

# ORACLE POLICY AUTOMATION

Angela Chin  
Senior Applications Consultant  
16 March 2010



# OVERVIEW

What is OPA?





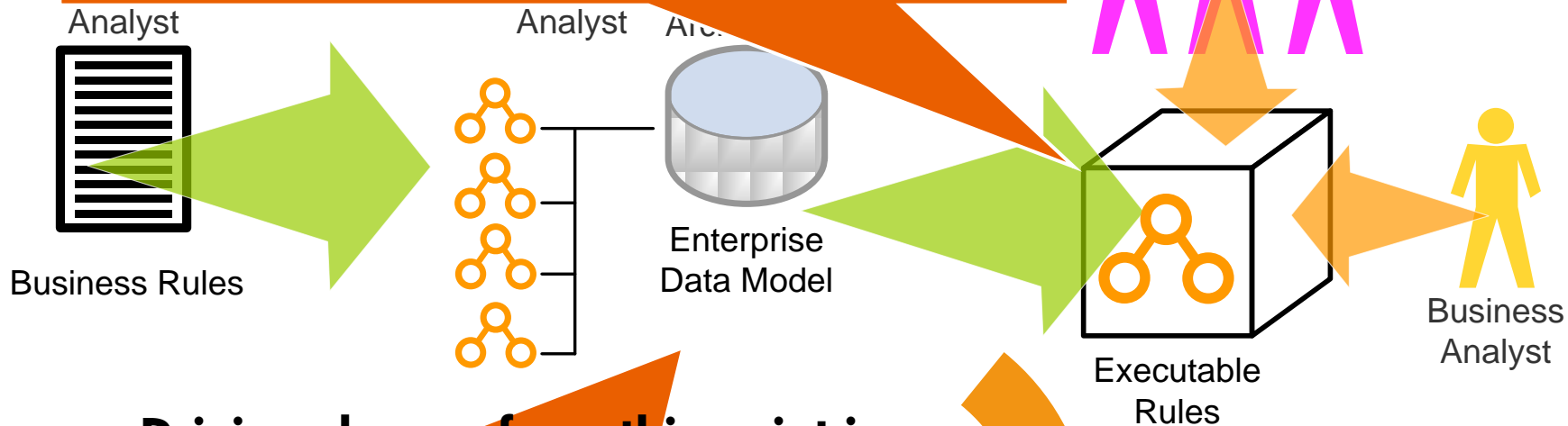
...but what if we had

executable  
requirements  
specifications?

# THE ORACLE POLICY AUTOMATION LIFECYCLE

STEP 1: Capture rules in Oracle Policy Manager

STEP 3: Deploy & test rules – well supported by transparent execution (decision reports)



Driving change from this point in the process is much cheaper – it involves fewer resources & fewer stages

STEP 2: Map rules to enterprise data model



# A LITTLE BACKGROUND

## Oracle Policy Automation:

- Commenced life as SoftLaw in Australia about 20 years ago
- Was also previously known as RuleBurst & Haley Office Rules
- Is NOT the same as Haley Business Rules Engine or Siebel Business Rules Engine
- Purchased by Oracle and is now the strategic direction for policy rules with Siebel



# DEMONSTRATION



# WHY USE OPA?

Some key features of OPA



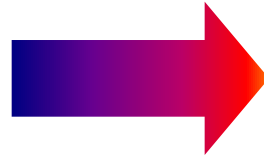


# WHY AUTOMATE ORGANISATIONAL POLICIES?

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**Policy complexity is growing**



**Making accurate and consistent decisions is difficult when finely targeted policies are needed to deliver the best outcomes**

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**Regulatory changes are accelerating**



**Security, geopolitical and financial events drive frequent legislative changes and high expectations of enforcement**

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**Budgetary pressures force efficiencies**



**Costly IT projects and resource-intensive call centers are expected to innovate, and deliver more with less**

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**Accountability requires transparency**

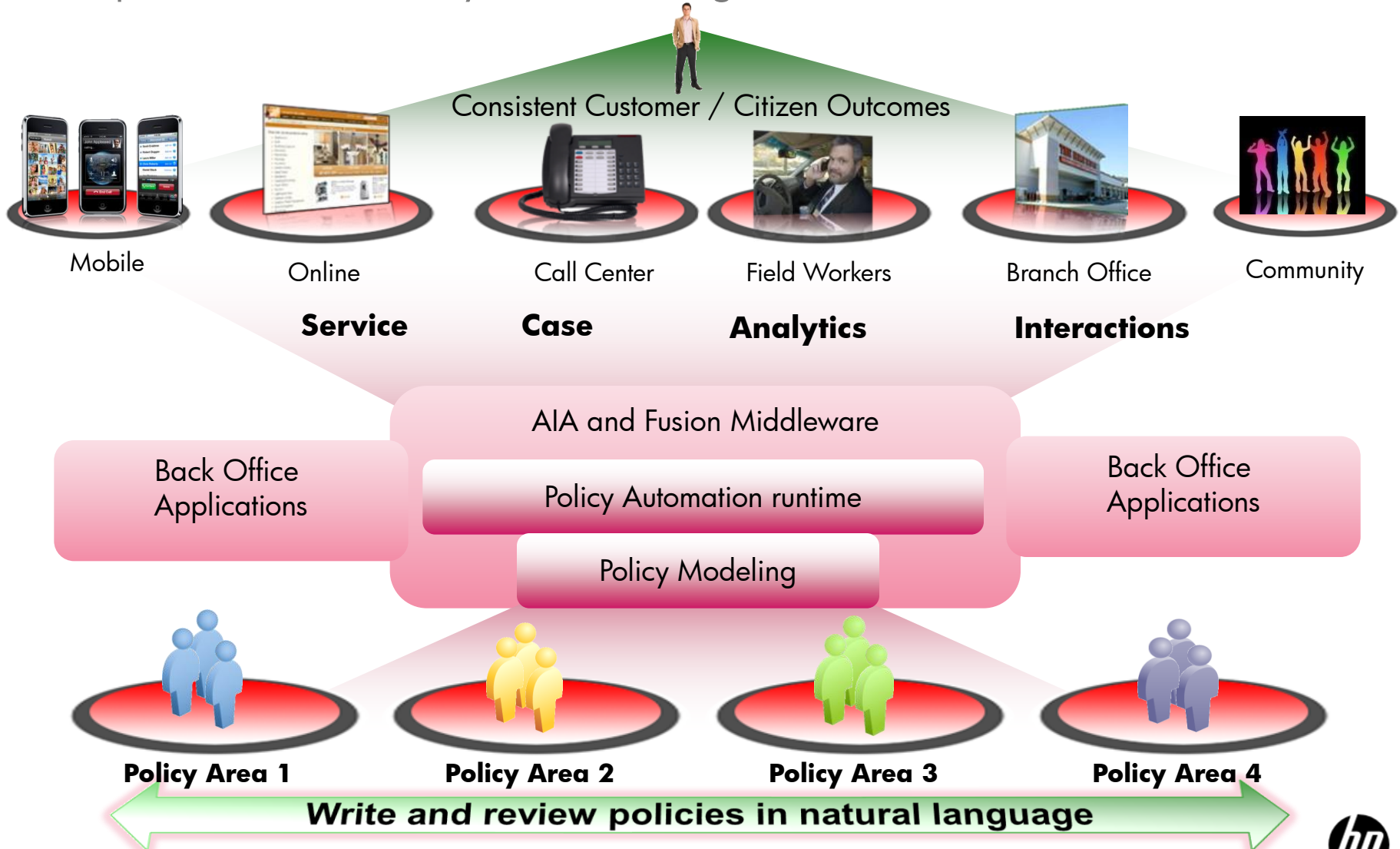


**Freedom of information is increasing the pressure from customers and citizens to prove compliance with policies and standards**

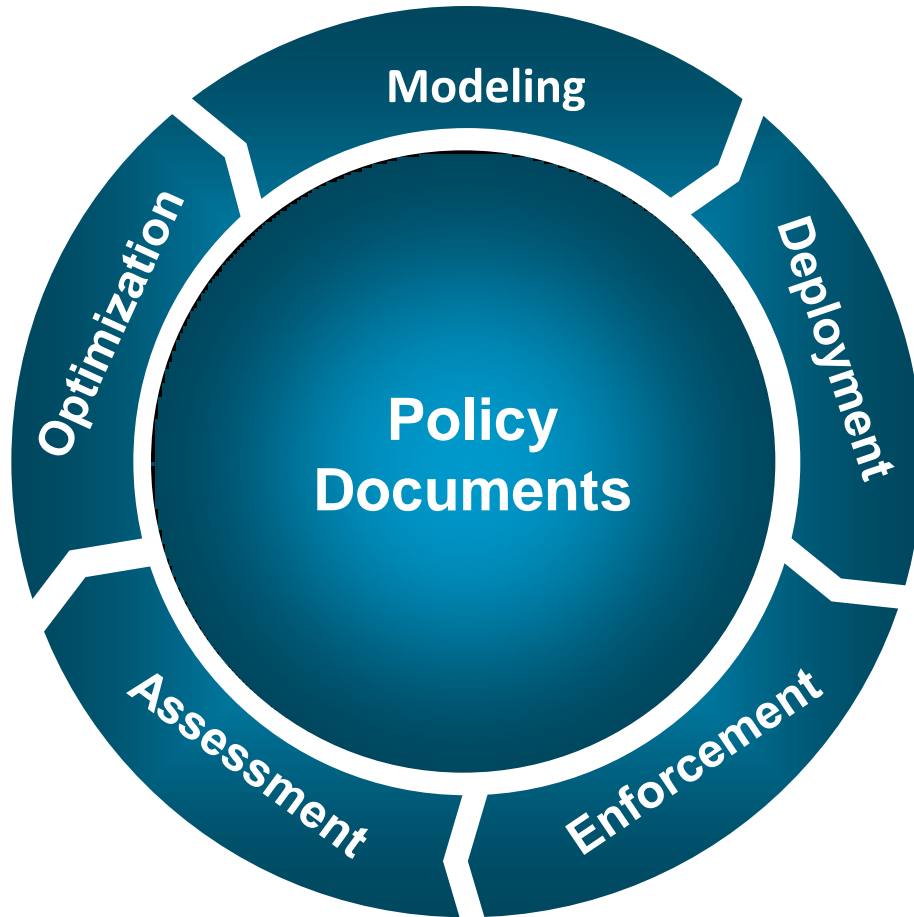
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# POLICY AUTOMATION STRATEGY

Multiple Channel Delivery, Flexible Integration

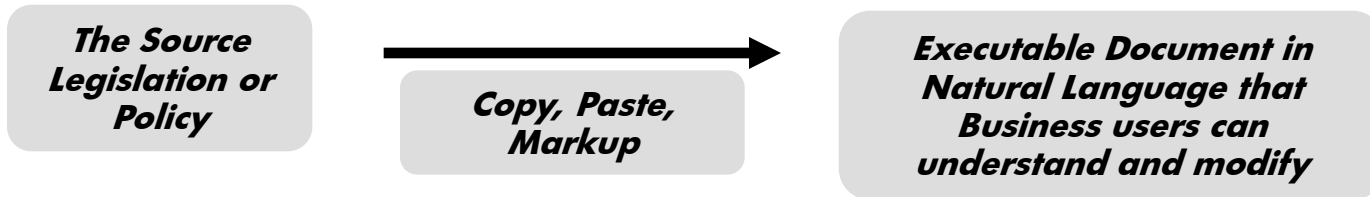


# KEY BENEFITS



- **Dramatically improves time-to-market for changes to policies and rules**
- **Simplifies development and maintenance**
- **Ensures accuracy and consistency in complex decisions and determinations**
- **Reduces the burden on IT resources**
- **Assesses the impact of changes in policy through “what if” scenarios**
- **Provides full decision reports**

# POLICY MODELING IN WORD



## Part 2 Eligibility to receive care

### 5.5 Residential care

- (1) A person is eligible to receive residential care only if:
  - (a) the person is assessed as:
    - (i) having a condition of frailty or disability requiring at least low level continuing personal care; and
    - (ii) being incapable of living in the community without support; and
    - (iii) meeting any other eligibility criteria for the level of care assessed for the person that are set out in the classification level applicable under the *Classification Principles 1997*; and
  - (b) for a person who is not an aged person — there are no other care facilities or care services more appropriate to meet the person's needs.

### 5.6 Community care

- (1) The person is eligible to receive community care only if the person:
  - (a) is assessed as having complex care needs; and
  - (b) would be assessed, if the person applied for residential care, as eligible to receive residential care at least at the low level of care; and
  - (c) prefers to remain living at home; and
  - (d) is able to remain living at home with the support of community care.

## Part 2 Eligibility to receive care

### 5.5 Residential care

**5.5(1) the person meets the criteria specified in the Approval of Care Recipient Principles as the criteria that a person must meet in order to be eligible to be approved as a recipient of residential care if**

- (a) all
  - (i) the person is assessed as having a condition of frailty or disability requiring at least low level continuing person care; and
  - (ii) the person is assessed as being incapable of living in the community without support; and
  - (iii) the person is assessed as meeting any other eligibility criteria for the level of care assessed for the person that are set out in the classification level applicable under the *Classification Principles 1997*

and

- (b) either
  - the person is an aged person; or
  - both
    - the person is not an aged person
    - there are not any other care facilities or care services more appropriate to meet the person's needs

### 5.6 Community care

**5.6(1) the person meets the criteria specified in the Approval of Care Recipients Principles as the criteria that a person must meet in order to be eligible to be approved as a recipient of community care if**

- (a) the person is assessed as having complex care needs; and
- (b) the person would be assessed, if the person applied for residential care, as eligible to receive residential care at least at the low level of care; and
- (c) the person prefers to remain living at home; and
- (d) the person is able to remain living at home with the support of community care

# RATES & POLICY TABLES

Original policy...

Item	Column 1 Family unit composition	Column 2 Age or status of applicant or recipient	Column 3 Amount of support
1	Sole applicant/recipient and no dependent children	Applicant/recipient is under 65 years of age	\$235.00
2	Sole applicant/recipient and no dependent children	Applicant/recipient is under 65 years of age and is a person who has persistent multiple barriers to employment	\$282.92
3	Sole applicant/recipient and no dependent children	Applicant/recipient is 65 or more years of age	\$531.42
4	Sole applicant/recipient and one or more dependent children	Applicant/recipient is under 65 years of age	\$375.58
5	Sole applicant/recipient and	Applicant/recipient is under 65	\$423.58

...modeled in Word

Monthly support allowance

**the applicant's family unit's monthly support allowance**

<b>235.00</b>	the applicant is a sole applicant and the applicant's number of dependent children = 0 and the applicant is under 65 years of age
<b>282.92</b>	the applicant is a sole applicant and the applicant's number of dependent children = 0 and the applicant is under 65 years of age and the applicant has persistent multiple barriers to employment
	the applicant is a sole applicant and the applicant's number of dependent children = 0 and the applicant is 65 years or more years of age
	the applicant is a sole applicant and the applicant's number of dependent children >= 1 and the applicant is under 65 years of age
	the applicant is a sole applicant and the applicant's number of dependent children >= 1 and

...modeled in Excel

Microsoft Excel - Allowances.xls

	Applicant	Number of dependent children	Age of applicant	Multiple persistent barriers to employment	Amount of support
1	the applicant is a sole applicant	0	< 65	FALSE	235.00
2	the applicant is a sole applicant	0	< 65	TRUE	282.92
3	the applicant is a sole applicant	0	>= 65	FALSE	531.42
4	the applicant is a sole applicant	>= 1	< 65	FALSE	375.58
5	the applicant is a sole applicant				
6	the applicant is a sole applicant				

# MULTI-LINGUAL

Easily add new verbs as needed

## validering har utförts för patienten

forall(besöken till relevant patient, validering har utförts av b

## validering har utförts av besöket om

besöket är inte det relevanta besöket

eller

både

besöket är det relevanta besöket

och

forall(åtgärderna för besöket, information för åtgärde

## information för åtgärden har samlats in för validering om

resultat för åtgärden är bekant

och

orsak till avslag för åtgärden är bekant

och

det är bekant antingen problem med validering av åtgärden h  
kontakta Försäkringskassan)

Model rules in your  
native language in Word  
or Excel

Integrate natural language  
questions into any  
application

Redigera Verb

Aktiva Verbformer Passiva Verbformer

Klicka på Tab för att böja verben automatiskt.

Aktiva tempusformer

<b>Infinitiv</b>		<b>Imperfekt</b>	
att	<input type="text" value="vara"/>	han/hon/de	<input type="text" value="var"/>
<b>Enkel presens</b>		<b>Perfekt/Pluskvamperfekt</b>	
han/hon/de	<input type="text" value="är"/>	han/hon/de har/hade	<input type="text" value="varit"/>

OK Annulera

Skatteverket

Datagranskning: Inte kännemärken Sammanträde: 115

[Datagranskning](#) | [Analyssammanfattning](#)

### Uppgifter om försäljningen

På vilket sätt har fastigheten avyttrats? \*

Har hela fastigheten avyttrats? \*  Ja  Nej

Vilken dag såldes fastigheten? \*

Fyll i datum (ÅÅÅÅ-MM-DD) eller välj i kalenderikonen

Submit



Varje ovanstående fråga är också länk till mer information. Klicka på frågetexten ovan för att få hjälp med att svara på frågan på skärmens högersida.

Internet 100%

# DETERMINATION REPORTING

## Alex Smith is eligible to be approved as a recipient of residential care.

The reasoning applied in reaching this conclusion is set out in hierarchical form below. Answers you have provided to questions during the interview are presented as active links. To review or change the answers to these questions, click the links provided.

Use the expand  and contract  icons to show or hide additional detail in the report.

### This conclusion is justified on the following grounds:

- Section 5.51(1) is satisfied.
  - Section 5.51(1)(a) is satisfied.
    - [Alex Smith is assessed as having a condition of frailty or disability requiring at least low level continuing person care.](#)
  - Section 5.51(1)(a)(ii) is satisfied.
    - [Alex Smith is assessed as being incapable of living in the community without support.](#)
  - Section 5.51(1)(a)(iii) is satisfied.
    - [Alex Smith is assessed as meeting any other eligibility criteria for the level of care assessed for the person that are set out in the classification level applicable under the Classification Principles 1997.](#)
- Section 5.51(1)(b) is satisfied.
  - [Alex Smith is not an aged person.](#)
  - [There are not any other care facilities or care services more appropriate to meet Alex Smith's needs.](#)

[continue](#)

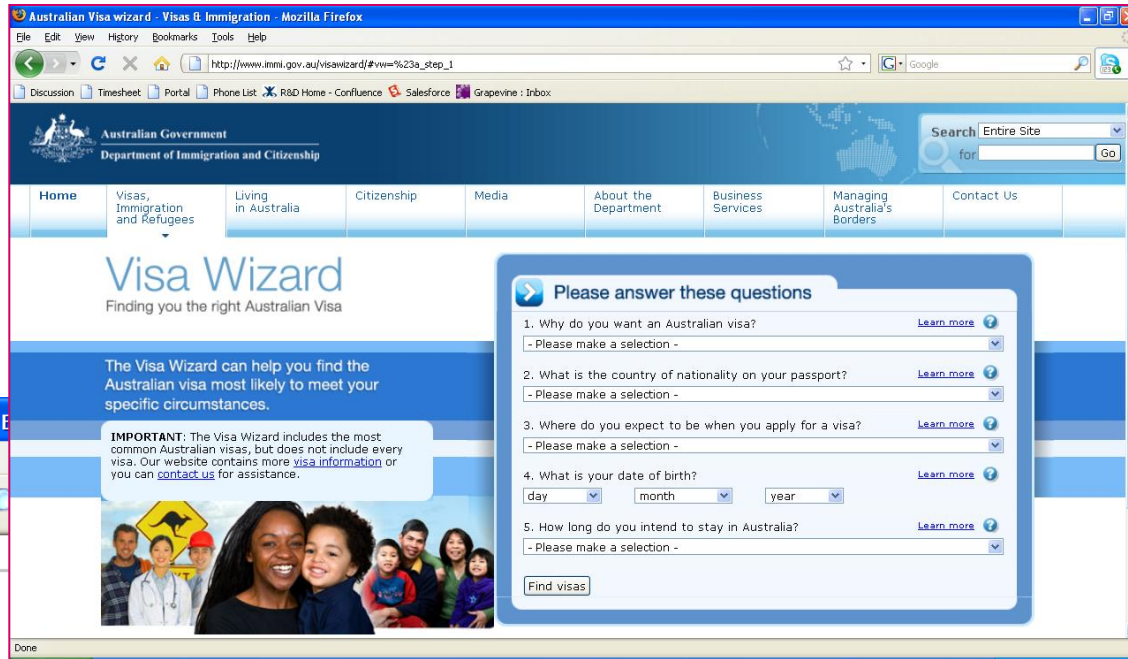
*Positive and Negative statements automatically created to explain determination*

*Can be used to build the content for a letter of advice or audit*

*Natural language engine provides personalization and pronoun substitution*



# DYNAMIC INTERVIEWS



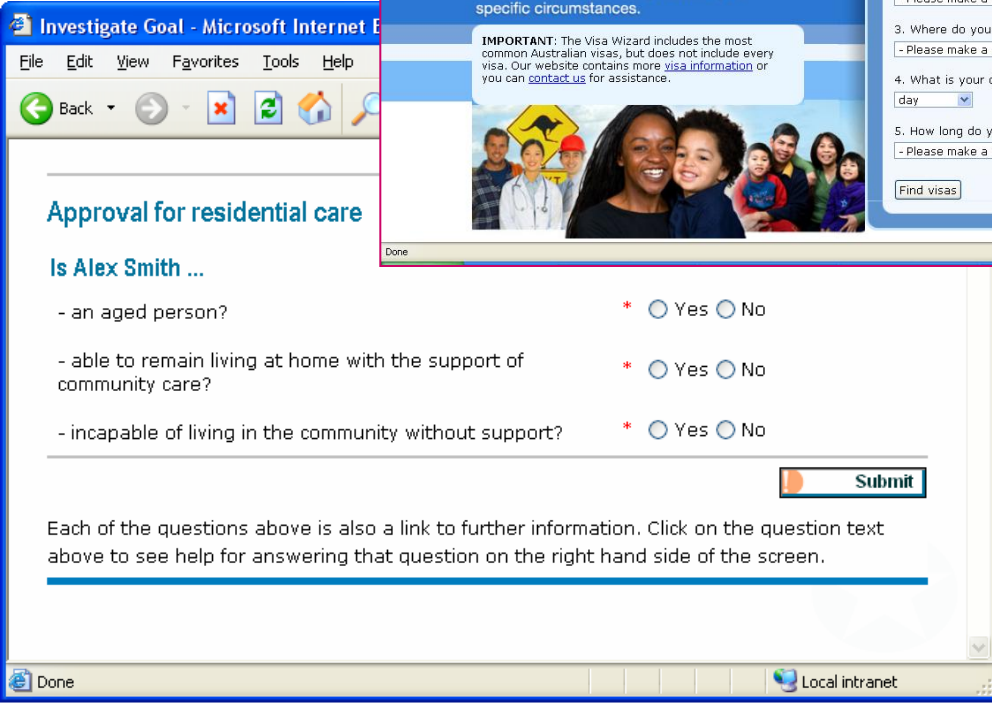
Screen authoring for non-technical users – easy to maintain

Questions automatically created from source document without need for any programming

Asks least number of questions in most logical order to finalize a determination

Implement either via a default Web user interface or by wrapping Web Service API

Above: Interview using Oracle Determinations Server web service to drive questions



Left: Oracle Web Determinations





# BACKWARD-CHAINING

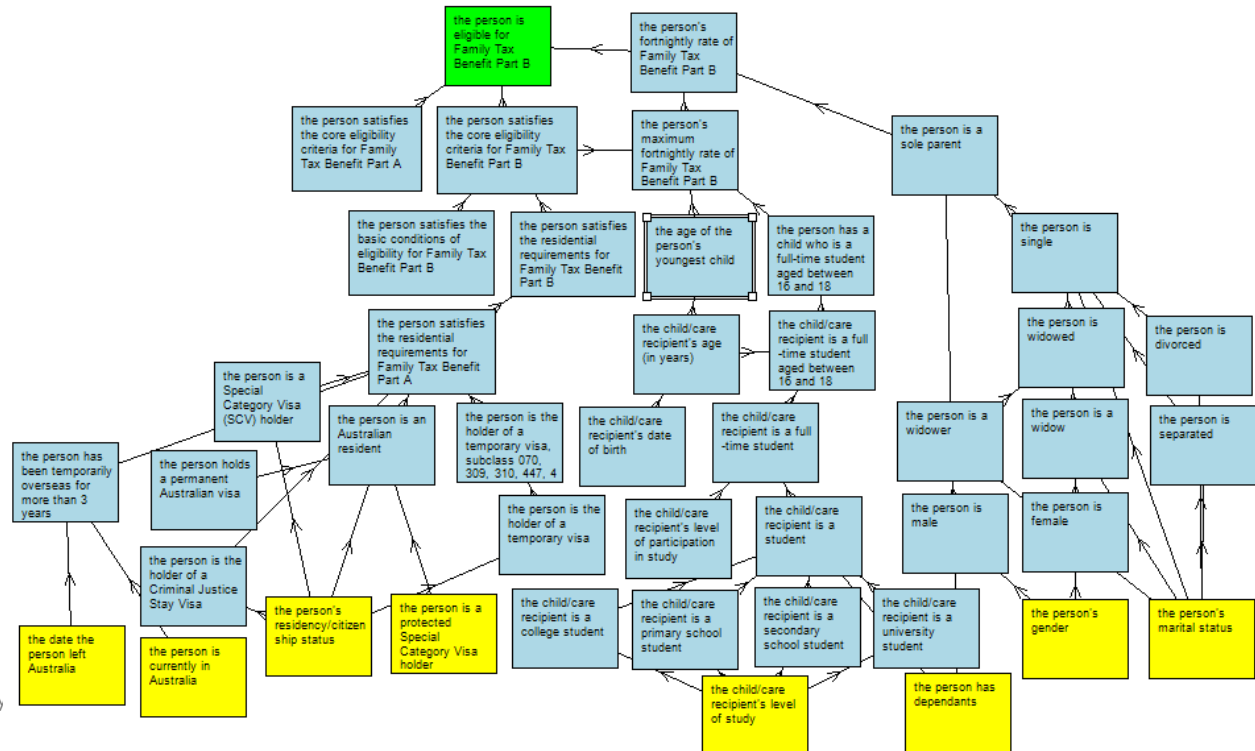
Show how a result was obtained, and what data was required

- In OPA, **backward chaining is free** (always on)
- This is critical to supporting **efficient interactive interviews**
- Decision reports use it to show **how a result was obtained**
  - Intermediate rules can be easily **excluded from a decision report**
  - Also provides *in*decision reports, showing additional data needed

Key

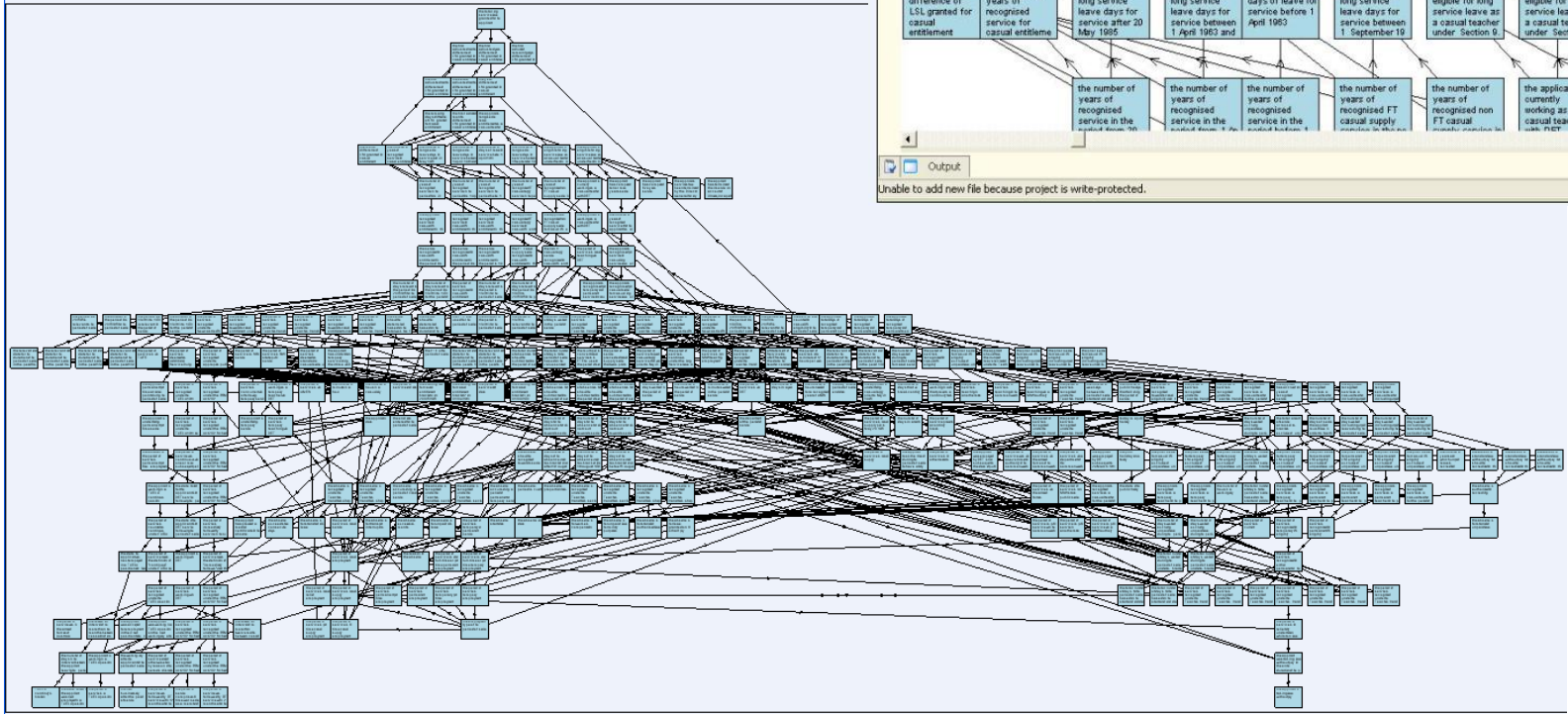
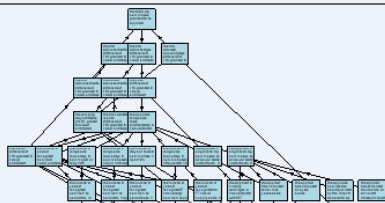
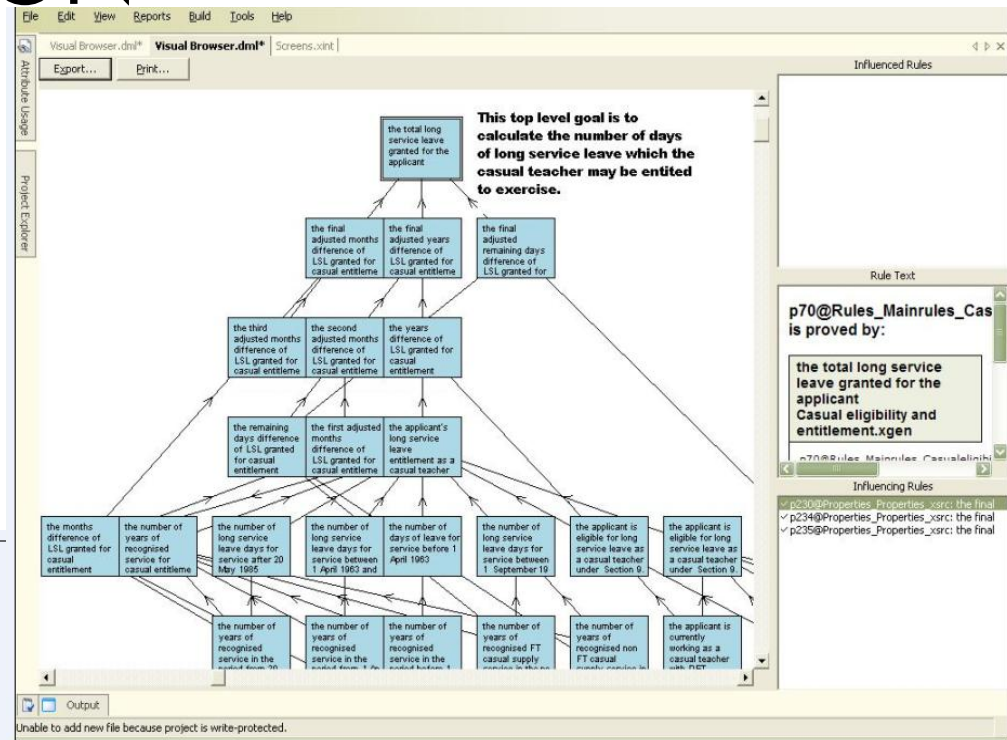
Conclusion

Data needed (from backward chaining)

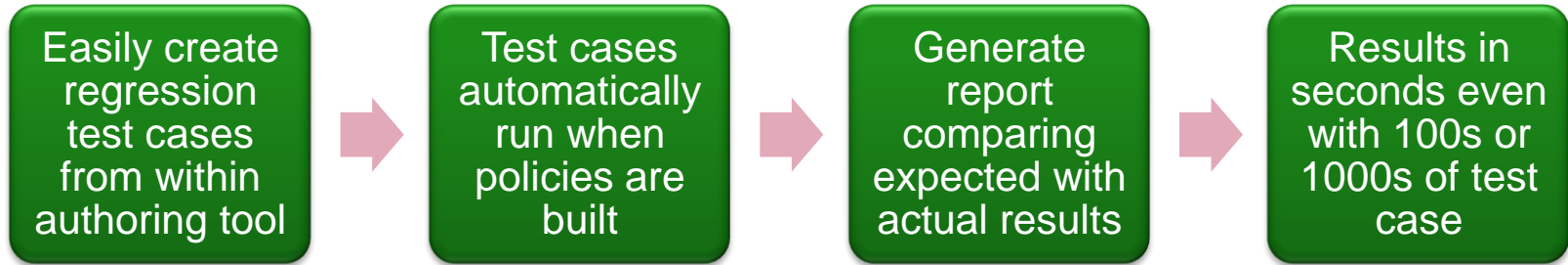


# POLICY VISUALISATION

- Automatically generate relationship graph linking policy fragments
- Automatically traverse all potential decision routes through the policy or legislation
- Visual topology highlights gaps, islands, inconsistencies



# REGRESSION TESTING



Test Cases
Outcomes
Validate Script
Execute Script

ID	Display Name	Text
b15@Rules_... premium	test Insurance Prem...	the person is 21 years of age and over the total Car insurance Premium

**Add Outcome Attribute**

ID: premium

Text: the total Car insurance Premium

Display Name: Insurance Premium

Threshold

Value: 80 percent

Bounds: Upper

Ignore:

Threshold Value:

Bounds:

Ignore:

Default Value Value: true

**Regression Tester Report**  
Generated 10/08/2009 10:11 PM

**Summary**

Test cases		Attributes	
Number of test cases:	6	Number of outcomes:	6 (6 significant)
Test cases passed:	5 (83.33%)	Matching outcomes:	5 (83.33% of total). Of these, 5 (100% of matching) matched exactly and 0 (0% of matching) matched after allowance for defined thresholds.
Test cases failed:	1 (16.67%)	Different outcomes:	1 (16.67%)
Test cases ignored:	0 (0%)	Ignored outcomes:	0 (0%)
Test cases with errors:	0 (0%)		

**Test case comparison results**

Cases	Entities	Outcomes	Expected	Actual
Test Case 1 Pass (1 exact, 0 threshold and 0 ignored)	global[global 1]	the claimant is eligible for the benefit	false	false
Test Case 2 Pass (1 exact, 0 threshold and 0 ignored)	global[global 1]	the claimant is eligible for the benefit	true	true
Test Case 3 Pass (1 exact, 0 threshold and 0 ignored)	global[global 1]	the claimant is eligible for the benefit	false	false
Test Case 4 Pass (1 exact, 0 threshold and 0 ignored)	global[global 1]	the claimant is eligible for the benefit	false	false
Test Case 5 Fail (1 out of 1 items)	global[global 1]	the claimant is eligible for the benefit	false	false
Test Case 6 Pass (1 exact, 0 threshold and 0 ignored)	global[global 1]	the claimant is eligible for the benefit	false	false



# OTHER FEATURES

- Syntactic and Non-syntactic language parsers (recognises language rules)
- Business Rule Re-use
- Temporal Reasoning
  - Adds a temporal dimension to all data
  - Calculate results across all relevant time periods and data
- Linear inferencing Logic
  - Order independence – conclusions must be independent of order input is received
  - No session memory – if input changes, prior inputs must not affect the result
  - Reverse Entropy – Adding input cannot cause conclusions to change (or to be retracted)
  - Knowable conclusions – It must be possible to reach an answer, given sufficient inputs
  - Single Proof – there must only be a single way to prove each result



# ANALYST COMMENT

Oracle Policy Automation (formerly known as Haley Office Rules) is recognized as *unique* as well as being a leader



## PRESS RELEASE

**Haley Limited Named a Market Leader in Business Rules for Business Analysts by Leading Independent Research Firm**

**Report Notes Haley's Unique, Natural-Language Rule Authoring Environment and Comprehensive Product Road Map**

Washington, DC – May 13, 2008 - Haley Limited, recognized since 1989 as leading provider of solutions for consistent and transparent decisions by both public- and private-sector organizations, announced today that the recently released research report "The Forrester Wave™, Business Rules Platforms, Q2 2008" has named both Haley Expert Rules and Haley Office Rules as leaders in the category of Business Rules for Business Analysts.

The report by Forrester, a leading independent technology research firm, notes "Haley provides the most advanced natural language authoring facilities in the market, along with both a general purpose platform and a platform tuned for automating entitlement applications."

Forrester evaluated 13 business rules platforms from 11 vendors and used 175 different criteria in its research. The report, written by John Rymer and Mike Gualtieri, evaluated vendors on both the strength of their product offerings and their overall strategies. The report stated that Haley Expert Rules, formerly known as Haley Authority/Haley Rules, emerged as a leader in the general-purpose business platforms section of the report and "earned high scores across the board in our feature categories."

In its evaluation of specialized business platforms, Forrester named Haley Office Rules a leader for eligibility-determining applications, pointing out that

"Haley Office Rules is the only platform to offer rule authoring in Microsoft Word, which permits business analysts to extract rules directly from plain text legislation or policy documents... When coupled with the Haley Determinations Engine, the result is a strong platform for eligibility and other determination applications rooted in legislation and written regulations... Haley's planned enhancements include vertical solution modules for benefits eligibility determination and fraud detection."

April 8, 2008  
The Forrester Wave™,  
Business Rules Platforms, Q2 2008  
by John B. Rymer and Mike Gualtieri  
for Application Development & Program Management Professionals

**"Haley Office Rules is the only platform to offer rule authoring in Microsoft Word, which permits business analysts to extract rules directly from plain text legislation or policy documents... When coupled with the Haley Determinations Engine, the result is a strong platform for eligibility and other determination applications rooted in legislation and written regulations.."**

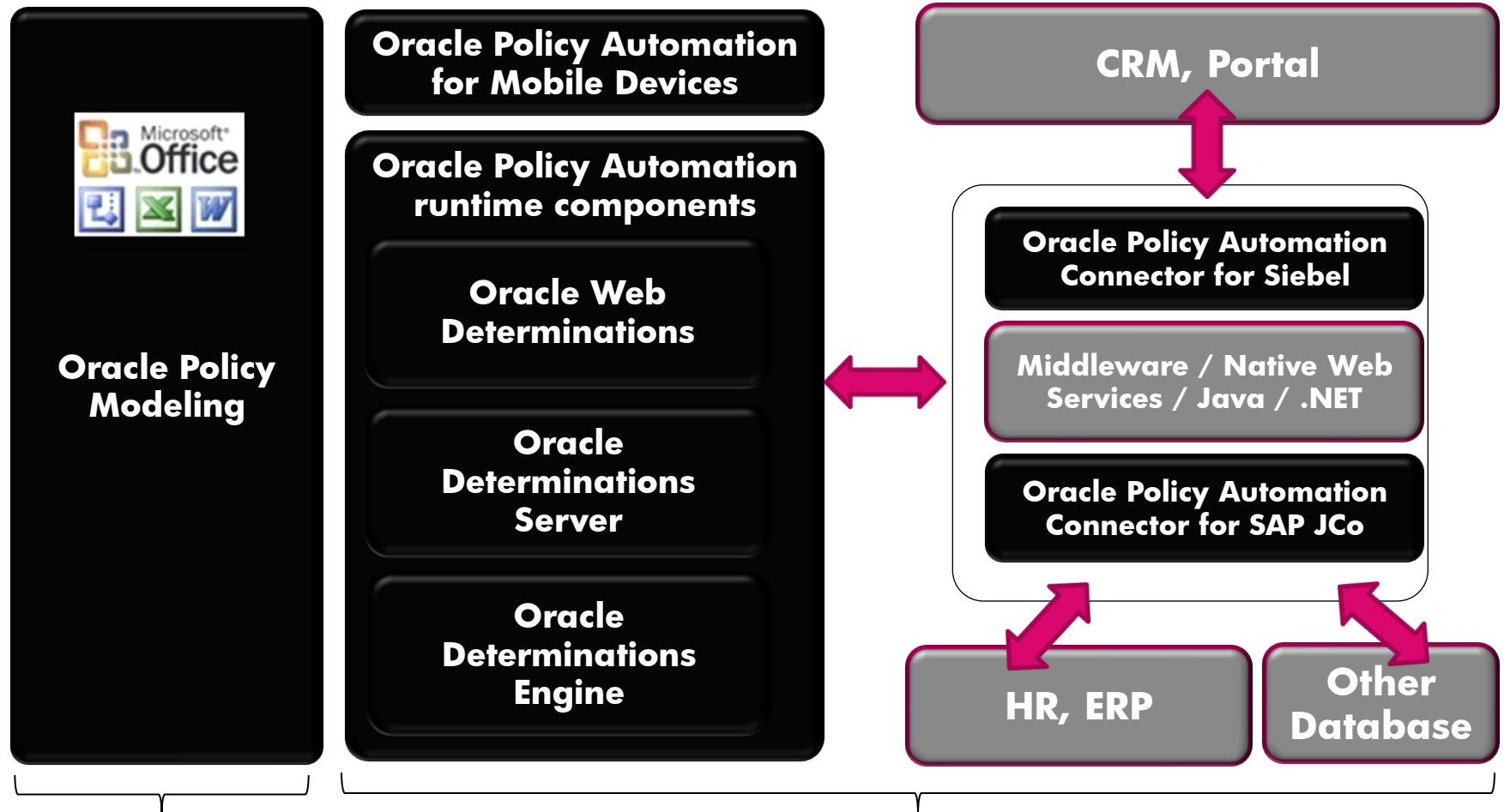
For more information, contact John Rymer, President of Strategy, at [redacted]. Haley's rule products are prominently featured and well reviewed in this important research report by Forrester is a testament to the ongoing hard work

**This report is available through Forrester.**



# FLEXIBLE SOLUTION ARCHITECTURE

Embed consistent determinations through the enterprise



***Business Rule Capture  
and Management***

***Business Rule Deployment***

# LIVE EXAMPLES

Some key publicly-accessible  
websites



# AUSTRALIAN DEPARTMENT OF IMMIGRATION AND CITIZENSHIP

<http://www.immi.govt.au/visawizard/>

<http://www.citizenship.gov.au/citizenshipwizard/>

## Overview

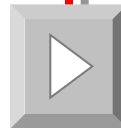
- The purpose of the Department of Immigration and Citizenship (DIAC) is to ‘enrich Australia through the well managed entry and settlement of people’.
- 6,000 staff located in all states and territories, 160 Australian-based staff in 60 countries

## Challenges

- Lack of support for staff in decision-making roles
- Gaps and vulnerabilities in systems and processes
- High profile errors in decisions resulting in political flak

## Solution

- A business-user driven solution that allows DIAC to capture, test, maintain and execute their policies and legislation
- Integrated within the overall IBM project solution in a service-oriented architecture
- Self service portal including a Visa Wizard and Citizenship Wizard



## Business Results

- Massive increase in self service using the Visa Wizard and Citizenship Wizard
- Reduced strain on frontline staff to deal with enquiries about potential Visa eligibility

## Strategic Impact

- Delivery of a large number of projects designed to improve the work environment for DIAC staff, clients and partner organizations
- DIAC will be able to better serve clients through
  - Consistent operating processes
  - Easily accessible instructions
  - Integrated record keeping
  - Effective QA processes
  - Accessible online training
  - Effective reporting



# AUSTRALIAN DEPARTMENT OF IMMIGRATION AND CITIZENSHIP



## Challenges

- Improve openness and accountability
- Deliver a unified and accurate internal view of all client dealings
- Streamline overlapping processes and deliver global consistency

## Results

- Visa applicants can now test eligibility against 54 visa classes through self-service
- 98% of call centre visa inquiries are now handled through self-service
- Rules automated for over 750,000 annual visa applications, delivering consistency for 7,000 global staff

# AUSTRALIAN DEPARTMENT OF IMMIGRATION AND CITIZENSHIP

## – A major implementation:

- 3 rule based systems in production use
- 54 visa sub-classes implemented
- 10,000+ rules (conclusions)
- 30,000+ attributes (data items)
- 16,000+ regression test cases

## – First prize in two major IT awards:

- Australian Excellence in e-Government Award
- International FutureGov Government Technology Awards

## – Rapid uptake

- Since September 2008, the visa wizard has been viewed more than 3.3 million times, at an average of 8300 daily
- Since December 2008, the citizenship wizard has been viewed over 220000 times at an average of 776 views daily.

# HER MAJESTY'S REVENUE & CUSTOMS EMPLOYMENT STATUS INDICATOR

<http://www.hmrc.gov.uk/calcs/esi.htm>



## Overview

- HMRC is responsible for collecting the bulk of UK tax revenue, as well as paying Tax Credits and Child Benefits, and strengthening the UK's frontiers.
- 29.5 million taxpayer records, 8.4 million Self Assessment

## Challenges

- Pan Government requirements for administrative efficiencies
- High volumes of enquiries at high cost
- Mystery shopper exercise: same enquiry made 9 times, 9 different responses given by staff
- Massive uncertainty for taxpayers

## Solution

- Interactive systems deployed which faithfully reflect complex legislative and associated policy and business policies
- Interactive guidance platform based on Oracle Web Determinations

## Business Results

- Up to ten-fold productivity improvements for system development compared to conventional software approaches
- For first system rolled out (employment status):
  - Business case assumed 25% self service but actual results over 90%
  - Saved millions of pounds in additional headcount that would have been required without automation
  - Projected headcount reallocation of over 1,000 staff

## Strategic Impact

- Oracle continues to assist HMRC in delivering on its Public Service Agreement targets
- Oracle Policy Automation established as key delivery tool in 5 year Strategic Plan



# INTERNAL REVENUE SERVICE (US)

<http://www.irs.gov.individuals/article>

## Publicly deployed system

- Sales Tax Deduction Calculator on IRS.gov:  
<http://www.irs.gov/individuals/article/0,,id=152421,00.html>

## Flexibility

- With OPA, policies can easily be modified by non-IT personnel
- Able to apply complex rules to individual taxpayers' circumstances

## Subject Matter Experts

- Build and change policy without having to rely on IT
- Enhances policy accountability as subject matter experts are controlling the solution
- Facing a knowledge drain in the next 5 years, OPA provides a knowledge repository to capture experience

## Time to market

- OPA is proven to reduce significant time in transforming policy documents into an active form
- System maintenance greatly simplified due to natural language rule format

# WORKCOVER NEW SOUTH WALES

<http://selfassessment.workcover.nsw.gov.au/canopy/smb/>

[http://www.workcover.nsw.gov.au/WorkersCompensation/PrivateRulings/Self\\_Assessment\\_Tool/Pages/default.aspx](http://www.workcover.nsw.gov.au/WorkersCompensation/PrivateRulings/Self_Assessment_Tool/Pages/default.aspx)

- WorkCover NSW is a government body tasked with ‘working in partnership with the NSW community to achieve safe workplaces, effective return to work and security for injured workers.’
- **Safety Self-Assessment Tool**  
Assesses employers against safety legislation and regulation and lets the employer know how they are doing in terms of managing workplace health and safety. It also lets the employer compare their performance anonymously with other businesses across sectors and sizes, and provides them with guidance to help improve their management of workplace health, safety and injured workers. This tool is available on the agency’s website
- **Worker Status Self Assessment Tool**  
This rulebase is for Private Rulings with regard to whether an individual is an employee or a contractor. This affects the type of worker’s compensation coverage which is required for the individual, as well as other issues in relation to tax and superannuation (equivalent to pension in the UK, 401(k) in the US). This rulebase was based on legislation, regulations and policy. It is available on the agency's website: (see link at the bottom of the page: ‘Worker Status Self Assessment Tool’)



# BUSINESS LINK (UK)

Subtitle Placeholder Goes Here

[Business Link](#) is a government-funded advice service for small and medium businesses in the UK. A partner built, deployed and maintains numerous public facing OPA guidance applications for them. Here are some examples.

[Assess the best method of payment for your transaction](#)

[Assess the health of your business](#)

[Business start-up organiser](#)

[Check tax and legal issues when selling a business](#)

[Choose the right legal structure for your business](#)

[Choose the right advertising media](#)

[Closing a business checklist](#)

[Create a growth action plan](#)

[Create a personalised regulation checklist](#)

[Discover who your most valuable customers are](#)

[Environmental compliance assessment](#)

[Find out if you can claim R&D tax relief](#)

[Find out which Incoterm you should use](#)

[Get the right website for your business](#)

[Health and safety performance indicator](#)

[Identify export opportunities](#)

[Identify potential sales channels](#)

[Identify where you can save money by going green](#)

[Identify which VAT \(sales tax\) scheme your business is eligible to use](#)

[Managing expectant and new mothers](#)

[Personal development plan](#)

[Setting up a basic IT system](#)

[When to register for VAT \(sales tax\)](#)

[When you can deregister for VAT](#)

# Summary

- Oracle Policy Automation is ideally suited for organisations that:
  - Have lots of complex or complicated policies
  - Are frequently changing legislation or policies
  - Have large volumes of decisions being made based on those policies
  - Want to reduce costs of maintaining business rules that support the policies
- Why Oracle Policy Automation is different to other 'rules engines'
  - Allows rules to be written and maintained in natural language, in MS Word and Excel, by non-technical users or SMEs
  - Multi-lingual
  - Loves complexity
  - Allows rule re-use throughout the organisation
  - Enforces logic internally – linear inferencing, temporal reasoning, determination reporting



# Q&A

