

---

# **New Tricks**

**Towards Best Practice in the Use of Rulebase Systems  
to Support Administrative Decision-Making**

**Peter Johnson and Surendra Dayal**

**RuleBurst Limited**

A.C.N. 008 651 223

# Contents

<b>1. INTRODUCTION .....</b>	<b>1</b>
<b>2. MAKING ADMINISTRATIVE DECISIONS.....</b>	<b>2</b>
2.1 THE ELEMENTS OF ADMINISTRATIVE DECISION-MAKING.....	2
2.2 DETERMINATION OF THE REQUIRED PROCESS.....	2
2.3 IDENTIFICATION AND COLLECTION OF INFORMATION .....	4
2.4 CONSIDERATION OF EVIDENCE.....	8
2.5 DETERMINATION .....	10
2.6 REASSESSMENT DETERMINATIONS.....	21
<b>3. BEST PRACTICE ISSUES.....</b>	<b>24</b>
3.1 POLICY DEVELOPMENT .....	24
3.2 SERVICE DELIVERY .....	25
3.3 QUALITY CONTROL.....	26
3.4 STAFF SKILLS .....	27
3.5 WORK STRUCTURES AND PRACTICES .....	28
3.6 ANCILLARY PROCESSES .....	28
<b>4. CONCLUSION .....</b>	<b>30</b>

**© RuleBurst Limited**

The contents of this document remain the property of, and shall not be reproduced in part or in whole in any form or by any means (whether graphic, electronic or mechanical, including photocopying, recording or information and retrieval systems) without the express permission of RuleBurst Ltd.

# 1. Introduction

Australian Commonwealth Government agencies are increasingly using rulebase systems (or expert systems) to administer complex legislative and policy material.

The Department of Veterans' Affairs has been a pioneer in this area, relying heavily on this style of technology since 1994 in its Compensation claim processing area.

The Department of Defence and Comcare have similarly deployed systems to assist in the pursuit of accuracy and consistency in the administration of their legislation and policy.

The deployment of rulebase systems has led to marked improvements in the quality and consistency of decisions and of administrative processes in each of these agencies.

At the time of writing, the Australian Taxation Office is making its decision on a tender for the use of this type of technology in its administration, and has advertised the style of facilities that it will make available to the public using this technology. Centrelink, the central service delivery agency for the Commonwealth, has heralded the use of this technology as a major plank in its new service delivery model.

While this widespread adoption of rulebase systems to support administrative decision-making has been foreshadowed for some years, the recent adoption of these techniques indicates that they will be increasingly used to support, control and improve administrative decision-making based on legislative or policy rules.

This paper examines several aspects of the use of rulebase systems, with a view to identifying some of the lessons learned from deployment, and to suggesting a baseline definition of best practice.

First, the paper analyses the manner in which rulebase techniques can support different elements of the decision-making process. Inaccuracy or inconsistency in primary decisions can arise from several different aspects of the traditional determinative process. The paper looks at these different aspects, the traditional problems in each of them, and the improvements and issues that can arise from the use of rulebase systems for each of these aspects. While it is unlikely that errors and inconsistencies will be able to be completely eradicated in any environment, we emphasise techniques for managing, reducing and removing different risks from different aspects of the decision-making process.

Secondly, the paper argues that the best results from the deployment of rulebase systems will arise when that deployment is part of a broader redesign of the entire decision-making process and environment. It argues that this redesign should involve changes to policy development, service delivery arrangements, work structures and practices, staff skill sets and quality control practices as well as the introduction of information technology.

Generally, the paper argues that the use of rulebase systems provides a new benchmark for best practice in administrative decision-making, and that in the future the task will be to define best practice for administration designed around the use of rulebase systems.

## 2. Making Administrative Decisions

---

### 2.1 The Elements of Administrative Decision-Making

The process that a client must follow to secure a determination of their rights has several major stages:

- Classification of the client's requirements, and determination of the appropriate process to meet those requirements;
- Identification of relevant information on the client's circumstances and collection of that information;
- Consideration of evidence supporting the information that has been collected or provided, and the resolution of any problems concerning the evidence;
- Determination of how the legal and policy rules apply in the light of the information on the client's case.

At each of these stages, there are different dangers. Different aspects of the administrative process can lead to an incorrect result, or to inconsistent results as between different clients. In this section, we examine each of these stages in detail, the manner in which inaccuracy or inconsistency can enter the process, and the ways in which rulebase systems can be used to help reduce those risks.

We also examine additional issues that arise in the reassessment of a person's rights, as a result of changes to legislation, policy or client circumstances.

---

### 2.2 Determination of the Required Process

#### 2.2.1.1 Traditional Problems

The first step in much operational decision-making is to identify the determination to be made. This generally takes place when a client's requirements are classified in line with the way that the agency classifies its work.

On the whole, this classification is actually performed by the client, who nominates the service or determination that they seek. If the client is misguided or mistaken in their nomination of the appropriate service, then the process can go awry unless this is corrected. The first opportunity for an inaccurate determination, or for inconsistent determinations between similarly placed clients, therefore arises at this point.

As the Ombudsman has argued in a recent discussion paper, *Balancing the Rights*, much of the current Commonwealth income support system effectively relies on self-assessment, partly because of the need for the client to nominate the appropriate service. As clients put to the Ombudsman:

“they rely on an agency...to make the correct determination of entitlements, because [the agency] has the expertise to do so, and because the rules are so complex. It is usually only much later that they discover they have missed an entitlement because of [an agency] error, or failure to give sufficient advice or information. People become frustrated and angry, because they believe they are claiming only what they would have been entitled to under law, had

the correct decision been made, or adequate information been given. In these circumstances, people believe that the system which transfers most of the risks to them, but which severely limits any provision for remedying the effect of errors, is grossly inadequate.” (para 5.23)

While this concern holds true for many stages in the assessment and reassessment process, the point at which a client must nominate a service is the first point at which this transfer of risk to the client commonly takes place.

In any transaction where the client must know what information to provide, what service to nominate or what determination to seek, these comments will hold true. Many transactions between Commonwealth Government agencies and their clients, outside the field of income support, have these characteristics.

A new focus on “customer service” looks in part to address this problem. This focus has led, in several agencies, to a redefinition of the classification system used by agencies in their interactions with clients. The change is from classification that presumes knowledge of the range and content of the agency’s services, to classification that takes as its starting point the client’s perspective of their situation. This new approach seeks to classify interactions in terms of *life events*.

The *life events* model is likely to address some of the concerns raised in the Ombudsman’s report. However, some problems in the accurate classification of a client’s situation will remain and some new ones will be introduced. For example, the model relies on internal processes and staff knowledge across a broad array of subject-material: assessors must have the capacity to make reliable determinations across traditional boundaries. The model can also rely on the client’s capacity to nominate multiple simultaneous life events, or all relevant aspect of a change in circumstances.

While this new model is undoubtedly a step towards the client’s perspective, and is therefore more reliable, it is obviously not possible to classify all client situations into a generic set of common events. There will still be dangers of failing to correctly identify all consequences of a change in client circumstances. The approach can be usefully supplemented by tools that enhance the comprehensive investigation of a client’s situation.

Of course, the classification of a case does not lead to inaccuracy in all cases. There are some transactions in which all clients are likely to be sufficiently knowledgeable, or in which the range of options is sufficiently limited, so that there is no significant risk of error in classifying the client’s requirements. However, we suggest that most administrative processes should be examined to determine whether this is the case, or whether there is a risk of error due to misclassification.

### **2.2.1.2 Rulebase Support**

A rulebase system can support an administrative process in which agency staff classify the client’s requirements, or a self-assessment and self-classification process, or a process based on common life events.

In each case, the support that a rulebase offers is the capacity to exhaustively test a broad range of issues in an efficient and reliable streaming process.

The root of the problem in the traditional administrative environment is one of two things. Either the client is forced to nominate the correct determination (or multiple determinations), but doesn’t know the possibilities because of the scale and complexity of the rules, or an agency staff member is responsible for classification, but makes an error. The agency staff member can easily make an error, through forgetting the detail of policy, jumping to a conclusion about the effect of the client’s circumstances or misunderstanding the content of policy.

A system that operates as an intelligent, exhaustive and efficient checklist will help to

overcome these problems. The technique will be effective, if its implementation is well-designed. In most situations, it is possible to design a coherent, automated rulebase facility for streaming client requirements.

The utility of this approach can be seen across a broad range of government transactions:

- Identification of appropriate payments for a person seeking income support;
- Identification of appropriate labour market, vocational or rehabilitation programs for a person returning to the workforce;
- Identification of appropriate services and treatment for a person being assessed for community care;
- Identification of an appropriate visa category for a person seeking permission to enter or remain in Australia;
- Identification of appropriate orders to seek and procedures to follow when seeking to make use of a court or tribunal;
- Identification of appropriate forms of government incentives and support for a business;
- Identification of necessary licences, permissions and registration for a business to be set up.

The use of a rulebase in these situations is simply as an exhaustive and objective checklist: it can be thorough, it won't jump to conclusions or pursue tangents at the expense of other paths, and it can implement completely up-to-date and accurate policy.

However, this use of a rulebase is likely to require changes in work practices and in the way that an agency interacts with clients. The use of an automated checking and streaming tool can enable a new intake process, which must be accommodated within the agency's work practices. It will be the combination of this new practice and the enabling system that improves the quality of initial streaming of clients.

---

## 2.3 Identification and Collection of Information

The broad data collection stage in determinative processing is traditionally a discrete stage. It is largely performed by the client, through completing a form or a set of forms. This usually takes place before the assessor considers and determines the case.

It is important to note the sequential nature of this traditional process – the client provides the data and then the assessor makes the determination.

The sequential nature of the process imposes profound constraints – the relevant information must be identified and collected in isolation from any identification of what data is likely to be most relevant. As we shall see, the use of rulebase technology allows these stages to become a single, dynamic interaction, which removes some of the traditional constraints. This will be explored later in this paper.

It is useful to separate this stage into two steps: the identification of the information that will be relevant in the client's particular case, and the process of collecting that information.

### 2.3.1 Identification of Relevant Information

#### 2.3.1.1 Traditional Problems

Any data collection process must include limits on the amount of data that is

collected. The person responsible for making the assessment will seek to ensure that all information relevant to the determination is collected, with a minimum of irrelevant information. It is therefore necessary to identify what information will be required to successfully conduct the transaction. This can obviously be different for different clients.

In a manual, paper-based process, the identification of relevant information must be substantially pre-determined. This is usually done through identification of the appropriate form, and through design of the form. Of course, the form is intended to identify all of the information that is relevant to the transaction at hand.

While any form is generic and largely static, there is some limited measure of interactivity built into many forms. The *navigational instructions* within forms (“If YES, go to Question 12”), go some way towards tailoring the information required to the facts of a particular case.

This tailoring of data collection is further refined through the use of form modules: “If YES, complete the *Spouse Details* module”.

Despite these limited levels of interactivity, forms are essentially generic. They are constrained by many factors: the size of form that clients will tolerate, the representation of data on corporate database systems, the need to cover diverse and complex material in a reasonably comprehensive way. One form must fit all clients.

Forms therefore often collect only a subset of the data required by the legislation. We have come across many examples where forms used by agencies do not accurately represent the information required by the legislation. This is inevitable in an environment in which the design of the form is necessarily constrained.

If a person makes a determination relying only on a subset of relevant information, there is an obvious danger of error. Any form-based identification of relevant data runs the risk of collecting information that may be appropriate for many cases, but not all. Any genericised set of information will obviously depart from the precise requirements of legislation or policy. If the information sought through the data collection exercise does not match the requirements of the legislation or policy, then some determinations are likely to be incorrect.

There is inevitable pressure to genericise information requirements in this paper-based environment: one form must fit all client circumstances. There is resistance to expanding the range of information that is collected. This is usually because additional information will further complicate forms, and will make it more difficult to secure client co-operation and compliance.

In an ideal environment for determinative processing, the process of identifying the relevant information to be collected from a client would have several characteristics:

- it would be *completely* tailored to that client’s circumstances;
- the information collected would not be misleadingly genericised; rather, the client’s circumstances would be tested against the precise requirements of the legislation or policy being administered. This is the only way to ensure that determinations are based on those precise requirements.

Not all data collection activities rely on forms. In some cases, such as client-initiated reviews, generic techniques are not used. A second problem can arise here. In this situation, the selection of relevant information is largely left to the client. In many cases, it is effectively a client’s responsibility to know that certain information is relevant, when it will be relevant and why it will be relevant, and to provide that information in order to secure a determination to which they are entitled. Once again, there are obvious dangers and there is an unfair transfer of risk in making the selection and provision of information substantially the responsibility of the client.

Whether generic, paper-based information gathering techniques are used, or completely manual tailored techniques, there are risks that the information that is

collected will not provide a completely accurate basis for a complex legislative determination.

### 2.3.1.2 Rulebase Support

Rulebase systems enable a new technique for the identification of relevant data. Where forms represent a largely static, generic means of collecting information, a rulebase system provides a dynamic technique. Where manual, tailored techniques such as client nomination or staff interviews run the risk of omitting relevant information, a rulebase system provides a comprehensive technique.

As a rulebase system collects information, it draws conclusions based upon that information. It selects information paths, based on what will be relevant. If used at the data collection stage, it will therefore conduct different information collection exercises for each client – the process of identifying the required information will be tailored to the circumstances of the client.

This has several implications for the issue of identifying relevant information.

First, there is no need to genericise the data collection process. The information sought from the client can usually more precisely reflect the provisions of the legislation. It is not necessary to create a form that will serve all clients and their circumstances tolerably well. Different clients will be required to provide different information, at different levels of detail, depending on their circumstances. This allows the data collection stage to more accurately reflect the precise requirements of the legislation or policy being administered. This alone holds the potential to remove cause for some inaccurate determinations: the technique provides a guaranteed baseline that precisely the information required by the legislation will have been considered in every case.

The second implication is more concerned with the techniques that an agency can use to administer difficult decisions. Because every data collection exercise can be tailored to the situation of the specific client, it is possible to collect a far *broader range* of information. The implications of this fact are profound. This enables far more precise targeting of policy and service delivery as well as far more detailed collection of management information than has traditionally been dreamt of, let alone possible.

So, for example, an automated information gathering facility can collect extensive and precisely relevant information on clients with different policy profiles, and can therefore apply more detailed policy rules for each of those clients: those with back injuries, those from Iran, those who run businesses with fewer than 30 staff, those who are under 25, those who are single, those who have a sick child. The tolerable degree of detail that can be collected is greatly extended. Therefore, the degree of detail in policy that can be applied can be greatly extended. This technique, which can be seen as a vast extension of the principle of the *Life Events* model, is discussed in more detail in a later section on the *Determination* stage of decision-making.

The shift to a dynamic, interactive method of identifying relevant information removes one of the most substantial barriers to accurate and consistent decision-making. This barrier is the need for determinations to be substantially based either on generic information-gathering processes, or on individual staff-directed investigations of broad policy issues. The use of an automated interactive facility for identifying relevant information provides agencies with the capacity to introduce completely new techniques for control and support in the decision-making process. These techniques are founded on the crafting of policy and handling for different categories of case.

While the use of rulebase systems can immediately ensure that data collection processes are more precisely tuned to legislative or policy requirements, it is this expansion of policy scope offered by the intelligent definition of investigative paths that is most relevant to the improvement of accuracy and consistency in complex



determinations.

## 2.3.2 Collection of Information

### 2.3.2.1 Traditional Problems

As we have noted, the traditional data collection process relies largely on generic forms. The quality of the information collected depends on the quality of the form.

The quality of a form includes a range of issues, each of which can affect the ultimate quality of the determination:

- the precision with which the form represents the data actually needed to make the determination has been mentioned as a key issue already.
- the coherence of the form to the client is critical: the phrasing of questions and the provision of explanatory material to assist the client in completing the form;
- to the extent that a data collection process can be personalised to match the client's situation, it is likely to be more successful in extracting useful information.

The reliability of the data collection process has an obvious and direct impact on the reliability of the ultimate determination. Where a client has misunderstood a question, misinterpreted the effect of providing certain information, omitted relevant data or failed to appreciate subtle aspects of their own situation, the integrity of the determination is at risk.

The traditional, form-based technique is again limited by its paper medium. Questions must be framed and located within generic forms. There is a limited capacity to tailor a paper form to a client's situation. Only a small amount of explanatory material can be provided on the form, in proximity to questions. As a result, explanatory booklets are often used to complement forms, and to overcome some of the difficulties in making forms easy to understand.

In our experience in many administrative environments, receipt of a complete and correct form is the exception rather than the rule, because of the difficulty people have with unfamiliar questions.

The use of explanatory booklets, the common administrative experience of receiving incomplete forms, and the everyday experience we all have with unfamiliar forms all indicate the entrenched problems with this data collection technique.

### 2.3.2.2 Rulebase Support

A rulebase system cannot overcome all of the problems involved in obtaining information from clients. In most cases, the clients will not be familiar with the process or context for the decision, will not know why information is relevant or the effect that different answers will have. Most data collection exercises are participation in someone else's process, and will therefore present ample opportunity for misunderstanding or misinterpretation.

However, interactive, rulebase-driven data collection techniques do offer some means of addressing problems in this area.

First, an interactive data collection process can be highly personalised. Questions can be framed to take into account previously-learned information. At a simple level, this can mean asking questions in terms of specific named people (*Lisa* instead of *the child*, or *Bruce* instead of *your spouse*). In more complex situations, this can allow iterative investigation of multiple situations, with each investigation phrased in terms of very specific people, transactions or events.

Personalisation provides context and makes any data collection process less foreign

and opaque. When linked with intelligent data collection, so that only relevant paths are pursued and irrelevant paths are not presented to the client, the data collection process can appear more natural and is likely to be more reliable in extracting accurate and relevant information.

Secondly, any electronic data collection process can obviously make use of data already held by the agency, minimising both inconvenience and some risk of inaccurate data.

Thirdly, a rulebase data collection process can be more effectively supplemented by explanatory material. Because the on-screen presentation is not limited in the way that paper presents absolute limits, each screen can include both questions and explanatory research material. There is no finite limit on the amount of explanatory material that can be presented on any question, because a computer screen involves virtual dimensions rather than physical dimensions. Through devices such as scrolling, tabs and hypertext links, an unlimited amount of explanatory material, examples, past cases and so on can be provided for any question.

Fourthly, a rulebase-driven data collection process is a process made up of relatively small chunks. The client does not see the extent of the process before starting it, in the way that a client can pick up a 10-page form and feel their heart sink. Self-contained screens can mask the extent and complexity of a potentially lengthy process. Each of us knows that one of the effects of a lengthy and unfamiliar form is an immediate desire to postpone completing it.

Finally, rulebase-driven data collection processes can often shorten the process, by removing any requirement for a client to see irrelevant data collection facilities. Even on well-structured forms, there is often a proportion of questions that a client can omit but still sees.

Data collection processes that are more likely to lead to provision of complete, accurate and relevant information are likely to improve the quality of determinations that rely on that information.

The design of forms has become a sophisticated, refined art in public administration. Rulebase systems offer a different medium for data collection, and offer intelligent tailoring, personalisation and enhanced explanatory facilities. But the techniques and conventions for on-line data collection, whether using rulebase systems or otherwise, are embryonic. They offer the potential for higher quality administration, particularly once ubiquitous. They need to be developed.

---

## 2.4 Consideration of Evidence

### 2.4.1.1 Traditional Problems

The consideration of evidence is a standard part of many determinative processes. A client will assert a state of affairs, and a determination can be made on the basis of the facts presented, as long as the evidence supports those facts.

The quality of consideration of evidence will have an obvious impact on the quality of the ultimate determination. In particular, it is possible for inconsistent interpretations of evidence to lead to inconsistent and inequitable determinations. At this stage, we are only concerned with decisions whether to accept or reject evidence, and the issue of relative weighting of evidence, rather than with making actual determinations based on accepted evidence.

On what basis does an assessor choose whether to accept evidence of certain facts or reject it? On what basis does an assessor resolve conflicts in evidence? On what basis does an assessor apply different weightings to evidence, or form reservations about evidence?

The consideration of evidence is obviously an area that requires the exercise of judgement, and often a general knowledge of the world. As such, it presents an area of high risk for accurate and consistent decisions. Each assessor will obviously bring personal values, experience and prejudices to the exercise of that judgement. An individual assessor's judgement on a specific day can be affected by such things as how they are feeling, the mood of the most recent policy trends or instructions, the practices of other local staff, whether they like the client, whether they feel they have been making positive or negative decisions recently and so on.

Many agencies seek to control and guide the exercise of this judgement through instructions on the proof of certain factors. Issues such as proof of identity, proof of citizenship, proof of earnings and so on are usually regulated and straightforward. This may or may not be done for all issues. In our experience, specific policy instructions on acceptable proof are limited to a relatively small number of major issues.

The assessor must also spend time identifying the evidence that is required in a particular case, and communicating this to the client. While this may not often be the source of inaccurate or inconsistent determinations, it can sometimes be the source of rework or delay, as the client has difficulty understanding or providing the evidence required.

### 2.4.1.2 Rulebase Support

A rulebase system cannot and should not attempt to automate the judgement of the quality of evidence. On the contrary, we believe that this judgement should become the primary focus of assessment staff, rather being seen as a peripheral or secondary duty.

Before discussing how a rulebase-supported process can enhance the consideration of evidence, it is useful to consider the idea that this may be the *only* function that needs to be performed by an agency assessor in many cases. An intelligent data collection system can accurately identify the information required from a client, collect that information directly from the client and can often automatically derive the conclusion that flows if that information is correct. In this situation, the chief role of an agency assessor should simply be to verify that the evidence in fact supports the information provided by the client.

We believe that a shift to this approach, and an increased emphasis on the consideration of evidence, will improve not only the efficiency and accessibility of much government administration, but also the quality and consistency of decisions.

How can a rulebase system support the consideration of evidence?

A rulebase interview can intelligently gather information from the client. It can draw conclusions as to how the legislation or policy applies, given that information. Importantly, it can readily identify each and every provision of the legislation or policy that is relied on for the conclusion.

In other words, a rulebase system can exhaustively and automatically identify the facts on which a determination relies. It can therefore automatically identify each of the facts that requires proof, and the precise proof that is required for each fact, in accordance with the agency's policy.

A rulebase system can therefore be used to generate a report on the evidence that is required to support a determination, whether that determination is in the client's favour or not. However, this requires some rigour on the part of the agency. The agency needs to associate evidentiary requirements with each provision of legislation or policy, or to identify that proof will not be required for some assertions (an agency may require proof of the age of a child, but not of whether the child attends primary or secondary school).

This facility takes on more strength when it is provided as part of an interactive data collection process undertaken by the client. After collecting information on the client's circumstances, the system can provide the client with an intelligent evidence-gathering facility. The system can nominate each of the areas in which evidence is required. Explanatory material can outline alternative forms of evidence, and the client can nominate the evidence that they are able to provide. The system can then print out a checklist of the exact evidentiary documents that they must gather and present.

Once the appropriate evidence has been identified, a rulebase system can also provide a useful adjunct to the consideration of that evidence. The system can load the client's case, and then commence a tailored evidentiary investigation. This investigation can step the assessor through each of the items that requires evidence, providing facilities for the assessor to record and comment on the tendered evidence, and facilities to record justification of their decisions on evidence. The system can also provide a detailed commentary on evidentiary issues for each of these items and advice on how to resolve problems with specific items.

Just as a rulebase system can provide a tailored, personalised information collection process, it can also provide a tailored, guided process for the consideration of evidence in a particular client's case. Such a process can focus the assessor's mind squarely on the consideration of each item of evidence, the requirements for that item, and the need for accountability in the consideration of evidence. Finally, this approach provides an efficient and comprehensive record of the consideration of evidence. This type of support can enhance the likelihood of consistent treatment of evidence, and the precise auditing of results that this process enables can provide management with the capacity to identify and address problems in the consideration of evidence.

This guided consideration of evidence can take place immediately after data collection, at some later time, or over an extended period as evidence becomes available. If the available evidence does not support the asserted facts, those facts can be changed to reflect the evidence and any consequences automatically determined by the system.

A rulebase system can introduce both efficiencies and discipline to the identification and the consideration of evidence. It can provide the foundation for more widespread auditing and monitoring of the consideration of evidence. It is the changes in work practices that these systems offer that can improve the quality of this aspect of the decision-making process, rather than any inherent capability of the systems.

---

## 2.5 Determination

The determination of a client's case can involve different types of reasoning, depending on the content of the legislative or policy rules being applied and on the facts of the client's case.

We have classified several different aspects of the *Determination* stage. These represent the major types of reasoning that are required in the process of interpreting and applying legislative provisions or policy rules:

- Performing calculations;
- Drawing conclusions on the application of intricate legislative or policy provisions;
- Making simple judgements - judgements involving a single issue, rather than explicitly involving the consideration of multiple factors;
- Making judgements involving the balancing of multiple factors;
- Exercising discretions.

All but the second of these types of reasoning are intermediate processes, and some may be required many times before a determination can be made. The drawing of conclusions takes place both at intermediate points in making a determination, and also as an inevitable final stage, as virtually all determinations require consideration of multiple logically-linked requirements – a decision on how the whole of the applicable legislation applies to the case.

## **2.5.1 Performing Calculations**

### **2.5.1.1 Traditional Problems**

Legislatively-based calculations are seldom simply arithmetic calculations. The majority of calculations that must be made in accordance with legislation involve a combination of judgements about the client's circumstances to determine the basis of a calculation, as well as the calculation itself. Recent Commonwealth legislation tends to include specific equations, processes for completing complex calculations and even examples, as well as conventional provisions guiding the basis of calculation.

Many calculation processes under legislation therefore involve a range of complicating factors, as well as the arithmetic:

- Determination of conventional legislative issues, to decide how to perform the calculation or the values to use in the calculation;
- Application of statutorily indexed variables in the calculation;
- Determination of whether transitional provisions apply to the calculation (because of the unusual preponderance of transitional provisions for this type of legislation);
- The performance of multiple calculations, and comparisons of outcomes or adoption of the most favourable or least favourable values for some components.

This means that many calculations are extensive and logically complex. Their complexity usually derives from the intricacy of the process, rather than from any sophisticated mathematical concepts or from any particularly difficult judgements.

Where assessors must administer intricate logical processes, there is naturally the potential for error. The quality of processing will rely almost completely on the quality of staff training, and on the thoroughness and skills of staff.

While many agencies have automated the arithmetic component of calculations, and perhaps some of the logic of the calculation processes, some of these processes are difficult to represent in conventional computer programs.

### **2.5.1.2 Rulebase Support**

Rulebases are designed specifically to automate rigorous logical processes. The automation of these complex calculation processes is an ideal use of a rulebase.

Rulebase support for these calculation processes offers a range of facilities that can improve accuracy and consistency:

- Guidance of the assessor through the process;
- Automatic determination of the appropriate basis for calculation, the application of transitional provisions, and automatic identification of the data required to perform the calculation;
- Provision of explanatory support for judgements that must be made on individual issues throughout this process;
- Automatic calculation;
- Provision of an audit trail, explaining how the legislation has been applied to

perform the calculation.

This process substantially addresses the two major risk factors in the administration of complex calculations: the strong reliance on training and the reliance on staff conscientiousness.

Any complex calculation should be administered through the provision of some automated support. Rulebase systems provide additional benefits to conventional computer systems in this automation.

## 2.5.2 Drawing Conclusions on the Application of Legislation

This step is performed when the decision-maker determines the logical effect of the combination of different legislative or policy provisions. It is an exercise in divining and applying the structural logic of the policy rules.

### 2.5.2.1 Traditional Problems

When people speak of the *complexity* of legislation, they frequently mean the *intricacy* of the provisions.

Most legislation is intricate. Each provision may involve numerous logical steps. The interaction of different provisions within one part of the legislation may be complicated. Physically separate parts of the legislation may interact in ways that are unpredictable, and that require a comprehensive knowledge of the legislation. Definitions may be located in different parts of the legislation, and may themselves interact in complicated ways, as well as affecting the operation of the major provisions.

Legislation is difficult to read and can be difficult to understand. Its intricacy effectively requires comprehensive knowledge of the content of a piece of legislation, and great rigour in the application of the legislation in a particular case.

In other situations, a perception of complexity may be based on the *breadth* of the policy. There may be a relatively small number of rules that apply to any particular case, but the total number of rules renders the whole area opaque. Many areas of legislation present this problem – the scale of the legislation is daunting, even though only a relatively small proportion will be applicable in a give case.

Intricacy and extensive breadth create an environment in which error is likely. This risk is often compounded by factors such as:

- Ambiguity or uncertainty within legislation;
- Frequent changes to legislation;
- The need to administer different versions of provisions for different cases at different times;
- High staff turnover;
- Pressure of work;
- Limitations on staff training;
- Reliance on staff keeping up-to-date with legislation through their memory of instructions or policy updates that they have read.

All of this means that many frontline staff do not actually administer the detail of complex legislation, but rather administer a body or rules that combines memories of early training, local folklore, memories of recent or distant policy instructions, and snatched advice from colleagues. Put bluntly, there is a high risk that assessors operating in an environment of legislative complexity are not actually administering the legislation. This has obvious and substantial implications for accuracy and consistency. Audits that we have conducted with clients support our contention that intricate and volatile legislative provisions are seldom likely to be very accurately

administered.

Intricate legislation frequently contains errors, ambiguities, or the capacity for multiple interpretations of logical interactions between provisions. This provides an environment in which different practices can easily arise between different assessors or offices. Once again, our audits and experience support that this is common.

These problems of the correct logical interpretation can be intractable. We have encountered situations in which not only the frontline staff, but also senior policy staff have resisted a need to resolve ambiguities or problems with the interpretation of the logic of legislation. Once problems of this type have been identified, it commonly takes an extended time before the issue is resolved. It is highly likely in this situation that there will have been inconsistent applications of policy by assessors in the past.

Despite the inherent risks in administering logically complex legislation, our experience has been that few agencies conduct audits to determine the accuracy and consistency of that administration. Just as there is a reliance on staff memory, knowledge and skill, so there appears to be a general acceptance that decisions are largely being made in accordance with legislation and policy. This reliance is not justified in the light of audits that we have conducted with clients.

The traditional solution to problems of intricacy and breadth is stove-piping of administration. Staff work only with a portion of the legislation. While this may create a poor environment for client service, it may improve the quality of decision-making. However, in some areas staff may still have to deal with an amount of legislation that is beyond them.

The major check on poor quality in this area is the provision for clients to seek review of decisions with which they are unhappy. But does this adequately address the problem?

The Ombudsman, in both the *Clients Beware* and the *Balancing the Rights* papers, correctly identified that this environment, and access to administrative review, effectively require the client to know when a mistake has been made. It requires the client to be expert in the legislation, in order to have an effective check on administrative error.

Given resource constraints, it is not clear whether agencies have had many options in this area of administration in the past. However, systems that explicitly and reliably implement the intricate logic of legislative and policy rules now provide an alternative, and a new basis for the development of best practice.

### 2.5.2.2 Rulebase Support

As with calculations, rulebases are designed to absorb and reliably implement logical complexity. Automating the logical interaction of legislative provisions, and the drawing of conclusions based on satisfaction of legislative criteria, is what rulebases are very good at. They are systems to automate the administration of rules.

We go so far as to argue that rulebase systems should provide the natural medium for the administration of legislative logic in the future. They can *completely* remove the substantial risks associated with administering this complex logic.

While other aspects of the decision-making process, such as the administration of judgements and discretions, require human participation, the administration of logic does not share this reliance. Those areas of judgement can be supplemented and improved through the use of rulebase systems, in conjunction with policy refinement and redefinition of work practices. In contrast, the administration of logic can be completely removed as a risk factor from the decision making process.

In a sense, a rulebase system provides similar functionality to a calculator or spreadsheet. However, while those tools automate numerically-based processes,

rulebase systems automate broader logical processes based on defined rules.

The use of a rulebase system for this function not only removes risk from the administration of the logic in a complex decision, it also provides more effective auditing capacity and management information for an agency. In this way, it enables an efficient, detailed and comprehensive platform for monitoring and improving decision-making processes.

The current manual and paper-based decision-making environment makes it difficult to monitor and audit the quality of determinative processes. Improvement processes largely rely on staff training, which can be costly and unreliable. Policy development and implementation invariably relies on further staff training.

The finely-grained way in which a rulebase system administers the logic of legislation changes this environment. Rulebase systems require every issue to be individually addressed, record the outcome on each issue, and allow an agency to identify patterns in reliance on provisions or in the quality of administration at this very detailed level.

Rulebase systems therefore enable an agency to more readily implement a cycle of policy development, quality improvement, performance monitoring and outcome monitoring. So, while they can directly improve the quality of administration of legislative logic, they can simultaneously enable the more ready identification of problems and provide a platform for improvement in the other parts of the decision-making process.

### 2.5.3 Making Simple Judgements

We distinguish *simple* judgements from those judgements that explicitly require the balancing of a number of equivalent factors. Their characterisation as *simple* does not mean that they are always easy, rather that they are not multi-factorial judgements (which pose unique problems and are discussed in the following section). We also distinguish them from the exercise of discretions.

A simple judgement is therefore required where:

- legislation or policy states a requirement in objective terms, and
- the determination of whether a client's circumstances satisfy that requirement in a specific case involves the unstructured determination of a single factor, rather than the collection and consideration of evidence on a broad range of equivalent factors and a global judgement in the light of that evidence. To some extent, this distinction simply separates those judgements for which a *factor-balancing* process has been enunciated in the legislation or common law from those for which no such process is articulated.

Most issues that a decision-maker must resolve are likely to be simple judgements. Most issues, even minor issues, that a decision-maker must address involve some exercise of judgement.

#### 2.5.3.1 Traditional Problems

Any determination based on legislation or policy is likely to involve a range of legislative provisions. Each provision involves multiple issues. And for each issue, some judgement will be required. For each legislative issue, the decision-maker must decide whether the client's circumstances satisfy that issue.

Many of these judgements are easy, or are easy in the majority of cases. In the field of veterans' entitlements, they may include such things as whether the client served in Australia's Defence Forces, whether the client served overseas, whether the client served in circumstances that involved hostile forces and so on. The ultimate determination will be based on a host of judgements on individual issues such as



these.

Any such judgement can be easy in some cases, and difficult in others. Any issue will present borderline problems. For example, whether a client is a man or a woman is usually a very simple issue, but as several Federal Court and AAT decisions indicate, in rare situations it can be difficult.

Issues that require judgement provide a common source of poor or inconsistent decision-making. Traditional approaches to these issues centre on the publication of explanatory policy material on the issue in manuals, and training in that policy.

In our work with government agencies, we have identified several common characteristics in the administration and support of these judgements:

- There are often issues on which there is no published policy at all. It is common for us to strike issues on which an agency has no policy or no substantial policy. There are several reasons for this.

Interpretative policy is frequently developed on a reactive basis. While, to some extent, this is inevitable because of the variety of human circumstance, there are problems with reactive policy development being the norm. While difficult cases on some issues come to the attention of policy-makers, there are often cases determined by primary decision-makers in the absence of authoritative policy and on the basis of local advice or convention. The fact that central policy staff don't know about difficult cases does not mean that they have not arisen and been dealt with.

There can also be a reluctance to attempt any comprehensive elaboration of how an issue should be resolved in different circumstances. This can be characterised as a preference for leaving the decision-maker with discretion. However, it frequently leads to inconsistent and potentially arbitrary determinations. This approach can only be legitimate if it is accompanied by controls in terms of outcome-monitoring, dissemination of results in different cases, and broad discussion of approaches and ideas. It can otherwise be a mandate for complete subjectivity and therefore inequity.

Finally, there can be an absence of policy simply because the task of developing policy on all issues is daunting. This can lead to a lack of policy on issues that are neither broad nor difficult, but that warrant some guidance in some cases.

The net result is that on many issues, it is impossible to find any helpful explanatory material in the agency's official policy guide.

- Where there is no agreed policy (and sometimes where there is) different practices grow up in different offices and between different assessors. This can go on, completely unmonitored. This clearly leads to inconsistent approaches and inconsistent determinations.
- There is usually little formal quality control over the exercise of these individual judgements. There is often no threshold proof of competence in administering these issues, no quality checks at the level of these issues, and little or no auditing of comparative performance in making these judgements. Instead, there is often an element of reliance on and trust in the experience of staff. This can effectively mean that the fact that a person is an assessor of a certain level of itself lends legitimacy to their determinations.
- There is one particularly alarming approach to these issues of judgement that we have heard on several occasions. This is the volunteering of the view that different senior assessors will be likely to arrive at different determinations in the same case, with this being seen both as acceptable and as proof of how difficult the judgement is.

Anyone who has worked in an operational environment of this type knows the reality of the extent of subjectivity in areas of judgement. Any member of staff can

immediately rank other staff in terms of whether they are harsh or lenient in their subjective judgements. We have also found that individual staff can seek to achieve an equitable level of subjectivity through an “averaging” method: if the assessor feels that they have been hard with some clients, then they may be more relaxed for the next few cases.

Obviously, there is a greater risk of inconsistent and incorrect determinations where the assessor has greater scope for subjectivity in the approach to and basis for the determination. Where an issue is stated in broad terms in the legislation, but where this requires consideration of quite different circumstances for each client, there is greater risk. Where a broadly stated judgement must be made in a situation of great diversity of client circumstances, there is little basis for consistency.

### **2.5.3.2 Rulebase Support**

The use of rulebase support offers two major methods for attacking these problems.

The first method provides more effective and comprehensive explanatory support, and flows from the rigour of rulebase development. The modelling of a piece of legislation or policy into rules requires examination of every line of the legislation or policy, and isolates each individual issue that must be addressed if the ultimate determination is to be correctly made. This development process encourages the examination of these individual issues, and invites consideration of the policy on each issue. The process identifies the extent to which elaboration of policy is required.

Once a rulebase is deployed, it requires a user to address each of these specific issues. In this context, the absence of elaborative policy on any issue is starkly highlighted.

Once a person uses a rulebase to support a determinative process, it therefore becomes immediately apparent that it is essential to complement the rulebase with access to explanatory policy or research material on each issue. The on-screen presentation of issues makes it quite simple to provide that explanatory material in a way that is easily accessible to the user.

This explanatory material can include explanations of the meaning and purpose of a question, more detailed commentary on treatment of the issue by courts and tribunals, access to court and tribunal decisions, access to relevant maps, diagrams or pictures to assist the user or elucidation of evidentiary requirements for that issue. All of these forms of assistance are likely to help the user to make an informed judgement, and are likely to at least promote consistency in approach to that particular judgement among users.

Where the rulebase investigation is undertaken by a client, as part of the data collection process, access to this type of explanatory material can help to overcome difficulties that the client has in answering questions. In these cases, the client effectively exercises these judgements, subject to provision of supporting evidence.

In our experience, the discipline of developing detailed and comprehensive policy on individual issues has been universally welcomed by the agencies with which we have worked. The resulting policy material has usually been identified as one of the great benefits of a deployed rulebase system. Once this policy exists, it provides a framework for review, feedback and improvement.

This first method of supporting simple judgements is appropriate in all cases, and can be sufficient in many cases. Where most clients’ situations are relatively similar, and where the difficult or unusual cases can be adequately addressed through the provision of explanatory material, this method will be sufficient.

The second method of supporting these judgements is usually most appropriate for the major issue or the difficult issues involved in the determination. Most legislatively-based determinations have a central issue. This central issue may be very generally stated in the legislation. However, reliance on individual assessors’

knowledge to administer this issue may lead to inconsistent or incorrect outcomes.

The second method is to develop far more detailed policy on this major issue for categories of cases with different profiles. This profiling may address the most common cases, the most costly cases, the most sensitive cases, the highest risk cases or whatever. This method therefore implements a risk management approach. It suggests that for any definable set of cases for which tailored policy and tailored handling can be specified, this policy and handling should be specified and implemented through a rulebase.

So, for example, a compensation determination process may separate out cases of back injuries, asbestosis, RSI, non-specific pain and other medical conditions for tailored handling. A Social Security determination process may separate clients from different employment backgrounds, clients with different disability profiles, clients with different labour market needs or clients of different ages for different handling. A business licensing or registration process may separate out retail, manufacturing, IT and other businesses for specific handling. This specific handling will include special policy on how to exercise the judgement, and potentially special procedures on the extent and nature of investigation.

In any context where a difficult judgement must be made in diverse circumstances, it is likely to be valuable to formalise policy rules for different sets of circumstances. The consideration and application of these rules can then be supported through their inclusion in a rulebase system. This leads to more finely-grained investigation of the targeted cases, a more consistent, guided approach to determination, and a framework for improved monitoring of performance and outcomes in these cases.

This technique lends itself to any judgement for which tailored structured policy can be defined for different categories of cases. If this is not possible, and if the issue is one that is regarded as complex, then it is very likely that outcomes will be inconsistent. If it is not possible to formalise an agreed approach to the determination of a complex issue, then on what basis is the determination currently being made?

This technique is, again, one that makes most sense within a rulebase-supported environment. In a manual environment that relies on paper-based collection of information, it is difficult to formalise special handling for different categories of case. The pressure is to genericise, rather than to specialise. Complexity is seen as a problem. The lack of a consistent method to collect tailored information in different cases constrains the determinative process. Any level of specialisation is likely to be left to the initiative and the experience of individual officers.

In a rulebase-supported environment, diversity is a tool rather than an obstacle. Complexity can be encouraged, rather than feared. Tailored, detailed, targeted policy can be encouraged, because the tools to implement it within a manageable administrative process are available.

As we previously stated, the capacity for interactive, tailored data collection processes to replace generic forms has enormous implications for determinative processes. Detailed data collection is an essential adjunct to detailed, tailored policy. This capacity provides the practical means of implementing far more detailed, structured policy on major or high-risk issues. The formulation of detailed, structured policy, and its implementation through a rulebase system, provides the basis for more equitable, consistent and legally correct determinations.

A rulebase system enables these approaches. It enables them because of its capacity to intelligently manage large bodies of structured rules. It absorbs complexity, and therefore allows more complex administration. But the improvements in the quality of determinations flow not from the use of the rulebase system, but from the formulation and administration of more refined policy that now becomes possible.

## 2.5.4 Making Judgements Involving Multiple Factors

Judgements that involve multiple factors require a specific reasoning process that is necessarily difficult to administer. It is difficult to ensure consistency in determinations that involve these judgements.

The reasoning process has the following characteristics:

- the assessor must address a known list of factors before making the judgement;
- any case will require consideration of many or all of these factors;
- these factors are equivalent rather than being logically linked, so they cannot be formed into rules;
- most or all of the factors are not decisive;
- after consideration of the evidence on all relevant factors in a particular case, the assessor must come to a global judgement, balancing the effect of all factors.

An example of this process is the Common Law determination of residence. The factors are an accepted part of the Common Law. There are many factors that must be considered. The global issue can be easily stated, but this ready statement masks the complexity and nature of the determination.

The determination of a marriage-like relationship under the Social Security Act, which specifies the factors to be taken into account, provides another example of this type of judgement.

We distinguish this type of issue from discretions, by noting that in this case the issue is objectively stated, whereas a discretion is a subjectively stated power.

### 2.5.4.1 Traditional Problems

This type of judgement is, of course, highly subjective. Because it inevitably involves the weighing of different factors, the relative weight that will be placed on matters of quality and degree must substantially reflect the personal values and disposition of the decision-maker.

It is therefore difficult for an agency to maintain consistency among multiple assessors who make determinations involving judgements of this type.

However, because these issues, when they arise as problematic, are likely to be crucial to the client's overall outcome, it is important that an agency finds whatever methods it can to improve the consistency and quality of these judgements. These methods have traditionally included such things as:

- Development of policy that provides a greater measure of certainty in cases with certain characteristics, so that the area of difficulty is minimised;
- Auditing and comparison of the performance of assessors in making the judgements;
- Support tools that impose rigour in the process of making these judgements, ensuring that all relevant factors are taken into account, and that irrelevant factors are not taken into account;
- Guidelines on how different factors are to be approached in specific cases, and the significance to be placed on particular sets of facts for different factors;
- A requirement for the evidence and the reasoning process to be documented in a manner that makes the decision justifiable.

### 2.5.4.2 Rulebase Support

Rulebase support can enhance the quality of judgements of this type by helping to impose rigour into the process of consideration. It can do this in two ways.

First, it should be both straightforward and legitimate to identify that certain cases or

combinations of circumstances will definitely satisfy or fail the criterion being tested. It is legitimate and desirable to limit the field of genuinely difficult judgements, where some situations can be simply and reliably dealt with. A rulebase can implement policy that tests for these circumstances and ensures the correct result. This is simply a preliminary approach to limit the number of cases that genuinely involve complexity. It lends predictability and consistency to a proportion of cases.

Within the genuine scope of judgement, the cases that do involve complexity, a rulebase system will not be able to directly support making the judgement. What it can do is to automate and control the process used by the decision-maker to reach the judgement. It is usually possible to identify rules about what factors to take into account in different cases, how to investigate them, and the order in which a decision-maker should consider different factors.

The modelling of the *process* of judgement rather than the *content* of the judgement imposes a consistent rigour on decision-makers. It can ensure that all relevant factors are taken into account and should reduce the chance that irrelevant factors will be relied on. This process automation can include documentation of the weight that the decision-maker attaches to different evidence or different factors. Different processes can be specified for cases with different characteristics. The provision of precisely relevant explanatory material on each factor can also help to ensure a consistent approach to the judgement.

As with any judgement, the rulebase provides a capacity for the assessor to be guided through tailored policy and processes for cases with particular characteristics: high risk, common cases, sensitive cases and so on. Once again, an increase in the complexity of policy, coupled with a tool that masks and absorbs that complexity, can lead to more refined and more reliable exercises of judgement.

In this implementation of a decision-making process, a rulebase system will support the judgement, rather than directly making it. It provides an agency with the tools both to regulate how these judgements are made, and to more easily and accurately compare performance between assessors.

### 2.5.4.3 Other approaches

The field of artificial intelligence, of which rulebase systems are one branch, offers some other techniques that may or may not be legitimate in this type of exercise. The first is the use of numeric weighting for different factors in each case, with the judgement being either guided or made by a simple calculation at the end of the consideration of all factors. This approach can be supplemented by the use of fuzzy logic in the calculation. The second method is the use of case based reasoning to make these judgements.

The attribution of weightings is a relatively straightforward exercise, and one that can be implemented using a rulebase system. For each factor that must be considered, the assessor would attribute a weighting (say, between 1 and 5) after consideration of the evidence, identifying the extent to which they felt it supported a positive judgement. Once all factors had been considered and weighted, the system might apply standard weightings as between the different factors, and come up with an overall score.

This approach is inherently imprecise, but it can lead to the categorisation of cases in terms of broad bands. A score between 80 and 100 will obviously be different from a score of 60. While it may not be legitimate to completely base the judgement on this score, it may (or may not) be a useful exercise in guiding the decision-maker, or in indicating the need for further investigation.

The use of case-based reasoning does not involve rulebase systems. This approach relies on inductive processes, where the system internally discerns patterns from cases with different characteristics and their results. The approach requires quite a large body of cases to be sampled to have any pretension to reliability. It also

requires very thoughtful analysis of cases and representation of the circumstances of each case in terms of a consistent set of criteria. Without this consistent set of criteria, the system cannot discern patterns between cases.

We question whether the case-based reasoning method is legitimate in this environment. It may lead to greater consistency, though this depends in part on the quality of analysis and representation. However, in order for the system to adequately take into account not only the presence or absence of factors, but the quality and degree of their presence, it would require a very sophisticated representation system. There are questions as to whether the variety of cases can be reliably reduced in this way to what must ultimately be an exhaustive representation of all variables.

It is up to an individual agency to determine the legitimacy of each of these techniques in their environment. It is likely that each of them will enhance consistency across multiple assessors, but there are questions as to whether the techniques would be found to be consistent with principles of administrative law.

There is a body of literature on the research and use of these techniques, largely summarised in the proceedings of the biennial *International Conference on Artificial Intelligence and Law* since 1989.

## 2.5.5 Exercising Discretions

We classify discretions as powers that are subjectively stated, so that the exercise of the power is explicitly left solely to the decision-maker's judgement. While these are not as common in modern legislation as they were in the past, they certainly exist. Some common examples include decisions to waive non-compliance or overpayments.

In our experience, many agencies characterise broad areas of judgement as discretion. So, such issues as whether a course of action is *reasonable*, or a decision on a common law issue such as *residence* is characterised as a discretion. For the purposes of this paper, we have drawn a distinction between these matters of judgement and the pure grant of discretion.

### 2.5.5.1 Traditional Problems

The administration of discretions poses very similar problems to the administration of difficult judgements. How does an agency ensure consistent and well-founded practice in the exercise of the discretion by multiple assessors?

The answer is usually a combination of the following, which are also common approaches to the exercise of important judgements:

- The publication of guidelines on how the discretion is to be exercised – effectively a body of rules and explanatory policy governing the exercise;
- The implementation of delegations, limiting the cases in which staff at a particular level may exercise the discretion, and requiring referral to more senior staff where the case is likely to involve unusual sensitivity or complexity;
- Double-checking of the decision by a more senior officer;
- Sequestering of the exercise of the discretion, so that it can only be exercised by a senior staff member, while all other determinations in the case are made by more junior staff.

Our experience with the administration of discretions by agency staff suggests that many staff are very aware when they are exercising a discretion, and feel some sense of residual, personal choice in the decision that they make. This can be in spite of detailed agency policy on the manner in which the discretion is to be exercised in specific cases.

Of course, the subjective exercise of judgement by a number of assessors invites inconsistency. As has previously been stated, reliance on subjective judgement invites personal values, prejudices and experience to guide the decision.

### **2.5.5.2 Rulebase Support**

Support for the genuine exercise of discretion is difficult. However, where an agency has defined rules governing the exercise of the discretion in particular cases, it is quite straightforward for a rulebase system to implement those rules in a consistent and reliable way.

Most agencies either can or will constrain discretions for a high proportion of cases, by defining detailed policy for the exercise of discretion. The policy may provide substantive rules, outlining the policy that is to be applied and the conclusion to be reached in certain cases. It may provide procedural rules, outlining the method that is to be used to investigate and consider the decision. It may provide delegation rules, outlining the limited circumstances in which an assessor may exercise the discretion. Each of these types of policy can be fully supported and implemented using a rulebase system.

Where the exercise of a discretion is not currently supported by this type of policy, there are dangers if the discretion is widely exercised. As we have previously argued in relation to the administration of judgements, the use of a rulebase system provides an opportunity for an agency to develop and consistently implement more detailed policy.

An agency can combine detailed policy, covering common, high-risk, highly sensitive or costly cases, with automated support for its implementation through the use of rulebase systems. This is a risk management strategy, designed to achieve better and more consistent results in a higher number of cases.

The methods that we have outlined in relation to simple judgements, and factor-balancing judgements, are equally applicable to the exercise of discretions. Although these methods will not eliminate inconsistency, they can provide a more rigorous, controlled and accountable environment.

---

## **2.6 Reassessment Determinations**

### **2.6.1.1 Traditional Problems**

Complex decisions do not occur only at a single point in the interaction between an agency and a client. In many situations, the decision must be periodically reassessed, as the legislation, the policy or the client's circumstances change. The manner in which reassessment occurs has a substantial impact on the overall quality of complex decision-making, and reassessment processes are no less complex than primary decision processes.

Reassessment determinations include all of the problems discussed in the previous sections. However, they also introduce new problems, as the process for decision-making is slightly different.

Where a reassessment must take place because of changes to legislation or policy, the first problem that an agency faces is identification of affected clients. This problem does not arise in the primary decision-making process, and introduces a new risk of error.

Where a reassessment takes place because of changes in client circumstances, there are a host of risks. The most significant is the common need for clients to recognise and nominate the relevant changes in circumstance. The most common support for

this approach are either the provision of generic paragraphs in advice letters, identifying standard situations for notification, or generic review forms sent periodically to clients.

### 2.6.1.2 Rulebase Support

Reassessment in the light of changes to legislation is straightforward in an automated environment. The client's known circumstances can be tested against the new legislative rules. If the new legislation requires investigation of new criteria, or the provision of new data, the system can prompt this. A rulebase can reduce many dangers in the administration of this new policy, as has been explained in previous sections of the paper.

The identification of affected clients can be enhanced through the more detailed data that is collected on a client during a rulebase investigation. If this more detailed data was collected in the original interaction with the client, and has been stored, the agency has a very fine-grained body of data from which to identify affected clients.

Reassessment in the light of changes to administrative or legal policy can sometimes be more difficult.

If the original policy was reduced to rules administered through a rulebase, then a reassessment can occur as for legislative changes.

However, if the affected policy deals with the interpretation of a requirement, and was incorporated into the decision process solely through the provision of explanatory commentary, or similar material to support a primary decision-maker's judgement, then there will need to be some means of identifying which clients might be affected by the change in policy. Once again, a rulebase-supported decision-making process should assist in this, because every client for whom a particular criterion was considered can be identified.

If detailed client data collected through the rulebase process has been saved to a database, then clients with refined profiles can be identified and manually reassessed. Where the issue on which policy has changed was one of manual judgement, then it will require manual reassessment (unless the new policy has led to the development of new rules). But at least the affected clients can be readily identified.

Most reassessment (and the most problematic form of reassessment) occurs in the light of changed client circumstances. This fact imposes very clear risks of error in the continuing assessment of entitlements.

The Ombudsman has recently and correctly identified that the requirement that a client identify relevant changes in circumstances means that the client is effectively self-assessing. In that situation, the onus is on the client to recognise which changes in personal circumstances will be relevant. In a manual environment, this is virtually impossible without a comprehensive knowledge of the legislation or policy, and a detailed record of precisely how the client satisfied the legislation.

If this is to be a means for triggering a reassessment, then the client must therefore at least be given a highly personalised and comprehensive list of all circumstances that have been taken into account in determining the client's case. This is the only way in which the client is likely to have any capacity to correctly recognise relevant changes. A rulebase system provides the capacity automatically and intelligently to generate such a selective and highly personalised report.

A personalised paper report of all factors supporting the original decision can be printed, the client can be required to identify any changes to this, and then these changes can be specifically located and entered in the system. Any consequences from those changes will be automatically identified.

A rulebase system also allows regular, detailed and personalised reviews of circumstances. A client can be asked to interactively review all of the factors that



have determined his or her entitlement, by retracing the steps in the original interview, and verifying the continuing correctness of each answer. This can be done either alone, or together with an assessor or advisor, and either at the agency's office or remotely.

This type of interactive review process provides a particular degree of safety, because it is comprehensive. Any alternative process runs the risk that *some* changed circumstances may be reported, but not others. Where a comprehensive, interactive review takes place, the client or assessor can change items, the effect of those changes will be immediately determined, and the client will be automatically prompted to provide new information if it is required. This on-line review process can be safer and more coherent than paper-based manual review processes.

In the method described above, the system ensures that *all* circumstances are reviewed for currency and accuracy. Alternatively, a rulebase system can allow selective identification of changed circumstances. It is possible to change nominated data items, and see what the consequences of these changes are.

While this selective process appears to be efficient, we would advocate the more thorough full interactive review previously mentioned, from a quality control perspective. The dangers of selective changes are easily demonstrated in both a manual and a rulebase-supported environment. While a client may report the dominant changed circumstance, such as separation from a partner, they may neglect to identify a range of ancillary or consequential changes, such as the loss of responsibility for children, a change of residential arrangements, or the opportunity for a radical redefinition of basis of the client's entitlements. Many changes of circumstance require re-verification or exploration of a range of other circumstances that are not inherently dependent on the first, but are practically associated.

A rulebase-supported decision-making process enhances the capacity to conduct effective reassessments for changed circumstances, but it will be most effective in the context of changed review practices. Using a decision support tool with review and reassessment processes that were designed for a paper and manual environment will not maximise the opportunities for quality improvement.

Reassessment must also be accompanied by re-identification of relevant evidence and sighting of that evidence. Sometimes, this will involve sighting of new evidence to support new data. At other times, it will be simply sighting evidence supporting an updating of or alteration to data (such as address, income etc). Where a rulebase is used to support reassessment processes, the evidentiary component must support the automatic identification of new evidentiary issues.

## 3. Best Practice Issues

Section 2 of this paper focused on different aspects of the decision-making process, traditional problems in achieving accuracy and consistency, and the ways in which a rulebase can support each of those aspects of the process.

A theme that emerges from this examination is that the use of rulebase technology will be most effective when combined with other changes to the administration of determinations. Great improvements in accuracy and consistency (as well as client service) can be secured, where the deployment of this technology is associated with changes to:

- the development of policy;
- the service delivery model that an agency uses;
- the quality control and improvement cycle and mechanisms used by the agency to monitor and improve the administration of determinations;
- the staff skills that are sought, emphasised and enhanced, not only in the areas directly responsible for making determinations, but in new or altered support areas;
- the work structures and practices for making determinations, and for supporting the new administrative environment.

What we have seen is that the use of rulebase systems provides new opportunities in each of these areas. The introduction of the use of this technology can therefore be seen as part of a dynamic and wide-ranging redesign of the process of making determinations and administering policy. We advocate a highly integrated approach to this redesign, so that new and effective processes are designed in conjunction with the design of a decision support system, and with a fine understanding of how the decision support system will operate.

In this section, we will more closely examine each of these aspects of administration, and the changes that we suggest will lead to a maximisation of benefit, and a move towards a new benchmark for best practice.

---

### 3.1 Policy Development

It is possible to deploy a rulebase system that simply deals with an intricate logical decision-making process and guards against errors in the administration of that logic. Such a system will avoid many errors, and may very substantially improve the quality of administration, but it does not fully exploit the opportunities that this technology and approach bring.

A rulebase decision support system is most likely to be effective when rigorous policy development and articulation support its use.

It is possible to harness clear and detailed policy in several ways using this technology:

- Explanatory material that elaborates the effect of each issue raised by the legislation is something that we regard as an essential adjunct to any rulebase interview. The rulebase will ask questions of the user, and in many cases the questions will be easily answered. However, in virtually all cases, it will be

necessary for the user to have regular recourse to explanatory material to work out how to answer certain questions accurately, and in a way that is in accordance with the purpose and effect of the legislative criterion being investigated. The elucidation of this explanatory policy has been repeatedly welcomed by users in the systems that we have developed with our clients.

- As we have seen, rulebase systems provide a mechanism for risk management in the administration of significant judgements. The development of detailed policy rules on different categories of cases, and of how the judgement is to be exercised in those different cases, provides an agency with far more control over the exercise of a judgement, and with the capacity to monitor and improve assessors' performance in exercising that judgement. We advocate the development of detailed policy for any major judgement, so that different types of cases are streamed for specific handling in this way.
- Rulebase systems provide a mechanism for more refined administration of multi-factor judgements and discretions. The guidance that the systems provide is likely to improve the quality and consistency of this administration, if the reasoning processes and explanatory material that they deliver are well-designed. This requires an agency to articulate clearly and in a detailed, structured way, the correct approach that decision-makers should take to these determinations.
- The process of construction of a rulebase system invariably highlights problems with the legislation or policy that it is modelling. Drafting errors, ambiguities, unintended consequences and alternative interpretations of structural logic – all these frequently arise from the process of modelling legislation into rules. This makes it essential that policy specialists are able to clarify the intent of legislation, or the interpretation favoured by the agency.

In each of the aspects of determinative processes, a well-designed rulebase system can enhance the quality of administration. However, this will only happen if the agency is committed to the articulation of the detailed, structured policy to be delivered by the rulebase techniques.

This commitment to policy development and articulation must be on-going. There needs to be a cycle of policy preparation, provision, feedback and improvement. Rulebase systems provide agencies with a platform for the implementation of refined policy and the quick implementation of changes in policy, so the system development and maintenance process must be closely aligned with monitoring of legislative change, court and tribunal decisions, internal policy changes, feedback from users, and auditing of assessors' performance.

This is a new way of working. When an agency invests in decision support, they must recognise the centrality of the decision support system in the decision-making process. They must understand its capacities and limitations, the techniques that the system uses and enables, and the opportunities that it presents. The agency has the capacity to disseminate and administer more detailed, rigorous, targeted policy, but it must commit to the rigour of this style of policy development and administration.

---

## 3.2 Service Delivery

This paper is concerned with the manner in which rulebase systems can improve the accuracy and consistency of administration of complex material. It is not principally concerned with the service delivery options that these systems enable. However, the extent to which the quality and consistency of decisions can be improved may, in many cases, be dependent upon the service delivery model adopted by the agency.

The principal method that we have advocated for the improvement of judgements and discretions has been the development of detailed, targeted policy: identifying cases of

different types and developing detailed policy on the handling and determination of those cases. This has been a risk management method adopted with great success by several of our clients. This method is substantially enabled through the use of decision support systems, which render this increased body of policy manageable and able to be reliably administered.

Throughout this paper, we have pointed out the link between this technique, and the data collection processes that an agency uses. Obviously, if specific types of cases are to be determined according to special rules, this requires more specific information to be collected in those cases.

An agency that adopts this approach to the administration of difficult issues has several options for the collection of this refined, targeted set of information:

- Staff can conduct interviews with clients who fall within one of these special categories;
- The agency can send special forms or questionnaires to these clients, or to other sources of information, to extract information beyond what is sought on the generic claim form;
- The agency can make use of electronic data collection techniques, such as rulebase interviews, to collect this information from clients, whether directly or through intermediaries such as staff or agents. (We believe that in most cases, the most effective method is assisted self-service).

Whatever approach is taken, the agency will need to alter its service delivery model to encompass this more tailored, personalised approach to the collection of client data. The shift away from generic, high-level rules will enhance the quality of decisions, but it requires a move away from generic, high-level data collection techniques.

So the benefits of using rulebase or other decision support technology will be more complete if the agency re-examines its data collection techniques as part of its implementation of that technology, and redesigns its interactions with clients so as to exploit the capacity of the technology more fully. New service delivery techniques need to be designed with an understanding of the technology, so as to take advantage of the technology and in conjunction with the development of policy and the design of the decision support system.

Naturally, enhancing the quality of decisions is not the only criterion for design of a service delivery model. However, in this case the redesign advocated is likely to lead to improved and more diverse service delivery options, efficiencies and administrative savings and flexibility in the deployment of staff. These aspects of the implementation of these systems are beyond the scope of this paper.

---

### 3.3 Quality Control

Rulebase systems, properly used, provide very effective and immediate quality control. If the correct data is entered and the correct judgements on individual issues are made, then the result should be reliably correct. In this way, they can themselves constitute a quality control mechanism.

But rulebase systems also provide a broader enhanced capacity to monitor and improve the quality of decision-making, and a more acute requirement to do this.

The quality of the decision-making process using a rulebase system will be directly referable to four things:

- the accuracy and integrity of the rulebase;
- the difficulty that users have in interpreting or answering individual questions, dealing with individual issues raised by the rulebase – this can include issues

such as the phrasing of questions or issues, the quality of explanatory commentary, the quality of other research material made available to users, and the breadth of specific issues;

- the quality of staff consideration of evidence, and of the resolution of evidentiary issues;
- any tendencies by users to abuse or manipulate the decision support system, so as to arrive at unjustified outcomes.

If there is any problem in quality in any of these areas, there is a likelihood of a substantial problem with the overall quality of decisions.

This therefore means that there needs to be a thoughtful and thorough quality control strategy for each of these elements. The quality control strategy needs to be continuous, as different problems are likely to arise at different times: when all staff are unfamiliar with the system, as new staff come on, once staff become very familiar with the system, after the implementation of new policy and so on.

An administrative environment that includes rulebase systems will provide the means for very detailed quality control systems. Feedback from users on individual issues or areas of policy can be very precise. Detailed auditing of performance is made possible because of the very detailed audit reports that a rulebase system should generate. The frequency with which different areas of policy are traversed and the manner in which they are handled can easily be tracked and explored.

Refined tracking and assessment of the administration of logic, of judgements and of evidence is therefore possible, far more than in traditional manual decision-making environments.

One of the most difficult problems that will arise in assuring quality is a cultural issue. Once staff become accustomed to the manner in which a rulebase works, once they are familiar with the rules, some staff seek to manipulate the system to arrive at predetermined conclusions. This appears to be a characteristic of only a subset of assessors. However, it clearly calls for monitoring of the manner in which individual assessors are using a decision support system to make determinations.

---

## 3.4 Staff Skills

An environment in which rulebase systems form an integral part of the administrative process will require new staff skills at many levels.

In the direct administration of determinations, it is possible to profile staff who will work effectively in conjunction with a decision support system, and those that will not. Where the implementation of the system threatens an assessor's status or self-perception, it is unlikely that the assessor will work effectively with the system. Where a decision support system is implemented to improve the quality of decisions with which assessors are very familiar, there is likely to be resistance.

Implementation of a decision support system is likely to be most effective where it extends the range of work that a person is able to do. In this situation, it is not likely to be seen as a threat. The most effective users of systems are likely to be people who understand the crucial nature of the individual judgements that they are called on to make, and who will refer to explanatory material when in any doubt about a particular issue. The most effective users are likely to be those who are not threatened by technology, who see a decision support system as a tool, and who are able to make pragmatic and sensible decisions about how to work with that tool to service clients effectively.

It is likely that the skill set required for an assessor in an environment supported by rulebase systems will be different from the traditional skill set. Specific knowledge of policy rules and procedure will be less valued, and pragmatism, capacity to

develop rapport with a client, capacity to consider evidence and make judgements effectively, capacity to communicate outcomes effectively to clients, and negotiation skills and general human skills are more likely to be emphasised.

Outside the frontline administrative environment, a host of new skills and roles are also likely to be required. If the integrated model that we advocate is implemented, then it requires staff who are capable of designing new and rigorous policy rules, effectively explaining and communicating policy, designing and monitoring service delivery mechanisms, verifying and testing rulebases, finely monitoring a range of aspects of administration and identifying problems and strategies for dealing with those problems.

The absence of these skills or roles is likely to compromise the effectiveness of deployment of decision support systems. We see them as an essential adjunct of this model of administering decision-making processes.

---

### 3.5 Work Structures and Practices

It is obvious that the introduction of rulebase-driven decision support systems will require changes in work structures and practices. Each of the previous sections has outlined a new approach to some aspect of administration: policy development, service delivery and quality control. New work structures and practices will be required to support the use of rulebase systems.

At the coalface, new work practices will be both required and enabled. Rulebase systems provide a means of escaping stove-piped service delivery structures, and of supporting multi-skilled staff in facilities for broad client contact.

Where rulebase systems (or other systems) are used to collect information electronically from clients, there will be a reduced emphasis on data entry, and it should be possible to move to an environment in which the primary function of assessors is the consideration of evidence, rather than the application of broad sets of policy rules.

Where rulebase systems implement new and more detailed policy, there will need to be new work practices to support the collection of information and the consideration of that policy. Where the systems implement new and more rigorous processes for exercising judgements and determinations, this in itself will be a significant shift in work practice for staff.

New auditing and quality control practices should become possible. Processes for feedback and refinement of the support tool and the service delivery strategies are both enabled and advisable.

If work structures and practices are not changed, if a rulebase system is implemented within an existing administrative environment, then there are dangers that it will either be ineffectual or will fail. If the staff strongly felt the need for decision support, then the system may be successful. However, where the system can be glibly (and usually incorrectly) characterised as deskilling or down-grading the status of staff, then it will be met with substantial resistance and will be unlikely to achieve quality improvement.

Once again, the quality of decisions is likely to be most improved where an agency re-examines its work structures and practices as part of an integrated new approach to the administration of complex rules.

---

### 3.6 Ancillary Processes

This paper focuses on the use of rulebase systems to improve quality and consistency

of decisions. It has not attempted to address all issues involved in the deployment of these systems.

There are a host of other issues that may need to be addressed in such a deployment. These include the impact of these systems on a range of ancillary administrative processes and considerations of privacy, confidentiality and security that arise from the use of these systems.

There are many ancillary procedural issues that may arise. These include such things as:

- The need to run parallel administrative systems for some time, retaining both a paper-based and an electronic service delivery environment;
- The need to record data on corporate client databases;
- The need to track progress on case tracking systems;
- The need to integrate with workflow systems;
- The communication of decisions to clients;
- The completion of clearance and authorisation processes for some determinations;
- The need to merge concurrent or ancillary processes involving the client;
- The specification and recording of MIS data for statistical purposes;
- Processes for requesting information from clients or other parties;
- Protocols or curbs on accessing or seeking information.

The use of rulebase systems is likely to require ancillary processes to be reviewed, the need for integration of systems to be determined, and any changes to those processes to be identified and managed. While we acknowledge the broader context within which these systems must operate in government agencies, these issues are not the focus of this paper.

Similarly, the use of rulebase systems will raise new issues in terms of privacy, confidentiality and security:

- Any facility that seeks more detailed information from clients can be seen as intrusive.
- There are real questions as to whether the finely detailed information collected by a rulebase system should be stored on a corporate database, or whether access to it should be more rigorously limited than for more general data.
- We have advocated electronic collection of information. This raises immediate issues of the security of such processes, whether clients will trust those processes and how clients can retain more, rather than less, control over their personal data in such an environment.

We believe that the use of these facilities, and in particular the use of facilities such as the Internet to collect client information, can provide the means for clients to more effectively control the access of government to their personal information, and the uses that government makes of that information. However, while we appreciate that these issues frequently arise quickly when we advocate the use of these systems, they are also beyond the scope of this paper.

## 4. Conclusion

The administration of complex legislative or policy material is inherently difficult. It will always be error-prone, particularly in an environment where there is high staff turnover, rapid policy change and pressure to reduce resources. There is a need in most operational government agencies to address problems of the accuracy and consistency of determinations, particularly in the light of these environmental stressors.

Of course, rulebase systems do not provide comprehensive and immediate answers to all problems of decision-making quality. But we argue that they provide both direct quality improvements and the opportunity for a radically new approach to the task.

Initially (and substantially), rulebase systems can immediately address problems in the administration of *intricacy*. Where assessors make errors due to the logical complexity of the subject material, a rulebase can act as a completely reliable logic calculator – if the inputs are reliably entered, the outputs will be reliably determined. This is a substantial source of error in the administration of most legislation.

But the administration of legislation and complex policy involves more than simply intricacy. Many problems in the quality and consistency of decisions arise because of issues such as the initial identification of the client's requirements, the investigation or assessment of the data required to determine a client's case and the exercise of judgements and discretions.

In each of these areas, rulebase systems do not, in themselves, provide a complete solution. Rather, they enable a new model for the exercise of these responsibilities. This new model relies on analysis of administrative responsibilities and practices from a risk management perspective, the development of new, tailored policy to address specific client segments, the harnessing of interactive information collection techniques, the refocusing of staff activities and the development of new approaches to quality monitoring and improvement.

We see rulebase technology as an *enabling* technology. It facilitates the use of new techniques. It demands new disciplines. We believe that the use of rulebase technology, as part of an integrated, holistic approach to redefining the techniques of administering legislation and policy, can lead to substantial improvements in the quality of government determinations. And we see this integrated approach as the basis for new best practice in the administration of legislation.