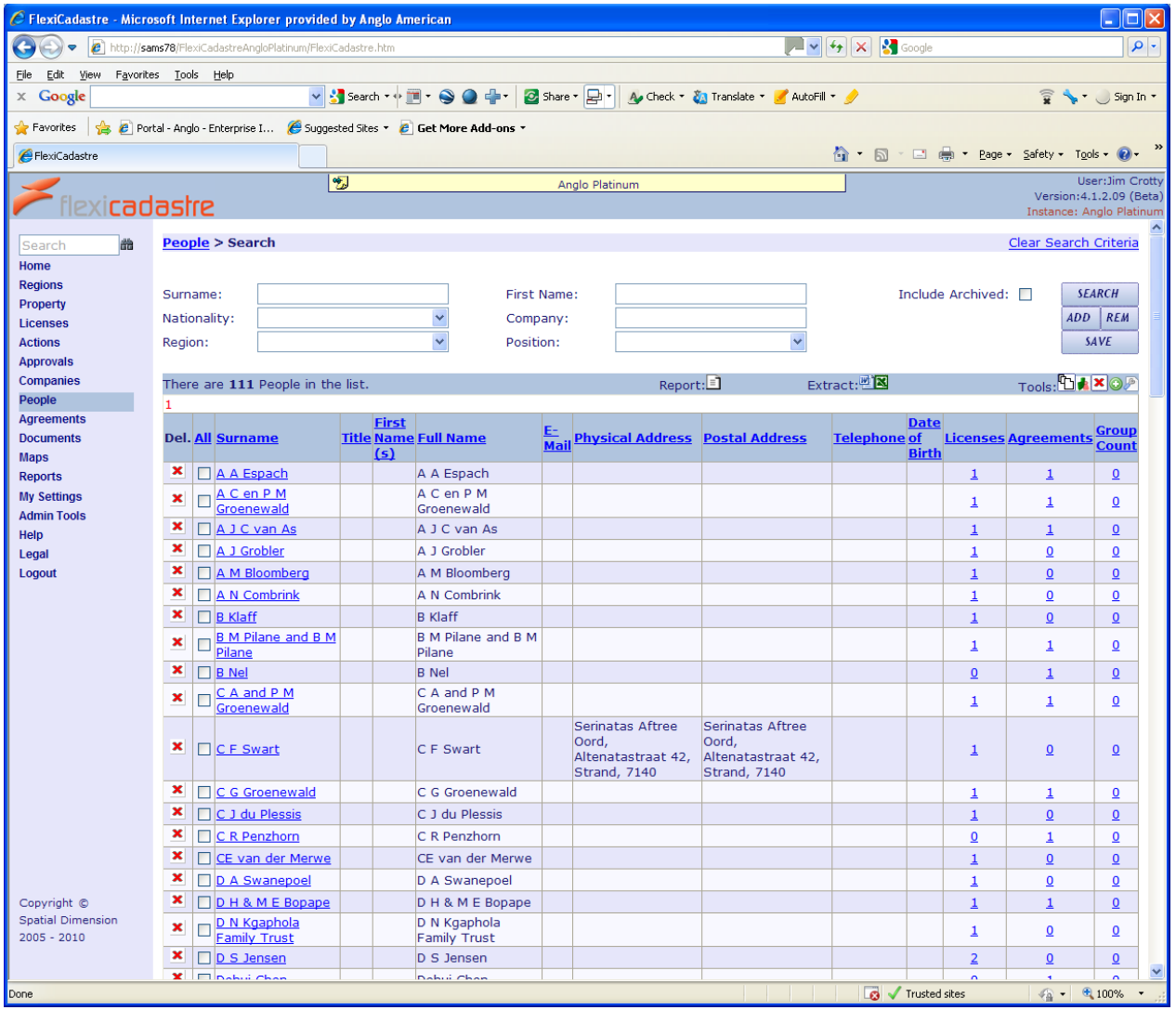
People



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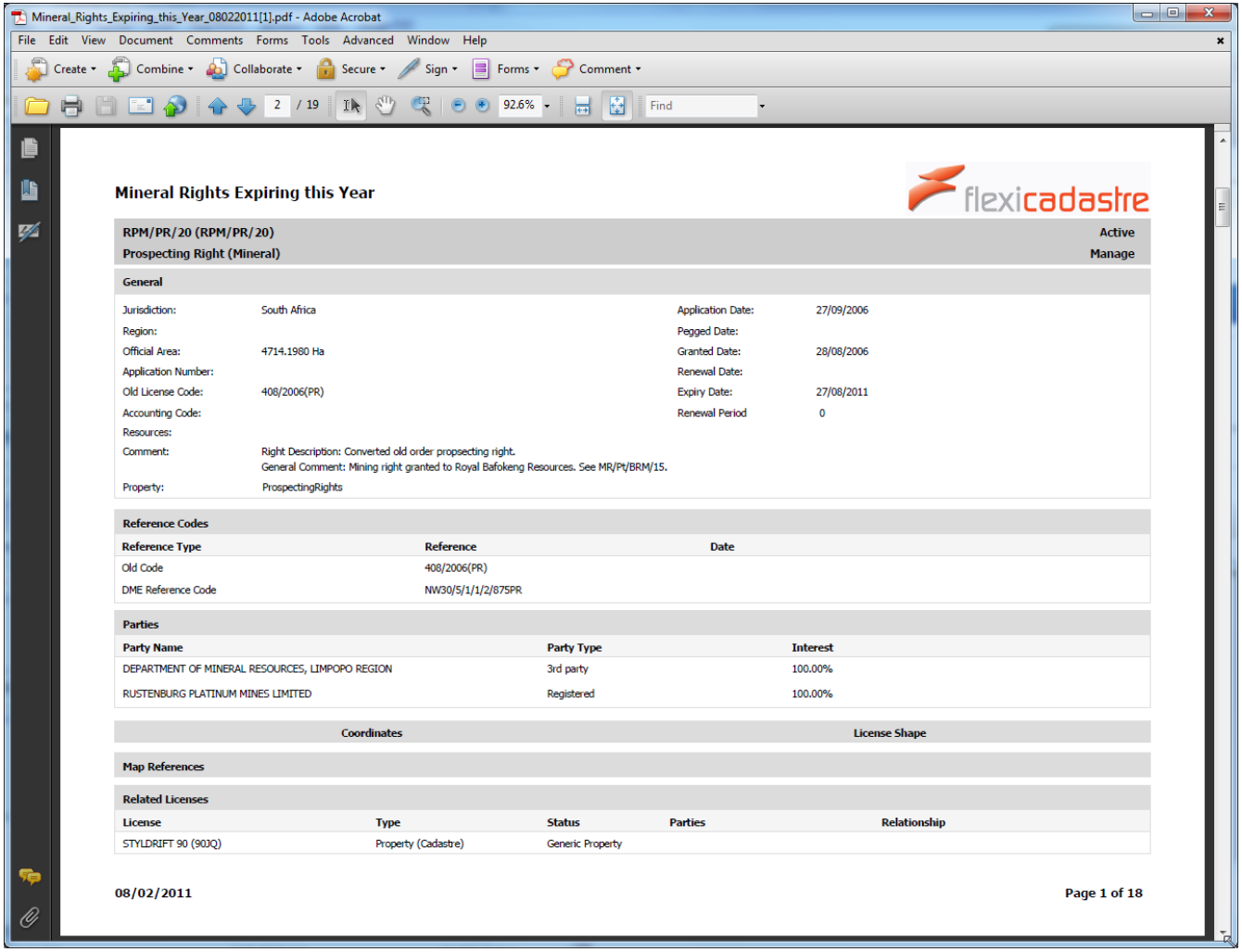
License details report



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Pitfalls

- Trust the vendor !!
  - They know what they are talking about
- Internal workflows not detailed enough
- Internal work flows had to be remodelled to accommodated Flexicadastre
- Spatial data from external agency (government) assumed to be clean…it wasn't
- Report requirements need to be an integral part of implementation (see first point)

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Conclusions

- Producing the right data model is the key to success in managing surface and mineral rights using Flexicadastre
- We have chosen the right tool for the job
- It needs to be a dynamic process
- We feel we have produced a data model that can be applied to any prospecting / mining management requirement…independent of commodity and company