Electronic Service Delivery:
Achieving Accuracy and Consistency in Complex Transactions

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Introduction

This paper discusses achieving accuracy and consistency in complex transactions through electronic service delivery. It focuses on the use of rulebase technology in the administration of legislation.

The paper first looks at *determinative processes*, the management of assessments of entitlement and obligations that form much of the operational work for many government agencies.

The paper then examines several entrenched problems in the administration of determinative processes: problems of achieving accuracy and consistency, particularly in a complex or volatile policy environment, and problems of service delivery.

Rulebase technology is seen as one means of overcoming many of these problems, and opening new opportunities. The paper provides an overview of what this technology is, and why it is peculiarly appropriate to the administration of legislation. Three case studies of the use of rulebase technology for administering legislation are provided: the Department of Veterans' Affairs, the Military Compensation and Rehabilitation Scheme and Comcare.

The paper looks at the implications of using rulebase technology more broadly in public administration. Implications for internal processes include an impact on the processes of policy development and legislative drafting, the format and use of policy and procedural manuals, increased flexibility in work structures, the role of administrative review and the types of staff that an agency may employ in determinative processing.

Finally, the paper discusses the profound implications of this technology for expanding service delivery options. It argues that ubiquitous public sector aspirations for one-stop shops, electronic service delivery and life-event based service delivery will only lead to a shallow level of service delivery, unless technology is used to enable *deep transactions*, complex determinative processes, to be completed in a highly automated way.

Determinative Processes in Public Administration

What are determinative processes?

Most government agencies that deliver services organise much of their work around *determinative processes*. These are processes of assessment against rules: determinations of entitlement, of obligations and of rights.

Where a government agency administers legislation, the staff of that agency are likely to make a great many determinations as to how the legislation applies to specific client cases. This is often the primary function of the operational staff.

Every level of government does this. At the federal level, we have agencies that determine pension or benefit entitlements, compensation, medical benefits, immigration visas, taxation liabilities, rights to subsidies and bounties, compliance with regulatory schemes and entitlement to grants. At the state level, there are agencies that assess and collect revenue, administer workers' compensation, determine environmental and land planning rights and obligations, adoption rights and child welfare rights and obligations, administer investment guidelines, fair trading laws, residential and commercial tenancy rights and determine their own levels of grants, subsidies and payments. At the local government level, the determination of rights to use land consumes vast amounts of staff time and client anxiety.

For most members of the community, this is largely what government does. Most people's direct contact with government comes at a time when they are obliged to seek some determination on how legislation applies to them. These processes largely define the relationship between a government and individual members of the community.

How do members of the community feel in this situation? What do they experience? How do you feel when you have to deal with a government agency that will determine your rights? I suggest that there are three experiences and perceptions that are almost ubiquitous:

- Most people believe that, generally, the government agency will make the correct determination. They may not always feel that it is fair or appropriate, but they will generally accept it.

- Most people will immediately feel powerless in the face of the government agency's process and determination. They will feel a mix of confusion, uncertainty and vulnerability in seeking the determination. I suggest that most people will feel intimidated when they have to participate in a process with which the other party is familiar and they are not.

- Most people will feel that they have no capacity to take charge of the process. This can be because they perceive the legislation governing their rights to be too foreign or complex, or it could be simply a general sense that they are not allowed to take charge: that government is in charge. Those that can afford to hire specialists to take charge on their behalf.

The more significant the determination and the more vulnerable the client will be in the face of the determination, the more these perceptions will be accentuated.

How correct is the perception that government agencies administer legislation correctly? How inevitable is it that clients feel a sinking loss of control and a general sense of reliance when dealing with government agencies that determine their rights.

Problems of complexity, change, accuracy and consistency

Inside government agencies, the issues are obviously different. In my experience, the following sketch summary is true:

- Front-line staff generally believe that they make the correct or preferable decision. However, they are not so sure about their colleagues' decision quality.

- Senior managers are frequently either uneasy about the quality and consistency of the primary decisions, or have grounds for believing that there is a general problem with the quality of those decisions.

- There is a general perception that legislation is too complex, and that complexity is compromising the quality of primary decision-making and the quality of service delivery.

- Many internal processes and a significant amount of staff training are devoted to coping with changes to legislation and policy. Change adds to complexity and is frequently seen as the enemy of smooth primary decision-making and service delivery.

My experience has been that agencies do not conduct audits on the accuracy and consistency of their staff's determinations. They audit performance against key indicators, but these are usually quantitative, focusing on throughput. To make some measure of the quality of primary decision-making, they look to rates of administrative review and the results of those review processes. At best, this is hopeful, evincing a sense that the incidence and subject matter of reviewed cases accurately reflect underlying decision patterns. At worst, it is naïve or dishonest, where there is some sense that the rate of inaccuracy is reflected in the volume of cases going to review.

On the basis of file audits that our clients have conducted, we can make the following generalisation: if only 25% of an agency's primary decisions are wrong, then the agency is doing well. This figure flies in the face of community perceptions. However, in discussions that I have had with senior managers in many government agencies, this does not appear to ring untrue. Rather, it appears to reflect the suspicions and concerns of those senior managers.

Complexity and change exacerbate the problems of securing accurate and consistent determinations. It is difficult for front-line staff to keep up-to-date in a volatile policy environment. It is particularly difficult where they have stressful workloads, and high levels of public contact.

Agencies deal with complexity and change through a number of devices. They stovepipe processes, so that each staff member only needs to remember the rules and procedures for a limited range of policy. They use delegation levels to segment case loads, channeling the more complex cases to more experienced staff. They use training, policy manuals and instructions to try to keep their staff up-to-date.

Yet there is something that is inherently wrong in these attempts to create a determinative assembly line. It is immediately apparent when a case moves out of the administrative domain and into the legal. This usually happens on review, although it can happen for some processes at the start, when legal advisors take charge. Lawyers (good lawyers) seldom make snap judgements from memory as to how legislation applies. They read the legislation. They identify what provisions apply and why. Where there is an issue of how a word or phrase applies to the immediate situation, they review policy or case law to see whether there is any guiding precedent.

This may conjure a picture of primary decision makers being extracted from their harried, open-plan existence and deposited in wood-paneled, leathered comfort to ruminate on the entitlement of their client. Naturally, the indulgence in terms of time and thought that is afforded within the legal process is not available in the administrative process.

But this is why the primary decisions are often wrong. The decisions can be quick, good or cheap; you can have two but you can't have all three. In some agencies, you can't have any.

Determinative processes and service delivery

There are currently two standard service delivery methods for determinative processes.

The first is the traditional process, in which a client comes to an agency, provides information on their circumstances, and a trained officer makes a determination, theoretically according to law.

The second is the model of assisted self-assessment. In this model, the client hires a gun to work on his or her behalf: a lawyer, an accountant or some type of domain consultant. On the whole, this is the way in which the moneyed minority organise their interactions with government, rather than being a common community response.

There are some areas in which true self-assessment is a reality. A prominent example is personal income tax assessment. However, this is not a dominant method.

The Commonwealth Ombudsman recently released a discussion paper, *Balancing the Rights: Providing information to customers in a self-assessment income support system*, that argued that the Australian income support system is in fact a self-assessing system. This argument suggested that where it is incumbent upon a person to know their rights and entitlements, to seek the appropriate entitlement and to volunteer sufficient and appropriate information in order to secure that entitlement, then this is effectively a self-assessing scheme.

On this analysis, most government determinative processes could be characterised as flawed systems of self-assessment.

In the discussion paper the Ombudsman reiterated the concern expressed on a number of other occasions, including in annual reports and in a special report on oral advice issues, that the self-assessment systems which certain agencies operate, "unfairly transfers a high level of risks to its customers". (para 2.23)

The impact of this transfer of risk to customers is potentially significant. As customers 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)

In the Ombudsman's view government agencies on whom clients rely for income support entitlements should:

"be aware that there will be many forms of direct contact between itself and customers, and these will not always be the result of clear written advice about certain entitlements. We believe the agency needs to reconsider how it can use its position of knowledge of its programs more effectively to assess information it receives from customers, which might act as a trigger for it to take additional action to check possible eligibility for other payments." (para 3.7)

The standard service delivery techniques, and the observations of the Ombudsman, illustrate a truism that lies behind the traditional service delivery models: you have to know the rules, in order to be able to apply them.

The fundamental techniques and structures of much public administration are built on this assumption. Only trained staff can administer legislation. Only experienced, knowledgeable people can determine rights and entitlements. Only specialists can accurately administer complex policy and statutory material.

This assumption represents a major barrier to expanded service delivery techniques. While agencies speak of *electronic service delivery*, they limit this to shallow transactions: updates on the status of a case, down-loading forms, on-line registration or lodgement. While agencies speak of single points of contact and one-stop shops, do they mean anything more than similar shallow transactions delivered over the counter?

Determinative processes are *deep transactions*. They are complex processes that form the meat of much government service delivery. Radical client benefits, profound electronic service delivery and major efficiencies in service delivery will only come with the capacity to deliver these deep transactions in new ways.

And the key to this is breaking a time-honoured axiom: making it possible to make determinations, without knowing the rules.

Rulebase Systems

Rulebase systems automate the administration of rules. Rulebase technology is a programming technique. It is not particularly new, nor is it particularly clever. However, its application can be clever. It is profoundly appropriate for determinative processes.

Before discussing how rulebase systems work, and how they can be used, it is salutory to remind ourselves of some other areas of specialist automation that have taken place over the last 25 years.

Calculators were the first ubiquitous device to automate complex mathematical/logical processes. Initially, they were anathema in schools and universities. If you could use a calculator, you wouldn't learn how to calculate cos, sin or tan, you wouldn't be able to determine a square root from first principles, you wouldn't be able to use logarithm tables effectively. Clearly, the calculator was a seriously deskilling device.

Spreadsheets became the next ubiquitous device to automate otherwise specialised or time-consuming mathematical/logical processes. They revolutionised accountancy. It might be said that they deskilled some accountants. What they certainly did was provide the means for large numbers of non-accountants to undertake tasks that were previously beyond them.

Both calculators and spreadsheets are now completely accepted tools for particular tasks. They have redefined how those tasks are performed. They have made it possible for people to operate more effectively and efficiently, and for agencies to organise certain types of work in different ways. Just as the word processor spelt the end of the typing pool, so spreadsheets have changed the role and expectations of managers.

With both devices, there is a common acceptance that if the parameters that are input are correct, then the result will be correct. This may be subject to some known constraints, but it is generally true. They are trusted as the legitimate means of performing common tasks accurately and efficiently.

Rulebase systems are simply another means of automating logic. They automate the structural logic of sets of rules (such as legislation). They are frequently and unfortunately known as *expert systems*, a hangover from early research and commercial characterisations. This nomenclature hides their character. They simply automate logic processes.

The administration of determinative processes, the application of rules, involves two types of interpretative skill. The first is dealing with logical intricacy. Legislation is intricate: provisions interact with each other, interpretative provisions must be applied within substantive provisions, complex alternative provisions interact with each other, lengthy provisions contain complex sub-sections, paragraphs, sub-paragraphs and so on.

The complexity of legislation largely derives from its logical intricacy. When government agencies, Ministers, staff or clients bemoan the complexity of legislation, they are almost always referring to the logical intricacy of the material: the apparently impenetrable web that has grown through countless amendments, targeting exercises, fixes and extensions.

The second type of interpretative skill that is required to administer determinative processes is the capacity to determine whether a brief phrase accurately characterises some aspect of a fact situation. This is the classic legal issue of interpretation: whether a product is *95% fat*, whether a houseboat is *a house*, whether a person *took reasonable steps*. These are exercises in judgement.

Logical intricacy can be reliably automated. Judgements cannot.

Rulebase systems can reliably model complex or intricate sets of rules. They can automate the process of investigating those rules, asking appropriate questions of the user to find out whether the facts required exist in the immediate case. They can apply the rules to determine a conclusion: whether the legislation applies. They can explain which rules apply: how the legislation covers or excludes the immediate case.

Rulebase systems make it possible for a person who does not know a set of rules, to apply them accurately. Along the way, that person will need to make judgements: interpreting phrases to see whether they cover the immediate case. However, this is a general human skill, and can be aided by the provision of explanatory material: elaboration on the meaning of the phrase, summaries of precedents, examples and so on.

Rulebase technology has the capacity to change the fundamental techniques of determinative processing. Its use is highly analagous to that of calculators and spreadsheets. It has the capacity to change the methods and the quality of many functions in public administration. It is a specialised and an appropriate technology for administering rules.

Case Studies

Department of Veterans' Affairs

The Department of Veterans' Affairs administers, among other entitlements, pensions payable to veterans to compensate them for service-related illness, injury and death. These disability and war widows' pensions require a difficult determination to be made: whether a claimed illness or injury resulted from service.

In 1992, the Department had been criticised by the Australian National Audit Office for its administration of the compensation program. It was clear that primary decision-making in the program was highly inconsistent, that liability was sometimes being accepted on inadequate grounds, and that the calculation of entitlements was unreliable.

The Department redesigned the way in which the program was to be managed. The new design had three key elements: new and far more detailed policy, a new computer system incorporating rulebase technology to support the decision-making, and a re-engineering of the processing function.

A risk management approach was taken to policy. 65 medical conditions were identified, that represented 75% of claimed conditions. Specific, detailed rules were developed for the determination of liability for these conditions. These rules, known as *Statements of Principle*, became delegated legislation. They comprehensively and authoritatively set out the basis on which liability for a particular medical condition would be accepted.

This aetiological policy was complemented by the development of detailed investigative processes: a tailored questionnaire for each possible cause for each condition, to be sent to the veteran or the appropriate doctor for completion. Protocols setting out the basis on which diagnoses would be accepted were formulated. In short, the process of administering the top 65 medical conditions was refined to fine detail.

The rulebase system implemented this array of medico-legal rules and investigative processes. It was part of a larger claim processing system, that automated other processing functions.

The compensation process was redesigned, abandoning multi-handling of claims in favour of single-officer processing.

In the first full year of operation, the program processed 60% more claims in an average of 60% less time, with 30% fewer staff, operating at lower delegation levels than before. Overall, the Department achieved an 80% productivity improvement, while simultaneously improving the quality and consistency of primary decisions.

The vast and complex policy that underpins CCPS is highly volatile. It is regularly updated in the light of current medical knowledge and legal developments. Because this policy is implemented by the rulebase, staff do not have to be trained in this changed policy, nor even alerted to specific changes. The system guides them reliably through the issues that need to be considered and addressed in any case.

The Compensation Claims Processing System (CCPS) is notable because it represents a very large deployment of rulebase technology in government. It demonstrates that more complex policy can be applied more simply, allowing very refined risk management principles to be applied to determinative processing.

Military Compensation and Rehabilitation

The Military Compensation and Rehabilitation Service (MCRS) administers workers' compensation for the Australian Defence Force.

One particularly complex aspect of workers' compensation in this jurisdiction is the administration of weekly incapacity payments. The Military Compensation Act provides multiple bases for the determination of entitlement in different situations, an array of comparative, alternative bases for calculation, and a tortuous set of transitional provisions for former members of the ADF who were receiving compensation prior to 1988.

The MCRS knew that this was a problem area in its administration. Managers knew that the administration of the legislation was likely to be inconsistent, and that staff found this aspect of their work particularly difficult.

The MCRS developed a rulebase system that automated the investigation and application of this legislation. The system incorporates both the compensation legislation and relevant rules relating to Commonwealth superannuation, which directly affect the calculation of weekly payments.

The process of development identified a number of hitherto hidden policy problems. It became clear that there was no agreed policy on a range of issues of judgement, leaving branch offices free to determine and administer their own interpretations of the effect of the legislation. It became clear that there were areas of interpretative policy or practice that were unsupported by the legislation. And finally, it became apparent that there were a significant number of areas for which there was simply no interpretative policy. All of these issues, and the discovery of

inherent drafting problems in legislation, are completely typical upshots of a rulebase development project.

The rulebase system that the MCRS developed combined a rulebase that models the legislation, with authoritative commentary on the interpretation of each issue raised by the legislation. This commentary was developed from the *Annotated Safety, Rehabilitation and Compensation Act*, the authoritative guide to Court and Tribunal decisions on the application of the Act, and incorporated MCRS policy and procedural material.

Prior to deployment, the MCRS conducted a file audit of manual decision-making, to provide a benchmark against which the performance of the system could be judged. The audit revealed that an average 25% of primary decisions on weekly payments were incorrect. The fundamental reason for this level of errors was the inherent complexity of the legislation – a manual calculation was often a tortured and dangerous process. However, this was exacerbated by the absence of clear and consistent interpretative policy on a range of issues, a problem that is typical when operating at this level of detail in a complex legislative field.

The deployment of the rulebase system remedied this level of errors. The complexity deriving from the intricacy of the provisions is automatically managed by the system, producing a correct logical application of the provisions. The commentary has been particularly well-received by staff, assisting them with interpretative guidance and support.

The MCRS has also deployed a rulebase module to apply the legislative requirements for redeeming weekly incapacity payments as a lump sum. Prior to the deployment of this module, the MCRS had little confidence that staff were correctly applying these requirements, or were even reasonably able to, given the intricacy and ambiguity of the legislation.

The MCRS is continuing to develop and deploy rulebase technology to cover all of the other major decision areas that it administers, including liability for compensation, eligibility for particular payments and calculation of lump sum payments.

Comcare

Comcare administers workers' compensation for most Commonwealth agencies and the ACT government. It administers the *Safety, Rehabilitation and Compensation Act 1988* as well as the *Occupational Health and Safety Act (Commonwealth Employment) Act 1991*.

The threshold issue in workers' compensation is liability. From this, all entitlements flow. Therefore, the major justification for all Commonwealth expenditure in a case is the decision to grant liability. Similarly, this decision determines whether a worker will receive financial and rehabilitative support for an illness or injury.

Comcare wish to achieve the highest quality possible in its administration of the issue of liability. Managers knew of, and wished to make use of, the approach taken by the Department of Veterans' Affairs in the CCPS system.

Comcare staff therefore identified 32 medical conditions that represent a high proportion of their claims. They adopted the Veterans' Affairs Statements of Principle on these conditions, and modified them to suit the workers' compensation environment. They defined detailed investigative processes for each of these conditions.

A liability rulebase was developed, based on the legislation and the modified Statements of Principle. The rulebase incorporated the detailed processes that had been defined, including the generation of tailored questionnaires and other documents required by the process.

Prior to deployment of the system, Comcare conducted an audit of liability decisions in 200 cases. This disclosed that there was a percentage of inconsistent and incorrect decisions; not surprising, considering the complexity of the legislation and policy on the issue.

The deployment of the system very substantially improved the accuracy and consistency of decisions. It also enabled new staff to take on this specialist processing function quickly and reliably.

Implications for Primary Decision-Making

The adoption of rulebase systems in the public sector will have a range of implications for agencies' internal administration of determinative processes. Below, I discuss some of these implications for:

- policy development;

- legislative drafting;

- policy and procedure manuals;

- work structures; and

- staff profiles.

Policy development

In many government agencies, there is a tension between the policy area and the service delivery area. Complexity and change in policy are seen as the enemies of smooth administration and service delivery.

Complexity will always be with us, and policy will always change. Legislation generally reflects community attitudes, which changes. Different legislation is required to deal with a changing environment. Complexity is inevitable when governments seek efficiency and refined targeting.

Complex policy is not necessarily bad policy. On the contrary, it may be very precise and completely appropriate. The perceived problem is that it is difficult to understand and to administer: operational issues.

Rulebase systems do not make legislation less complex. Rather, they absorb the complexity. They hide the complexity from the user. This means that the user can get a result, without experiencing complexity.

If a user of legislation doesn't experience complexity, does it matter that the legislation is complex? It certainly matters if it is needlessly intricate, and is a sloppy or convoluted elaboration of policy where a more elegant form would be equally accurate. But don't the problems of complexity largely disappear, if the administration of legislation is not perceived to be difficult or obscure or convoluted?

A second traditional problem with complexity is that, on the whole, as the complexity of policy increases, the cost of its administration is likely to increase. This cost may be in terms of additional resources, or simply in terms of squeezing more out of existing resources. But as a general axiom, this is true. Once again, this is an operational issue.

As the Department of Veterans' Affairs and Comcare have demonstrated, it is possible to dramatically increase the scale and complexity of policy, while simultaneously reducing administrative costs. Once again, this is through the use of rulebase techniques, which hide the increased complexity from the user.

If the user doesn't need to know the rules, then the user doesn't need to learn them. If the user can apply generalist skills in administering policy, then he or she is not affected by specific changes or extensions to that policy.

Rulebase techniques therefore remove operational impediments to a completely different approach to policy development. If extremely refined and detailed policy can be accurately and consistently administered, without any adverse impact on staff, then new policy development opportunities emerge.

More precise targeting is possible. A refined risk management approach can be taken to high volume or highly sensitive categories of cases. Detailed policy dealing with substantial margins of cases can be developed and reliably applied: the top 10 medical conditions, drivers between 25 and 35, people from New Zealand, applications from dairy farmers, companies with fewer than 15 staff – whatever refinement warrants targeting or specific handling.

Different rules can apply to different people, and the application of these rules can be controlled and monitored, to allow greater policy refinement.

Legislation and legislative drafting
The use of rulebase systems has implications for the format of legislation and for legislative drafting, at two levels.

The first is fairly mechanical. Rulebase techniques can be used to model legislation. Obviously, the use of consistent and clear drafting techniques and logical operators greatly enhances the ease with which the legislation can be modelled.

Once rulebase systems become the dominant method of administering legislation in any government agency, there will be pressure on drafting counsel to draft in a style that supports that delivery vehicle. This should not pose any particular difficulty, and should be an interesting exercise for those counsel.

The second implication is more significant. If rulebase systems are to be the means by which most people use legislation, then this effectively changes the medium of legislation.

We are all familiar with the densely elegant format and self-consciously crude packaging of Bills, Acts and their peripheral documents. Thus has it always been. But let's speak heresy. If most people who will use the operational portions of legislation will use it through some form of interactive electronic format, why should that format not have the status of legislation? Why should it not be the medium in which that legislation is produced, or one of two media?

Most people, when they approach legislation to use it, are not concerned with what it says in total. They don't want to read it. They want to answer a question. They want to see how the rules apply to a particular situation. This is the natural or dominant use of legislation.

The legislature, the judiciary and the executive frequently operate on the assumption that people know the law, a preposterous and ludicrous assumption at present. This assumption can be less preposterous if people are provided with the means to readily determine how the law applies to a particular situation.

I believe that rulebase systems will provide the public format for operational portions of legislation in the future, whether this is an officially sanctioned approach or whether it will simply reflect a practical reality.

Policy and procedure manuals

If rulebase techniques are used to administer the structural logic of legislation and policy (and frequently, for the logic of associated procedures), this has implications for the support resources that staff require.

The major work for a person who is using a rulebase system to make a determination is the consideration and exercise of judgement on discrete issues. This involves the consideration of evidence, the application of common sense and interpretative skill, potentially some policy research work, and possibly some investigation.

Once again, more precise support material can be provided to staff members, so that for each legislative issue that can arise there is clear guidance and assistance. Readily available commentary that elaborates on precisely the phrase or issue being considered can greatly improve the quality of the exercise of judgement. Instructions on evidentiary requirements can assist the staff member to make a reliable assessment.

On the other hand, the staff member does not need to memorise extensive policy materials that cover both the structural logic of the legislation being administered, and the interpretative policy.

Similarly, if procedural rules are incorporated into the system – the exercise of delegations, the requirements for documentation, the production of client correspondence, the interaction with decision recording systems and so on – then the staff member has less need to learn these arcane procedures.

One aim in the automation of a determinative process should be to ensure that the staff member involved should be able to operate effectively without knowing the precise rules, and should therefore be able to work across a broad area reliably.

Work structures

If a person does not need to memorise rules in order to be able to apply them, then he or she can operate effectively across a broad subject area. If only generalist skills are required for making determinations, then a person can operate effectively across a very broad range of determinations.

Similarly, this change in the technique for administering determinative processes has implications for segmentation of staff. There will always be a likelihood that senior staff will need to administer very complex or sensitive cases that involve substantial judgements. However, it is possible to shift down the cases that simply involve a high level of logical intricacy or knowledge of arcane portions of the legislation.

Work structures in most operational agencies are currently largely determined by knowledge. Stovepipe processes reflect the recognition that there is a finite amount that individual officers can remember. This in turn reflects the fact that determinative processes rely almost completely on the memory of trained staff.

Moves to single points of contact, one-stop shops and so on are fanciful if they are not accompanied by a radically different approach to administering determinative processes. If they are simply contact points, where clients can drop off forms, collect pamphlets and receive status reports, then they represent an advance in client convenience, but no significant change to real work structures.

Administrative review

The use of rulebase techniques in public administration has implications for administrative review. If the structural logic of legislation is effectively administered by systems for an agency, then how is an administrative review body to approach this?

On one hand, these bodies can be far more proactive. If a system administers a major aspect of determinations, this opens the way for review agencies to audit and certify their compliance with the legislation. Surely, this is a more practically useful function than simply dealing with complaints after the event.

If the real function of administrative review agencies is to assist in the improvement of the quality of administration, then any practical steps that they can take to improve primary administration should be viewed as a healthy and extremely effective preventative strategy.

Unfortunately, many review bodies appear to have seen their role as purely directed to the resolution of complaints. The use of more automated techniques for determinative processes provides them with an opportunity for a more dynamic role.

Should review agencies use the rulebase systems in determining cases? This is more problematic. They use calculators to perform calculations that arise in cases before them.

There will be some cases where structural logic is precisely the issue: the unravelling of complex and overlaid transitional provisions is one example. In this case, it is probably essential that a tribunal operates from first principles and provides an authoritative exposition on the operation of the legislation.

More commonly, the issue before the tribunal is simply the interpretation of a phrase and its application to a set of facts. Here, the rulebase system is not appropriate. However, it may be an appropriate tool for checking the overall application of the legislation.

Finally, will tribunals and courts accept the legitimacy of determinations made by rulebase systems? Will they regard the use of such systems as an abrogation of a responsibility to make the determination? This is only likely to happen through a misunderstanding of the way in which these systems operate and would be easily overcome by amendment of the relevant legislation to authorise such decisions.

Staff profiles

The Department of Veterans' Affairs has substantial experience working with rulebase systems, and reviewing the way in which staff interact with them and make use of them.

In broad terms, the Department has identified that there is a desirable profile for staff who are given responsibility for a determinative process, using such a system.

Through quality reviews, the Department has identifed two major types of user. The first is one who tends to make a determination about a case in their own mind and work to secure this determination.

The second type of officer relies on the system, and complements it. These officers appear to enjoy conscientiously exercising judgement and will make pragmatic decisions in obtaining and evaluating evidence or clarifying facts. They see their role as involving skill in exercising judgement at the level of individual issues, rather than having a personal investment in the final result.

From a quality management perspective, the Department prefers the second type of staff member. This profiling will have an impact on their recruitment and training procedures in the future.

Implications for Service Delivery

The adoption of rulebase systems by the public sector can have profound implications for service delivery techniques. Below, I discuss some of the major opportunities:

- enhanced data collection processes;

- outsourcing of services;

- self-service; and

- one-stop shops and similar government service delivery points.

Intelligent data collection processes

I must admit to despairing when I see governments tout the provision of access to existing forms on the Internet as their move into *electronic service delivery*. This has mistaken the medium for the message.

The shift to the electronic media should herald a radical shift in the way that things are done - the way that services are delivered. To give a client the capacity to print a standard paper form over the Internet may be convenient, but it misses the point. Electronic media provide the opportunity for dynamic, rather than static interaction. Static electronic interaction is not a great deal more than a gimmick.

Rulebase systems provide an opportunity for agencies to replace data collection based on generic paper forms with far more dynamic and effective electronic processes. They can provide intelligent, interactive, tailored data collection processes, which collect more detailed and more relevant data in less time than it takes to complete a generic form. They will be far easier for the user to navigate than a conventional form. And at the end of the data collection process, the user actually gets the result.

An appropriate rulebase system will conduct an intelligent dialogue with a user. It will investigate the legislation directly, asking questions of the user. As each question is answered, the system will draw any conclusions possible from that conclusion. So for example, if a particular subsidy cannot be paid to a company with more than 15 staff, and the user identifies that their company has 30 staff, the system will immediately stop investigating that subsidy, and will only look at alternative subsidies to which this limitation does not apply.

This intelligent, directed conversation is more natural and less confusing to users than forms. The user does not have to be given directions such as "If YES, go to question 12". The system applies that logic. The questions can be framed in terms of the client's personal situation:

"When was Lisa born?" The user will only be asked questions that are actually relevant to his or her case, in the light of information already provided. So, for example, the system may ignore blocks of questions or even pages of questions that would appear on a paper form, because they are irrelevant to the case at hand.

This intelligent data collection process does not simply make form-filling less intimidating and less difficult for the user, it allows the agency to collect more detailed and more useful data. So, for example, in a workers' compensation context, if it is clear that the claimant has a back injury, a host of special questions that only apply to backs can be asked. If the claimant suffers from stress, a host of questions on that subject can be asked. The fact that the data collection process is dynamic rather than static makes it more natural and more powerful.

If the data collection process is simultaneously the determinative process, then the agency has profoundly changed the dynamic of interaction with the client. The client will obviously see more benefit and will be more disposed to seek out this means of interaction in the future.

Outsourced services

The use of rulebase technology provides an agency with the capacity to outsource determinative processes with a measure of well-founded confidence.

Because a rulebase system guides the user and encapsulates the logic of the decision process, there is less scope for error. Errors will not arise from lack of knowledge of what the rules are, or from lack of knowledge about changes to rules. They will not arise through workers applying local folklore instead of the correct rules, nor through the application of irrelevant considerations.

Errors can still arise through poor judgement on a particular issue. However, the capacity of a rulebase system to automatically record a complete audit trail for any decision provides an appropriate means of managing this risk. It is possible to monitor decision-making practice in detail, and to identify errors precisely, so that a policy agency can effectively audit an outsourced decision-processing agent.

Rulebase systems enable outsourcing of determinative processing, because they support a peculiarly appropriate model for outsourcing. The policy agency can develop and maintain the decision tool, largely regulating the manner in which the agent goes about the decision-making process. The policy agency has control of policy change and implementation, through the provision of new releases that encapsulate the new rules. The policy agency has the capacity to precisely monitor the performance and decision quality of the agent, and can therefore effectively hold the agent accountable.

This enhanced capacity for outsourcing is complemented by an enhanced array of outsourcing vehicles. While an obvious style of outsourcing is to commission a single external agency to provide all of the processing, this is not the only model available. Because a rulebase system enables precise auditing, a keenly competitive outsourced environment is possible. Multiple agents can be licensed, and their performance very accurately assessed.

However, rulebase systems open the possibility for a far more creative approach to off-loading determinative processing. Widely dispersed, local agents, who provide convenient and trusted environments for clients, can safely be licensed using this type of system. They can be commissioned to provide a service on a continuing basis, or on a fee-per-transaction basis. This opens the way for significant government services to be reliably provided through neighbourhood centres, community centres, accountants, pharmacists, doctors, schools, childcare centres, service stations, gardening shops – whatever outlet makes most sense for a particular type of transaction.

These community-based service providers may rightly see no significant value in simply providing their clients with access to government forms or pamphlets. However, the provision of a capacity to complete transactions with government agencies may be highly complementary to their own services. This capacity can be very attractive to those providers, if the transactions effectively enhance the services that they wish to provide for their clientele. When the punter gets a result, rather than a pamphlet or form, they will see more value in the transaction.

Self-service

The ideal service delivery vehicle for determinative processing is, in many cases, self-service.

Within *self-service* I include the range of mediated or assisted self-service that effectively provides the same result. It therefore includes self-service with help from a spouse, a son or daughter, a parent, a friend or relative, a neighbourhood person who "knows how to do it". It is also self-service, rather than outsourcing, where a community or commercial agency provides the facilities and assistance for its clientele to complete transactions, at no cost to the government agency. I suggest that this model of self-service will become very widespread over the next 3-5 years.

Using a rulebase system, it is demonstrably as easy for a person to process their own determination as to complete the relevant form. The provision of information through a tailored, intelligent on-screen interview is usually simpler than the navigation of a form of any substance. And with a rulebase system, at the conclusion of this process the determination is a by-product. This determination may need to be supplemented by provision and sighting of appropriate evidence (or it may not in some cases).

Self-assessment, or assisted self-assessment, obviously requires changes to a government agency's approach to and support for determinative processes. But the benefits to the client, in terms of convenience, confidence, a sense of control and the capacity for hypothetical scenario testing are compelling. Simultaneously, the benefits to the government agency are compelling – vast reductions in unproductive data entry, vast reductions in staff time spent on mundane aspects of processing, fewer interruptions through phone calls and enquiries, and the capacity to apply more resources more effectively to essential tasks of compliance auditing and verification.

One-stop shops

One-stop shops run the risk of being pamphlet counters. They are currently a ubiquitous response to the stove-piping of traditional government service delivery. They can be cross-agency service delivery points, or single points of contact within an agency.

So, how are you really going to provide clients with a staff member who can confidently and sequentially resolve a client's taxation problem, the grandparent's immigration application, the daughter's social security claim, the son's hotel licensing issue and the car registration?

This example is perhaps fanciful. But if a one-stop shop is to be anything more than a pamphlet counter, it must actually deliver services, rather than simply delivering information about services. The conventional means of delivering government services is through trained, knowledgeable staff, who apply that specialist knowledge to resolve specific issues.

Rulebase systems are not magic bullets. But they do address a primary problem facing a one-stop shop. They reduce the need for specific, arcane knowledge, and accentuate a requirement for generalist, pragmatic skills. They empower a government officer to be able to reliably perform a process with which he or she is broadly familiar, without requiring knowledge of the minutiae of the content or effect of the process.

If rulebase systems enable government officers to complete processes and make determinations with which they are not specifically familiar, then a one-stop shop can truly look to offer an array of services across divisional and portfolio boundaries. It is at this point that the shop becomes an effective service delivery point, meeting the aspirations of government rather than simply providing a shadow presence for continuing, stove-piped bureaucracies.

Conclusion

Sadly, most international government efforts at *electronic service delivery* are, when properly examined, concerned with transactions on the scale of dog licensing, changes of address, business name registration and so on. I call these *shallow transactions*.

While these transactions are useful, they are not the meat of government service delivery. Electronic service delivery has a very limited scope, unless it can truly include *deep transactions*: those determinative processes that currently require detailed knowledge of policy or process.

When a government agency can administer deep transactions electronically, when it can provide reliable access to immediate resolution of a complex application or claim, then it is providing real electronic service delivery. It is at this point that the government agency is changing the way that it organises and works. It is at this point that the government agency shifts to a primarily *electronic* basis for the delivery of this type of service, rather than simply having a convenient adjunct to continuing traditional determinative processing.

Electronic access to complex rule-based transactions will not be possible without the use of appropriate technology. This paper has argued that rulebase technology is appropriate for this task, and is able to deliver a level of electronic service delivery that profoundly and productively changes the nature of government and its relationship with the community.

This approach to service delivery does not simply provide a client with convenience. It can effectively address entrenched and intractable problems with the quality of manual primary decision-making in government. It can provide the client with a range of services not previously possible – testing of hypothetical scenarios, cross-portfolio packages of determinations, determination of optimal packages of services. But, to me, the most important client benefit is dignity: it provides a means whereby the client can control the process of seeking entitlements, within a comfortable and trusted environment and with well-founded assurance that the decision is unprejudiced and equitable.