

# IPS-CSC Forum

17 August 2010

## “Enhancing Public Service Through Policy Automation”

Ballroom 3, Orchard Hotel



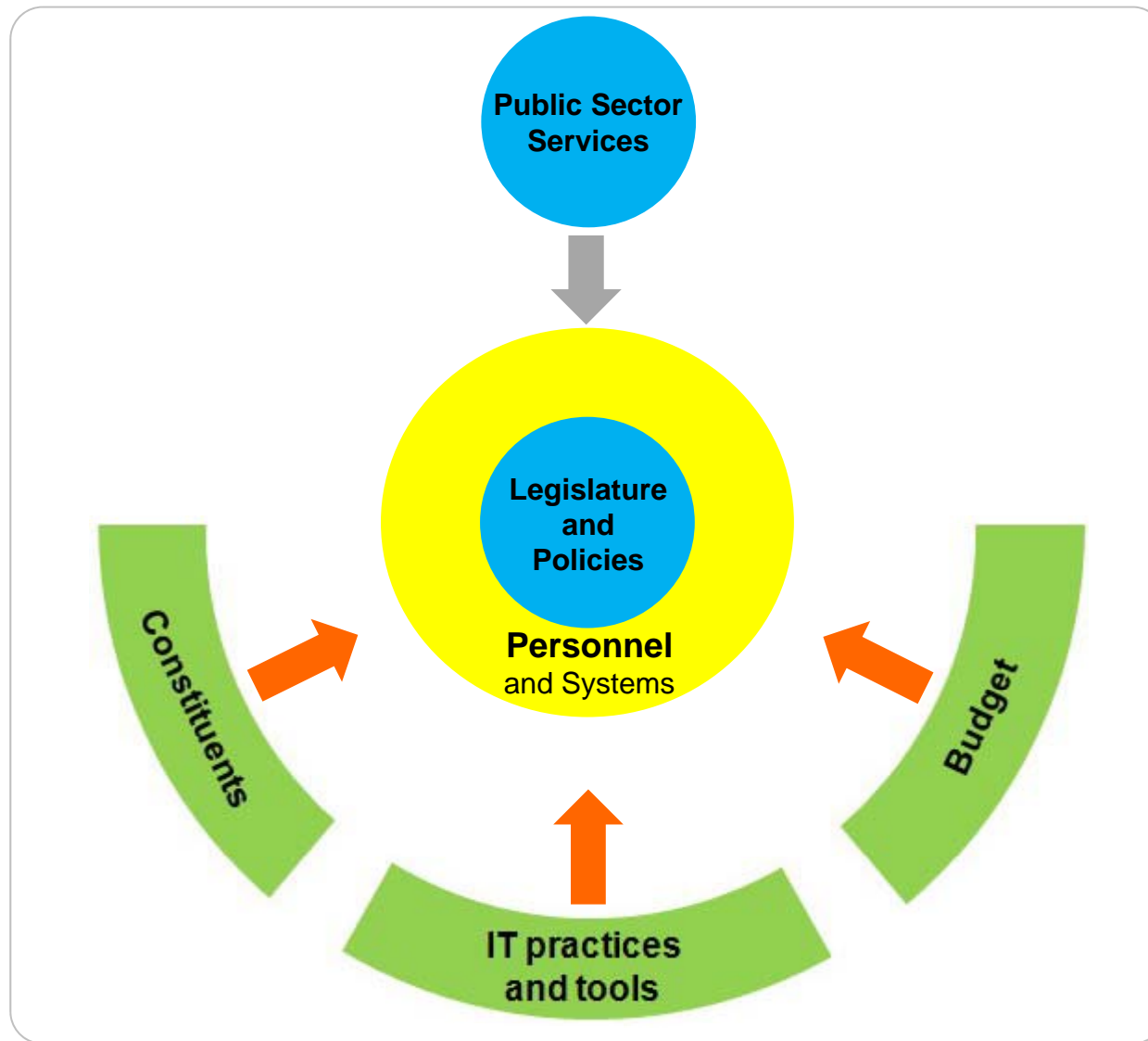
# Automating Policy Implementation

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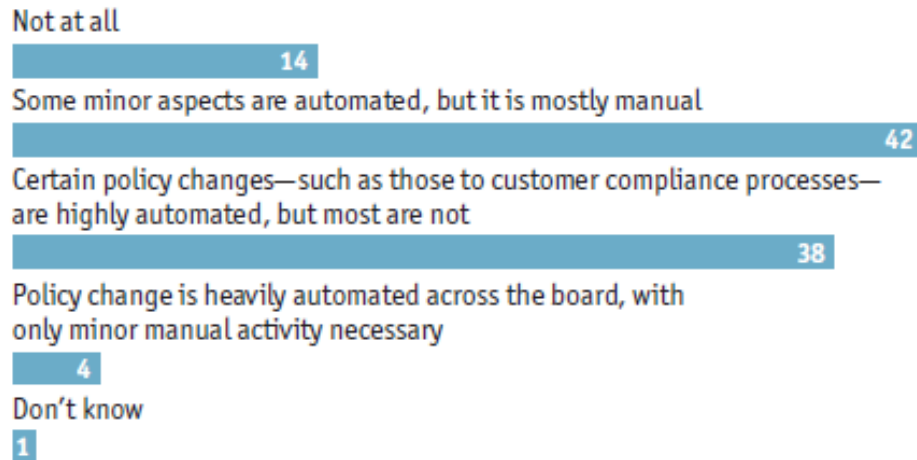
# Public Sector Administration



# Policy Implementation Challenges

**How automated is policy implementation in your organisation?**

Source: "Enabling Efficient Policy Implementation" – EIU, December 2009



**What are the biggest barriers to successful implementation of significant new policies?**

Source: "Enabling Efficient Policy Implementation" – EIU, December 2009



# Policy Implementation Challenges

## Public Sector Responses

Every interaction with citizens is governed by logic based on policy and legislation:

- Am I eligible for a welfare payment?
- Do I need a permit for this?
- How much tax do I have to pay?
- What type of visa should I get?
- etc

Has inconsistent policy implementation across the organisation caused any of the following in the last year?

Source: "Enabling Efficient Policy Implementation" – EIU, December 2009



# Approaches to Implementing Public Sector Policies

There are **3 main ways** to handle complex interactions / decisions.

1

**Employ rooms  
full of people  
trained to make  
the decision  
... but**

- People are expensive, and they all require detailed training
- They make mistakes, are inconsistent, and biased
- Can be inefficient
- High turnover of staff means shortage of skills

2

**Write custom  
code and scripts  
... but**

- Can be very difficult, very complex, and very expensive to write
- Very difficult and costly to update to keep up with policy change (which they do all the time!)
- Integration with other apps can be complex

3

**Policy  
Automation**

- **Quick and easy** to set up, use and change
- **Integrates** with existing applications, **web deployable** for self service
- **Business owners own the rules**



## Policy Automation

**The use of computer systems to automate the interpretation and application of Policies**

- Uses **natural language** to empower non-technical subject matter experts
- Translates **legislation and policy documents into software tools** that automate and guide decisions
- An approach to business rules specifically adapted for the needs of government
- **Mirrors the policy life cycle** rather than the software life cycle
  - Roll changes out at the time of effect, not months later

# Natural Language Authoring

- Empower business users to translate legislation into natural language business rules
- Translate policies into configurable, flexible and reusable rules

Source legislation  
or policy



copy source material,  
paste into Word, markup



executable document in natural language which  
business users can understand and modify

1. Borrower must be a Singapore-based company (not necessarily Singapore-owned) with at least 3 strategic business functions in Singapore\*\* that is borrowing to support its overseas expansion.

- Borrower can tap on the IF Scheme to purchase fixed assets and/or purchase factories for use by its overseas subsidiary company, which is at least 50% equity owned by the Singapore-incorporated company.
- Borrower with no physical set-up overseas but is exporting services to overseas market (such as leasing companies) can also tap on the IF Scheme to finance the purchase of fixed assets for use overseas.

1 **the borrower satisfies the Singapore based company requirements if**

the borrower is based in Singapore and  
the borrower has at least 3 strategic business functions in Singapore and  
the borrower is borrowing to support its overseas expansion and  
either

all

the borrower is purchasing fixed assets and/or factories for use by its overseas subsidiary company and  
the borrower owns at least 50% of the overseas subsidiary's equity

or

all

the borrower does not have physical setup overseas and  
the borrower is exporting services to overseas market and  
the borrower is financing the purchase of fixed assets for overseas use



# Applying The Policy

The screenshot shows a Mozilla Firefox browser window titled 'Singapore Based Company - Web Determinations'. The address bar shows 'http://loc'. The browser's menu bar includes File, Edit, View, History, Bookmarks, Tools, and Help. The toolbar shows various icons for navigation and search. The main content area is titled 'Web Determinations' and has tabs for 'Summary' and 'Data Review'. Below the tabs are buttons for 'Save', 'Save As', 'Load', and 'Reset'. The form content is titled 'Singapore Based Company' and contains three questions, each with a radio button for 'Yes' and 'No':

- Is ABC Technologies based in Singapore? \*
- Does ABC Technologies have at least 3 strategic business functions in Singapore? \*
- Is ABC Technologies borrowing to support its overseas expansion? \*

A 'Submit' button is located below the questions. At the bottom of the page, there is a footer that reads 'Standard application copyright and disclaimer'.

*Questions automatically created from source document without need for any programming*

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

# Transparency and Accountability

## ABC Technologies is eligible for the Internationalisation Finance Scheme.

- ☐ ABC Technologies satisfies the Singapore based company requirements.
  - ☐ Section 1 is satisfied.
    - ☐ ABC Technologies is based in Singapore.
    - ☐ ABC Technologies has at least 3 strategic business functions in Singapore.
    - ☐ ABC Technologies is borrowing to support its overseas expansion.
    - ☐ ABC Technologies is purchasing fixed assets and/or factories for use by its overseas subsidiary company.
    - ☐ ABC Technologies owns at least 50% of the overseas subsidiary's equity.
  - ☐ ABC Technologies satisfies the turnover requirements.
    - ☐ Section 2 is satisfied.
      - ☐ ABC Technologies satisfies the turnover requirements for a non-trading company.
        - ☐ ABC Technologies is a non-trading company.
        - ☐ ABC Technologies is a publicly listed company with less than S\$300 million turnover.
    - ☐ ABC Technologies's overseas business benefits Singapore.
      - ☐ Section 3 is satisfied.
        - ☐ ABC Technologies's business complements the Singapore company's core operations.
        - ☐ ABC Technologies's business result in economic spin-offs to Singapore.

*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*



# Benefits of Automating Policy Implementation

- **Addresses the drawbacks** of the manual approach:
  - Increased productivity
  - Consistent and accurate
  - Automatic audit reports for every decision
  - Greatly reduced cost of training
- **Outperforms** traditional code-based customisation:
  - Faster time-to-market
  - Maintenance mirrors changes to the source material
  - Develop once, use everywhere: “single source of truth”
  - Increase visibility / auditability of every decision
  - Simplify implementation & maintenance, while lowering risk

# Example Outcomes with Policy Automation

Improved Agility and Customer Service with Reduced IT Project Costs

	Area	Without Automation	With Automation	Net Benefit	% Benefit	
Lower IT Project Costs	Policy Capture	200 days	20 days	180 days	90%	Improved Agility
	Logic Updates	90 days	3 days	87 days	97%	
	Call Center Training	60 days	5 days	55 days	95%	
	Business Logic Implem.	\$1M	\$200K	\$800K	80%	
Higher Quality	Processing days / case	30	3	27	95%	Improved Customer Service
	Call Center calls / case	4	1	3	75%	
	Error Rate / 1000 cases	50	24	26	52%	
	Appeal Rate / 100 cases	5	3	2	45%	

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Source: Customer interviews. 2000-2009.

\*Relative expenditure figures based on customer side-by-side study vs. other implementation techniques



# Potential Users of Policy Automation Solutions

Any organisation that has a need for:

1. Handling large, complex or inter-related policies, including those that vary over time
2. Delivering audit reports of how decisions are reached
3. Efficient modeling by business users of natural language rules in Microsoft Word and Excel documents
4. Ensuring rule changes across releases are well-managed with strong regression testing capabilities
5. Optional interactive web-based decision making for customers or employees to obtain their own answers to complex questions
6. A high-speed determinations solutions in a service-oriented architecture
7. Ease of integration with ERP, CRM and other systems

# Possible Applications in the Public Sector



## Tax

Capture expert tax law interpretation  
Deliver self-service tax calculators and on-line guidance  
Calculate complex tax obligations

## Child Welfare

Deliver cross-agency child protection guidance

## Immigration and Border Control

Provide online visa eligibility  
Deliver up to date customs officer decision assistance

## Healthcare

Pre-qualify for medical treatment  
Compute eligible reimbursements

## Human Resources

Provide pre-screening advice across all benefit programs  
Determine benefit, compensation and other payments  
Determine eligibility for promotion

## Licensing/Permits

Determine types of require licences to start a business  
What are the fees payable ?

# Internal Revenue Services



- **Background**

- The Internal Revenue Service (IRS) is the United States federal government agency that collects taxes and enforces the internal revenue laws.
- Over 165 million taxpayer records provide over 1 trillion dollars annually.

- **Issue**

- Tax calculation software could not be updated in time for the annual filing seasons – manual processing and backlogs developed.
- Guidance on IRS.gov and in call centers did not match rules used to process tax returns.
- Complexity of tax legislation and policy resulting in inaccuracy over the application of tax rules.
- Approx. US\$10 billion in Earned Income Tax Credit (EITC) is over-claimed each year, of which approx US\$8 billion is wrongfully paid out.

- **Benefit**

- Reduced impact from loss of subject-matter experts.
- Consistency across channels will drastically reduce fraud and “answer shopping”.
- 50% reduction in cost of development of processing systems.
- Social and political return on investment by providing a more effective and efficient service to the public.



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The Oracle logo is displayed in a bold, red, sans-serif font. The word "ORACLE" is written in all caps, with a registered trademark symbol (®) to the upper right of the final letter "E". Below the main text is a faint, semi-transparent reflection of the same text, creating a mirror effect. The background is white, and there are two thin vertical red lines on the left side of the page, one near the top and one near the bottom.