



ADMINISTRATIVE REVIEW COUNCIL

**AUTOMATED ASSISTANCE IN
ADMINISTRATIVE DECISION MAKING**

REPORT TO THE ATTORNEY-GENERAL

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Administrative Review Council

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ADMINISTRATIVE REVIEW COUNCIL

12 November 2004

The Hon. Philip Ruddock MP
Attorney-General
Parliament House
CANBERRA ACT 2600

Dear Attorney-General

I have pleasure in submitting to you the Administrative Review Council's report entitled *Automated Assistance in Administrative Decision Making*.

In view of their potential for cost savings, efficiencies and greater accuracy in decision making, it can be expected that automated computer systems designed to assist administrative decision makers will become increasingly important tools of government.

The Council has identified a range of best-practice principles it considers will ensure that decision making done by or with the assistance of these systems is consistent with administrative law values. These principles will provide a useful framework for government agencies installing such systems or reviewing their practices.

Yours sincerely

Wayne Martin QC
President

The Administrative Review Council

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Best-practice principles for automated assistance in administrative decision making

Expert systems can play a significant and beneficial role in administrative decision making, particularly in areas where high volumes of decisions are made. Their potential to offer cost savings and improve efficiency and accuracy means it can be expected that the systems will become increasingly important tools of government.

An examination of the development and operation of expert systems is both timely and important. In this report the Council identifies a range of best-practice principles it considers will ensure that decision making done by or with the assistance of expert systems is consistent with the administrative law values of lawfulness, fairness, rationality, openness (or transparency) and efficiency.

The Council makes an important distinction in the report between administrative decisions for which the decision maker is required to exercise discretion and those for which no discretion is exercisable once the facts are established. In the latter case, the Council concludes that full automation of the decision-making process is appropriate. Where discretion is exercisable, however, the Council considers that the process should not be fully automated; in these circumstances, expert systems are best used as decision-making tools.

Many of the principles the Council identified are basically ‘good sense’ and practical in content – for example, the principles relating to ensuring the accuracy and currency of the legislative and other information contained in an expert system. Although the principles are directed at people involved in the construction and maintenance of expert systems used in administrative decision making, they are equally applicable to any agency manual on administrative decision making. The same is true of the interim measures proposed for dealing with the situation where legislative amendments need to be inserted into the system and of the principles relating to information management.

None of the principles put forward is radical or surprising. They are consistent with the best-practice principles generally associated with good administrative decision making and are straightforward and achievable. The Council is confident they will ensure that good decisions consistent with administrative law values are made with the assistance of expert systems.

The suitability of expert systems for administrative decision making

Principle 1

Expert systems that make a decision – as opposed to helping a decision maker make a decision – would generally be suitable only for decisions involving non-discretionary elements.

Principle 2

Expert systems should not automate the exercise of discretion.

Principle 3

Expert systems can be used as an administrative tool to assist an officer in exercising his or her discretion. In these cases the systems should be designed so that they do not fetter the decision maker in the exercise of his or her power by recommending or guiding the decision maker to a particular outcome.

Principle 4

Any information provided by an expert system to assist a decision maker in exercising discretion must accurately reflect relevant government law and policy.

Authority for using expert systems

Principle 5

The use of an expert system to make a decision – as opposed to helping a decision maker make a decision – should be legislatively sanctioned to ensure that it is compatible with the legal principles of authorised decision making.

Overriding an expert system

Principle 6

Before overriding a decision made by or with the assistance of an expert system, the primary decision maker should contact a senior officer to discuss the decision to override the system.

If decisions made by or with the assistance of expert systems can be overridden only by a senior officer, it might be advantageous for this to be legislatively clarified.

Grounds for review of decisions

Principle 7

The construction of an expert system must comply with administrative law standards if decisions made in accordance with the rule base are to be lawful.

Decisions made by or with the assistance of expert systems must comply with administrative law standards in order to be legally valid.

Privacy

Principle 8

The people responsible for constructing an expert system must ensure that it is compatible with their agency's privacy obligations.

Disclosure requirements

Principle 9

Expert systems should comply with administrative law disclosure requirements—in particular, requirements associated with freedom of information and statements of reasons.

Accuracy and consistency

Principle 10

Expert systems should be designed, used and maintained in such a way that they accurately and consistently reflect the relevant law and policy.

Design and maintenance

Principle 11

The team designing an expert system should be made up of a combination of people with technical expert systems knowledge and legal and policy experience.

Principle 12

Expert systems must be regularly updated and maintained in order to ensure the currency of the information on which the rule base is constructed.

The people responsible for maintaining an expert system need a detailed knowledge of the system.

Principle 13

Agencies should have robust system-testing processes in operation to ensure the initial and continued accuracy and effectiveness of expert systems used in administrative decision making.

To the extent to which it is technically possible, expert systems should be designed to be self-evaluating—that is, designed in such a way that the system identifies errors in itself.

Time and cost

Principle 14

To ensure the continuing accuracy and currency of an expert system and the material it contains, there should be sufficient funding available for a program of periodic maintenance for the system.

Principle 15

When amendments to an expert system cannot be made immediately, agencies should have interim strategies – for example, alerts on the system and notification of interim instructions to system users – to ensure that decision making remains accurate.

‘Skilling’ or ‘de-skilling’ decision makers?**Principle 16**

Officers using expert systems should receive continuing training in order to ensure that they understand the relevant legislation and are able to explain a decision to the affected person.

Principle 17

In the event that the system malfunctions, there should be officers available who have sufficient training to make the decision manually.

Human manipulation**Principle 18**

A process – for example, robust quality assurance or auditing – should be in operation to ensure that officers are not using informal workarounds to manipulate the result of an expert system.

The audit facility**Principle 19**

Expert systems should provide a comprehensive audit trail that can be used for review and audit purposes.

Data quality**Principle 20**

Agencies should use suitable practices for accurately collecting and storing data used by expert systems in administrative decision making.

Principle 21

Agencies should take steps to ensure that the data collected and used by expert systems for administrative decision making remain accurate and complete.

Review procedures**Principle 22**

Agencies should have the capacity and the will to conduct internal reviews of decisions manually where appropriate, particularly where review of a matter involving the decision maker’s judgment is sought.

Principle 23

External reviews of administrative decisions should be done manually, in accordance with the procedures and practices of the particular tribunal or court conducting the review.

Independent scrutiny**Principles 24**

Independent scrutiny and oversight of expert systems should focus on ensuring that the administrative law values are reflected in the decision-making process.

Principle 25

A panel should be created to oversee and provide advice to government on the operation of expert systems in administrative decision making. The panel should be advisory in nature, with the agencies themselves and external overseeing bodies such as the Auditor-General and the Ombudsman remaining responsible for system testing and quality assurance. Among the members of the panel should be representatives of the following:

- the Office of the Ombudsman
- the Australian National Audit Office
- Commonwealth agencies
- community organisations.

Diverse service delivery mechanisms**Principle 26**

In the development and operation of expert systems for use in administrative decision making, account should be taken of access and equity.

Self-assessment**Principle 27**

Self-service options delivered by the use of expert systems, including self-assessment, should supplement – rather than replace – direct human services.

1 Introduction

1.1 The Administrative Review Council

The Administrative Review Council was established under the *Administrative Appeals Tribunal Act 1975* as an integral part of the Commonwealth system of administrative law. The Council advises the Attorney-General on a broad range of matters related to Commonwealth administration.

The inquiry into the use of automated assistance in administrative decision making is relevant to two of the Council's functions pursuant to s. 51 of the *Administrative Appeals Tribunal Act*:

(aa) to keep the Commonwealth administrative law system under review, monitor developments in administrative law and recommend to the Minister improvements that might be made to the system; and

(ab) to inquire into the adequacy of the procedures used by authorities of the Commonwealth and other persons who exercise administrative discretions or make administrative decisions, and consult with and advise them about those procedures, for the purpose of ensuring that the discretions are exercised, or the decisions are made, in a just and equitable manner.

Section 51 of the Act is reproduced in Appendix A.

1.2 The project

Primary decision making is now 'big business' for many government agencies. For example, in 2002-03 Centrelink conducted 4 402 527 reviews of eligibility and entitlement.¹

Expert systems are increasingly being used by government to make, or help make, administrative decisions. Advances in technology and the increase in the quantity and complexity of administrative decisions have led some government agencies to see expert systems as a means of facilitating and possibly improving decision-making processes.

Expert systems have the potential to make decision making more accurate and consistent. They also have the potential to be more cost effective, particularly for agencies that must make many decisions. Additionally, the technology can be used in the development of new service delivery options.

Despite the potential benefits offered by expert systems, however, care must be taken to ensure that their use supports administrative law values and that administrative review mechanisms keep pace with technological change.

¹ Centrelink 2003, *Annual Report 2002-03*, Centrelink, Canberra, p. 81.

In view of the growing use of expert systems, the Council resolved to inquire into their use in administrative decision making. It wanted to look at the following:

- current use of expert systems by the Commonwealth
- how and by whom the systems are designed and used
- how the systems operate and how they are tested to ensure that they reflect the relevant legislation
- opportunities, if any, for independent scrutiny of the systems
- the features of an optimal system
- the implications of the use of expert systems from the perspective of the administrative law system and its decision-making procedures
- aspects of access and equity that arise in relation to expert systems.

1.3 Consultation

The Council released its *Automated Assistance in Administrative Decision Making* issues paper in 2003. The paper considered the implications of the use of automated systems for primary decision making – such as the opportunities for greater accuracy, consistency and efficiency and the potential effects on the skills of decision makers. It also discussed how automated systems might best be designed and maintained and how their use affects administrative review of decisions.

In preparing the issues paper, the Council conducted a stocktake of current and proposed use of expert systems in administrative decision making by Commonwealth agencies. Appendix B presents the stocktake results. Following the stocktake, the Council decided to engage in further discussions with Comcare, the Department of Veterans' Affairs, the Department of Family and Community Services, Centrelink and the Australian Taxation Office, all of which make extensive use of expert systems in high-volume decision-making areas. On the basis of this information, the Council used the issues paper to put forward its preliminary views about the use of expert systems and to seek feedback.

In addition to obtaining information through submissions (see Appendix C), on 12 November 2003 the Council held a forum in Melbourne to further consider the uses of expert systems. The forum was attended by about 60 people from a broad range of interest groups, including government, business and community organisations.

1.4 This report

Although the primary focus of the Council's issues paper was rule-based systems, in this report the Council has broadened its focus to encompass other forms of expert systems used in administrative decision making. As the Department of Veterans' Affairs observed in its response to the issues paper, regardless of the type of expert or decision-support tool used in administrative decision making,

the primary consideration of ensuring that decisions 'accord with the law, are fair and consistent and have appropriate privacy and audit controls' remains relevant.² Further, continuing advances in technology mean it is possible that other expert systems that do not come within the definition of a rule-based system will be developed.

Having regard to the responses to its issues paper and to the information gathered through further consultations with respondents to the issues paper and others, in this report the Council focuses on the following:

- the sorts of administrative decisions best suited to the use of expert systems
- the advantages and disadvantages of using expert systems in administrative decision making
- best-practice principles for developing and operating expert systems in administrative decision making
- the need for expert systems in administrative decision making to comply with the five values the Council has previously identified as crucial elements of the administrative law system
 - lawfulness
 - fairness
 - rationality
 - openness or transparency
 - efficiency.

These values are coincident with concepts of administrative justice, which are seen to include four basic requirements for just decision making in a society governed by the rule of law – lawfulness, fairness, rationality and intelligibility.³ Accessibility, affordability and timeliness are also said to be relevant from the perspective of the applicant and the general community.⁴ Among the mechanisms for achieving administrative justice are education of decision makers, internal review by superior officers, and external administrative review.⁵

² Department of Veterans' Affairs, submission, p. 18.

³ French, Justice R S 2001, 'Judicial review rights', *AIAL Forum*, no. 28, p. 30.

⁴ *ibid.*, p. 31.

⁵ *ibid.*, pp. 31-2.

2 Expert systems

Since the invention of the first digital computer in 1945 there have been astounding developments in computer technology. Artificial intelligence is an area in which there has been much progress, and one element of it – expert systems – has been used in a variety of fields, among them public administration. The Commonwealth has invested large amounts of money in developing expert systems to assist in the performance of its executive tasks, among them administrative decision making.

2.1 Types of expert systems

The *Macquarie Dictionary* defines ‘expert systems’ as computing systems that, when provided with basic information and a general set of rules for reasoning and drawing conclusions, can mimic the thought processes of a human expert. Another definition is computer programs constructed with the assistance of human experts and capable of functioning at the standard of human experts in a given field.⁶

A legal expert system is a type of expert system. It can be defined as a computer program that performs tasks for which the intelligence of a legal expert is usually thought to be required – whether the legal expertise be that of a lawyer or that of a non-lawyer with expertise in a particular area of the law.⁷

Expert systems are distinct from decision-support systems, which provide information to enable a human to make a decision without actually indicating what the outcome should be. It is important, however, to be aware that expert systems can be used as decision-support systems, as well as actually making a decision. They can provide decision support by guiding a decision maker through the relevant legislation and providing explanatory and supporting materials such as legislation, policy information and case law.

One way of classifying legal expert systems is according to the way in which such a system represents the law that it contains. There are two broad ways in which the system can represent the law – through constructed knowledge and through learned knowledge.

2.1.1 Constructed knowledge

A legal expert system represents the law through constructed knowledge when the law is interpreted and constructed by legal experts and then represented as explicit rules in the expert system.

⁶ Greinke, A 1994, ‘Legal expert systems: a humanistic critique of mechanical legal inference’, *E-Law*, vol. 1, no. 4, p. 2.

⁷ See Baker, D 2001, ‘The probable impact of legal expert systems on the development of the social security system’, Paper submitted to the Research Unit, Faculty of Law, Australian National University, p. 6.

Rule-based systems are the main type of legal expert system that use constructed knowledge. They involve the modelling of rules accompanied by an 'engine' that automates the process of investigating those rules by interacting with users to establish client details. Rule-based systems that model legislation perform two functions:

- They interrogate the user, identifying the next relevant legislative matter and closing off irrelevant paths as they go.
- They draw conclusions, applying the structural logic of the legislation on the basis of information collected from the user.⁸

The systems can operate online, with an officer asking an applicant questions upon prompting by the rule-based system. The questions the system asks give effect to the legislative requirements for the decision at issue – for example, eligibility for receipt of a particular benefit – and the relevant policy. The applicant and the officer can view on the computer screen commentary about the questions, the source legislation, relevant cases and the agency's policy. Explanatory material can be provided using devices such as scrolling, tabs and hypertext links.⁹

Among the rule-based systems that model legislation are STATUTE Expert, developed by SoftLaw, and jnana, developed by Jnana Technologies Corporation. Commonwealth and state government agencies use STATUTE Expert in administrative decision making; legal firm Blake Dawson Waldron uses jnana to evaluate whether advertisements comply with the *Trade Practices Act 1975* and other relevant laws and regulations and to determine whether the permit requirements in various jurisdictions have been satisfied in advance of trade promotions.

Rule-based systems can also be used to model complex rules that do not have a legislative basis. In the insurance market, for example, they can assist with quoting and determining insurance premiums. Other uses of rule-based systems are diagnostic risk assessment and airline scheduling. XpertRule, developed by ATTAR and used by the Australian Taxation Office, is a rule-based system that does not have a legislative basis.

2.1.2 Learned knowledge

A legal expert system represents the law through learned knowledge when the law has been 'learnt' by the system. The computer itself generates the rules from a

⁸ Sutherland, P & Johnson, P 1996, 'The impact of technology on decision-making and administrative review', Paper presented to the Australian Institute of Administrative Law Conference, Canberra, p. 9.

⁹ Johnson, P & Dayal, S 1999, 'New tricks: towards best practice in the use of rulebase systems to support administrative decision-making', Paper presented to a seminar of the Institute of Public Administration Australia, Canberra, p. 21.

series of examples or precedents.¹⁰ Case-based reasoning and neural networks are examples of systems using learned knowledge.

Case-based reasoning relies on inductive processes whereby the system discerns patterns from cases with different characteristics.¹¹ For example, FINDER is a case-based system developed to give advice on the law of trover, an area of case law involving the rights of people who find lost chattels. FINDER provides advice by using a database of leading trover cases and a set of attributes that were of legal significance in those cases.¹²

Neural networks try to replicate the processes of the human brain.¹³ They scan a series of decisions and the weight attached to each aspect of a decision and then generalise a rule. NetRisk, which is used by the Australian Taxation Office, is an example of a neural network system. It is a debt risk-profiling application that uses 'client circumstances and past behaviour to predict the level of intervention required to best resolve an outstanding [tax] obligation'.¹⁴

2.2 Expert systems identified in the Council's stocktake

As noted, in preparation for its issues paper, the Council did a stocktake of Commonwealth agencies' current and proposed use of expert systems. It asked agencies the following questions:

- Are expert systems currently used within your agency to make administrative decisions? If so, what decisions are the systems used to make?
- Does your agency propose to use other expert systems in the future or to expand the categories of decisions currently made using existing expert systems? If so, please provide details.

The stocktake results showed that the most commonly used expert system was the rule-based system. Appendix B presents the results.

In the course of its consultations the Council received from Centrelink information about one of its pilot projects, a rule-based system known as the Edge Project.¹⁵ Centrelink subsequently advised the Council that the project was not proceeding in its current form. Despite this, the experiences of Centrelink and the software producer, SoftLaw, remain relevant; as a result, the views expressed

¹⁰ Baker, D 2001, 'The probable impact of legal expert systems on the development of the social security system', Paper submitted to the Research Unit, Faculty of Law, Australian National University, October, pp. 7-9.

¹¹ Johnson, P & Dayal, S 1999, 'New tricks: towards best practice in the use of rulebase systems to support administrative decision-making', Paper presented to a seminar of the Institute of Public Administration Australia, Canberra, p. 21.

¹² See discussion in Popple, J 1996, *A Pragmatic Legal Expert System*, Dartmouth, Aldershot, pp. 40-1.

¹³ Lim, A 1993, 'Information Technology Support for Legislative Development: tools for the legislative engineer', Paper submitted to the Research Unit, Faculty of Law, Australian National University, October, p. 11.

¹⁴ Australian Taxation Office 2001, *Technology in Receivables Management: NetRisk and predictive risk profiling*, ATO, Canberra, p. 1.

¹⁵ The pilot project is discussed in Appendix B.

during consultations and in submissions from both Centrelink and SoftLaw are referred to in this report.

2.3 Terminology

In a number of responses to the issues paper questions were raised about some of the terminology the Council used in relation to expert systems.

One agency said the issues paper did not go far enough in defining expert systems, as opposed to business systems. It suggested that many of the examples provided by other departments seemed to be business systems with embedded business rules and not true expert systems.¹⁶

Another comment was that the Council's definition of expert system was incorrect because expert systems modify their own behaviour over time. On this basis, it could be argued that static rule-based systems are more generally business applications, rather than expert systems.

The Council acknowledged in the issues paper that there are varying views about the term 'expert system'. Indeed, it has been argued that the term is ambiguous.¹⁷ The Council appreciates that there are various ways of classifying the different types of expert systems; for example, legal expert systems can be distinguished from expert systems that use business rules rather than legislative rules or rules based on policy or case law. Nevertheless, this report maintains the definitions the Council adopted in the issues paper in relation to expert systems.

2.4 Government and expert systems

Government has executive and administrative functions. One of its executive functions involves formulating policy on various matters. Policy can be debated and implemented through legislation; in turn, policy emerges to assist with the implementation of legislation. Administrative decision making involves application of that legislation and policy to an individual's circumstances.

Administrative decision-making processes play an important role in the relationship between government and the citizen. At the micro level, adherence to sound administrative processes ensures that decisions are properly made and that the rights of applicants are protected in their dealings with government agencies. At the macro level, adherence to sound administrative decision-making processes improves the quality of government decision making generally.¹⁸

With advances in technology and the increase in the quantity and complexity of administrative decisions, technology can be used to facilitate and possibly improve the administrative decision-making process. Use of technology in this way is part of a broader 'knowledge-management' framework.

¹⁶ Department of the Environment and Heritage, submission, p. 1.

¹⁷ Popple, J 1991, 'Legal expert systems: the inadequacy of a rule-based approach', *Australian Computer Journal*, vol. 23, no. 1, p. 12.

¹⁸ See Creyke, R & McMillan, J (forthcoming), *Control of Government Action*, Butterworths, Sydney, p. 1.

'Knowledge management' has been defined in a number of ways. For example, it has been used as 'creating, using, sharing and learning from knowledge in order to improve an organisation's capacity to act'¹⁹ and as 'getting the right knowledge to the right people at the right time to serve the right objectives'.²⁰ It is an interdisciplinary framework intended to help agencies engage in the wider information, or knowledge, economy.²¹ Expert systems are one element of that knowledge-management framework: they provide a means whereby agencies can set out a consistent interpretation of complex legal rules and policy.

2.5 The suitability of expert systems for administrative decision making

It has been suggested that the use of expert systems other than rule-based systems in the administration of legislation may not be consistent with the principles of administrative law.²² For example, case-based reasoning poses problems for administrative decision making because it is fact-based, not conceptual, and involves the system discerning patterns from cases with different characteristics. It has been argued that there is a fundamental difference between statutes and case law and that lawyers apply statutes in a rule-like fashion, whereas they reason with cases by arguing about their similarities and differences.²³ Given that administrative decision making is predominantly based on legislative rules rather than case-law, case-based reasoning systems are not generally suitable for administrative decision making.

Neural networks are inductive and over time distinguish the relevant combination of facts. But these systems do not easily provide reasons for their decisions, which means they are not generally suitable for administrative decision making.

The Council's research indicates that the use of rule-based systems in Commonwealth administrative decision making is more widespread than is the use of other expert systems.

2.6 The level of assistance expert systems can provide for administrative decision making

Expert systems are not new. For example, Centrelink has used rate calculators for many years to determine statutory rates of payments and benefits. Changes in technology are, however, offering greater opportunities for using expert systems throughout the administrative decision-making process.

¹⁹ G Bennett, Human Resources Director, AMP Financial Services, cited in Moodie, A 2002, 'Knowledge management', *Agenda*, Australian Institute of Management, Canberra, p. 1.

²⁰ Stephens, D 2000, 'Knowledge management in the APS: a stocktake and a prospectus', Paper presented at the Institute of Public Administration Australia conference 'Five Years of Reform', Canberra, November, p. 4, cited in Edwards, M 2002, 'Public sector governance – future issues for Australia', *Australian Journal of Public Administration*, vol. 61, no. 2, p. 55.

²¹ Australian Government Information Management Office 2004, *Better Practice Checklist 13: knowledge management*, AGIMO, Canberra, p. 3.

²² Johnson, P & Dayal, S 1999, 'New tricks: towards best practice in the use of rulebase systems to support administrative decision-making', Paper presented to a seminar of the Institute of Public Administration Australia, Canberra, p. 21.

²³ Popple, J 1996, *A Pragmatic Legal Expert System*, Dartmouth, Aldershot, p. 37.

The Council found that expert systems can be used in different ways in administrative decision making. For example:

- They can be automated to make the decision.
- They can recommend a decision to the decision maker.
- They can guide a user through relevant facts, legislation and policy, closing off irrelevant paths as they go.
- They can be used as a decision-support system, providing useful commentary – including about relevant legislation, case law and policy – for the decision maker.

The systems use a combination of these decision-making and decision-support functions. For example, an expert system can provide useful information for the user (a decision-support function) as well as direct the user through particular paths of the legislative provisions, depending on the answers the user provides (a decision-making function). Accordingly, at one end of the spectrum they can automate a decision and at the other end they can be used as a decision-support tool.

The level of assistance expert systems provide in relation to administrative decision making can raise questions about particular administrative law values. For example, it is important that an expert system used to identify the relevant law for a decision maker – that is, a basic decision-support function – correctly identifies that law. But an expert system that is also used to identify the relevant facts, guide the user through the relevant legislation and then make a determination – in relation to a person's tax liability, for example – can raise additional questions about whether the system has identified the relevant considerations and whether it has fettered any discretionary power of the decision maker.

Care must therefore be taken to ensure that the use of expert systems supports administrative law values. Chapter 4 discusses further the potential advantages and disadvantages associated with using expert systems in administrative decision making.

3 Are expert systems suitable for use in all administrative decision making?

There are differing views about the desirability of using expert systems for all types of administrative decisions.

It has been argued that legal reasoning necessarily involves resort to social context and purpose and that as a result application of the law is not suited to an expert system. Proponents of this view suggest that the development of legal expert systems should be abandoned and the focus should move to computerising more mechanical tasks such as retrieving legal information.²⁴

A second view is that expert systems have a legitimate role in making simple judgments and otherwise guiding people who are making decisions that involve multiple factors or the use of discretion.²⁵ This view emphasises the benefits of consistency in decision making, which expert systems can bring.

Some advocates of the use of expert systems are more ambitious: they suggest that other programming techniques – such as case-based reasoning and neural networks – could be added to rule-based systems to improve the ability of computers to make sophisticated decisions.²⁶

Having considered the expert systems identified during the stocktake, the Council concluded that expert systems can operate to assist in administrative decision making – provided administrative law values are taken into consideration. The main dangers associated with the introduction of expert systems for decision making will come from how the systems are used, rather than from the systems themselves.²⁷

The level of assistance expert systems should provide depends on the type of decision involved.

3.1 Non-discretionary decisions

The law operates in a social context and is not easily reduced to neat rules. Even a prescriptive legislative provision, which may seem to be already reduced to simple rules, can involve reference to case law in order that a human expert can interpret the provision.

²⁴ See Greinke, A 1994, 'Legal expert systems: a humanistic critique of mechanical legal inference', *E-Law*, vol. 1, no. 4, pp. 17-20.

²⁵ For example, see Johnson, P & Dayal, S 1999, 'New tricks: towards best practice in the use of rulebase systems to support administrative decision-making', Paper presented to a seminar of the Institute of Public Administration Australia, Canberra, p. 21.

²⁶ See Stranieri, A, Zeleznikow, J, Gawler, M & Lewis, B 1999, 'A hybrid rule-neural approach for the automation of legal reasoning in the discretionary domain of family law in Australia', *Artificial Intelligence and the Law*, vol. 7, pp. 153-83.

²⁷ See Fremont, J 1994, 'Computerized administrative decision-making and fundamental rights', *Osgoode Hall Law Journal*, vol. 32, no. 4, pp. 829.

Given the difficulties that can be involved in constructing an expert system that is capable of making a decision based on interpretation and representation of the law, the Council considers that using an expert system to *make* a decision – as opposed to helping or guiding a decision maker in making the decision – would generally be suitable only for decisions involving non-discretionary criteria.²⁸

3.2 Discretionary decisions

One thing that became apparent during the course of the Council's project concerns the level of assistance expert systems should provide in relation to decisions involving the exercise of discretion by the decision maker. It is fundamental to administrative decision making that, if a decision involves the exercise of discretion, the decision maker must exercise that discretion personally and not be fettered in doing so.

3.2.1 Which decisions involve the exercise of discretion?

The Social Security Appeals Tribunal submitted that although there are few true discretions left in the social security law – for example, the discretion of the Secretary of the Department of Family and Community Services in relation to granting Special Benefit – there are many social security laws that involve the development of an opinion or the exercise of judgment, or both.²⁹ Similarly, it has been suggested that discretionary powers are not as common in modern legislation and that many agencies characterise broad areas of judgment as discretion.³⁰

Where identical findings of fact can lead to different legitimate outcomes, this indicates the presence of discretion.³¹ Different outcomes can arise because different weights are attached to the relevant factors.

There are, however, different concepts of the meaning of discretion, ranging from narrow discretion to unfettered discretion.³² For the purposes of this report, the Council adopted a broad view of discretionary decisions. References to the exercise of discretion and discretionary decisions thus include the following:

- decisions where the decision maker has a wide discretion to choose between alternatives – for example, the power of the Minister for Immigration and Multicultural and Indigenous Affairs to substitute a more favourable decision for a decision of the Refugee Review Tribunal if the Minister 'thinks it is in the public interest to do so'³³

²⁸ For the purposes of this report, references to expert systems that *make* a decision, or to decisions *made* by expert systems, include decisions that are legislatively deemed to have been made by a human officer. This is discussed in Section 4.1.

²⁹ Social Security Appeals Tribunal, submission, p. 3.

³⁰ Johnson, P & Dayal, S 1999, 'New tricks: towards best practice in the use of rulebase systems to support administrative decision-making', Paper presented to a seminar of the Institute of Public Administration Australia, Canberra, p. 21.

³¹ See discussion in Zeleznikow, J 2000, 'Building decision support systems in discretionary legal domains', *International Review of Law, Computers & Technology*, vol. 14, no. 3, p. 342.

³² *ibid.*, p. 344.

³³ See s. 417 of the *Migration Act 1958*.

- decisions where, although the decision maker's power is more limited, the decision maker must still exercise their judgment in order to make a decision.

An example of the latter, narrower type of discretion is a decision that involves the question of whether to treat a person as a member of a couple for the purposes of determining eligibility for social security payments. Although a number of factors must be taken into account when determining whether a person is a member of a couple, the decision maker uses their own judgment to weigh up all the circumstances of the case and make the decision.³⁴

3.2.2 The views of respondents

There was a general view among those who responded to the issues paper that expert systems should not be used in such a way as to fetter the decision-making power.

SoftLaw argued that a rule-based system that exhaustively and faithfully models the legislation will be capable of taking into account any circumstances contemplated by the legislation, allowing for residual discretion where the criteria are not met.³⁵ It further argued that rule-based systems can improve administrative decision making by properly modelling a subset of lawful circumstances, guiding staff through the various matters for consideration, and providing links to relevant legislation and other commentary.³⁶

A number of respondents raised the question of using expert systems as decision-support tools in relation to discretionary decisions. Centrelink and the Department of Family and Community Services submitted that their expert system's ability to highlight discretionary decisions for decision makers was desirable.³⁷ Similarly, the Department of Veterans' Affairs advised the Council that issues to do with discretion are dealt with through the support commentary that accompanies each question in the expert system.³⁸ However both these agencies limit officers' ability to override the ultimate result of the expert system, so it seems that the expert system is only being used as a decision-support tool in relation to the aspect of the decision that is discretionary.³⁹

National Legal Aid advised the Council that legal aid commissions that are currently operating rule-based systems are using them as decision support tools⁴⁰:

It is because many of the criteria in the guidelines for legal aid are not strict and the range of circumstances that individuals find themselves in are not easily reduced to business rules that Commissions consider any process to move to Rules Based Systems, even for use as decision support tools, will need to be iterative.⁴¹

³⁴ See s. 4(3) of the *Social Security Act 1991*.

³⁵ SoftLaw, submission, p. 52.

³⁶ *ibid.*, p. 26.

³⁷ FaCS and Centrelink, submission, p. 3.

³⁸ Department of Veterans' Affairs, submission, p. 15.

³⁹ See the discussion about overriding a system's decision in Section 4.2.

⁴⁰ National Legal Aid, submission, p. 2.

⁴¹ *ibid.*, p. 3.

The Social Security Appeals Tribunal noted that, although an expert system might lead a person through the relevant provisions and refer to policy and case law, ultimately it is a matter of assessing the evidence and making a judgment.⁴²

The National Welfare Rights Network Inc. expressed apprehension about the use of rule-based systems in the administration and delivery of social security payments relying on discretionary criteria. Although acknowledging the usefulness of decision-support tools, it submitted that it is not possible to have a logic tree that covers every possibility in discretionary decision making and that the infinite variety of the human condition means that rule-based systems are not appropriate in administrative decision making. It argued that it is beyond the scope of these systems to consider and weigh up all the relevant matters – legal, administrative and social – that affect a person.⁴³

3.2.3 Discretion and uses of expert systems identified by the Council

Although it would be possible for an expert system to automate the exercise of a discretion based on the data provided to it, the Council's research suggests that this is not occurring. Instead, the expert systems it identified provide information or guidance to the decision maker in relation to discretionary decisions. The Department of Family and Community Services and Centrelink investigated the possibility of an expert system making discretionary decisions but rejected this approach on the basis that it was inappropriate.⁴⁴

SoftLaw and the Axe Group described four approaches that have been adopted for dealing with the exercise of discretion by expert systems⁴⁵:

- *Approach 1: Direct.* The discretion to be exercised is asked as a base-level fact (to which the response is 'yes' or 'no') and the officer exercises the discretion whilst being guided by the commentary. The officer can record the reasons for the exercise of discretion. This approach is appropriate when questions of fact and value are inseparable in the exercise of discretion, such that a decision maker attaches value to a matter of fact even in choosing to have regard to that matter of fact.

The approach was adopted in the Department of Veterans' Affairs Incapacity Calculator in relation to a decision about whether interim payments ought to be paid under s. 19 of the *Safety, Rehabilitation and Compensation Act 1988*. The rule-based system asks the assessor whether interim payments should be made. Commentary material is provided for the assessor. If the assessor's answer is 'yes', the system applies the calculation rules in s. 19 to the employee's case.

- *Approach 2: Recommendation.* The system collects data related to the discretion and then recommends a decision to the officer. The officer is asked to confirm or override the decision and to fill in the reason box for audit purposes. This

⁴² Social Security Appeals Tribunal, submission, p. 3.

⁴³ National Welfare Rights Network Inc., submission, p. 3.

⁴⁴ FaCS and Centrelink, submission, pp. 12-13.

⁴⁵ The descriptions of the first three approaches were provided by SoftLaw; the description of the fourth approach was provided by the Axe Group.

approach is used in limited situations when questions of fact and value are separate but must be reconciled by a decision maker in the exercise of discretion. When it is used, the decision maker is required to attach a value to each matter of fact before exercising the discretion. The commentary might suggest the value to be attached to each matter of fact.

An example of this approach is Comcare's Initial Liability Module system in relation to an officer's decision whether initial liability should be accepted under s. 14 of the Safety, Rehabilitation and Compensation Act. The rule-based system recommends a decision and it is open to the officer to override that decision. There is a facility that allows the officer to provide reasons or supporting explanation.

- *Approach 3: Guided.* This approach is appropriate when questions of fact and value are entirely separate, such that the only question of value in the exercise of discretion is whether the discretion is exercised at all. For example, the discretionary provision sets out the matters of fact that must be considered if the discretion is to be exercised. The approach offers alternatives: the officer can exercise discretion as a base fact or can choose to be guided through the various factors that must be considered in exercising the discretion – a process that ensures the officer has considered all the factors relevant to exercising the discretion and the factors can be reviewed for audit purposes. The officer is then presented with a question (as in Approach 1) that requires them to enter the discretion as a base-level fact. There is also a reason box.

An example of this approach is a prototype being developed for the Australian Taxation Office but not yet in use. The prototype relates to s. 87-65 of the *Income Tax Assessment Act 1997*. When a business fails a test for a 'personal services business' the Commissioner has a residual discretion. Section 87-65(3) limits the exercise of that discretion but refers to the consideration of 'unusual circumstances', which are defined in s. 87-65(4). If the unusual circumstances are immediately obvious to the officer – because of their nature or the officer's expertise – the discretion can be exercised immediately and the reasons for doing so entered. If, however, the officer wants to consider further the statutory limitations on the exercise of the discretion, the rule base directs the decision maker through the relevant screens. SoftLaw noted, 'The availability of an "immediate" discretion may be limited to users above a particular level of experience. In this manner ... rule-bases may be developed for less experienced users'.

- *Approach 4: Workflow.* The Axe Group uses the Workflow approach, in which relevant facts are automatically routed to an expert who can make the decision(s) and then the rules decide on the 'next step' in the light of the expert's decision. This seems to be similar to SoftLaw's Direct approach.

3.2.4 Conclusion

It is the Council's view that the automation of discretion is not in accordance with the administrative law values of lawfulness and fairness because it could fetter the decision maker in the exercise of their discretionary power. Nevertheless, the four

approaches just described demonstrate that expert systems can be used as an administrative tool to help an officer exercise their discretion.

To ensure the lawfulness and fairness of discretionary decisions, expert systems must be designed in a way that reflects government policy and does not fetter the decision maker in exercising any discretion he or she has been given. The system should expressly advise the decision maker that the question being asked is a matter for the decision maker's judgment. Just as hard-copy resources should accurately reflect government law and policy, so too should any information provided to a decision maker by an expert system.

In the course of its work on expert systems, the Council identified 27 principles of best practice, which it suggests should be adopted for the use of expert systems in the administrative decision-making process.

Principle 1

Expert systems that make a decision – as opposed to helping a decision maker make a decision – would generally be suitable only for decisions involving non-discretionary elements.

Principle 2

Expert systems should not automate the exercise of discretion.

Principle 3

Expert systems can be used as an administrative tool to assist an officer in exercising his or her discretion. In these cases the systems should be designed so that they do not fetter the decision maker in the exercise of his or her power by recommending or guiding the decision maker to a particular outcome.

Principle 4

Any information provided by an expert system to assist a decision maker in exercising discretion must accurately reflect relevant government law and policy.

4 The potential advantages and disadvantages of using expert systems in administrative decision making

The Council identified a range of considerations that highlight the advantages and disadvantages of using expert systems to make or help to make administrative decisions. The main considerations are as follows:

- primary administrative law considerations
 - authority for using expert systems
 - overriding an expert system
 - grounds for review of decisions
 - privacy
 - disclosure requirements
 - possible narrowing of discretion
- system development and operational considerations
 - accuracy and consistency
 - design and maintenance
 - time and cost
 - ‘skilling’ or ‘de-skilling’ of decision makers
 - human manipulation
 - the audit facility
 - data quality
 - review procedures
 - independent scrutiny
- new service delivery options
 - diverse service delivery mechanisms
 - involvement of community organisations
 - self-assessment.

4.1 Authority for using expert systems

When an expert system is used to make a decision (or even part of one) there is a question whether the computer is the decision maker and, if so, whether there is a need for legislation permitting a decision to be made by a computer. This is relevant to the administrative law value of lawfulness.

Some respondents to the issues paper argued that it was not necessary for statutory recognition of the use of computer programs in administrative decision making because the programs are simply tools; others argued that some form of statutory recognition would be appropriate or useful.

One respondent considered that automated assistance in administrative decision making should be legislatively sanctioned, facilitated and governed – particularly where it affects personal rights – and that some people erroneously assume electronic transactions legislation authorises the use of computer systems in the decision-making process.⁴⁶

4.1.1 The Electronic Transactions Act

The *Electronic Transactions Act 1999* provides that, for the purposes of the Commonwealth, a transaction is not generally invalid because it took place wholly or partly by means of one or more electronic communications. It prescribes the circumstances in which the following legal requirements can be met by means of an electronic communication:

- a requirement to give information in writing
- a requirement to provide a signature
- a requirement to produce a document
- a requirement to record or retain information.⁴⁷

The Act does not require that a person receive electronic communications from the Commonwealth; instead, a person must consent to receiving such communications.⁴⁸ In addition, the *Electronic Transactions Regulations 2000* list a number of laws to which the Act does not apply. Accordingly, although the Act legitimises the use of electronic communications in dealings between Commonwealth agencies and the public, it does not cover the question of whether a decision can actually be made by a computer system such as an expert system.

4.1.2 Current legislation authorising the use of expert systems

There is little specific legislative authority for decisions made by computers. The Council is aware of provisions of social security law and family assistance law that provide for the use of computer programs in decision making and that the resultant decisions are deemed to have been made by the Secretary of the relevant department.⁴⁹ The Acts provide as follows⁵⁰:

- (1) The Secretary may arrange for the use, under the Secretary's control, of computer programs for any purposes for which the

⁴⁶ Mr Greg Ross, submission, p. 2.

⁴⁷ See ss. 9–13 of the Act.

⁴⁸ *ibid.*

⁴⁹ *Family and Community Services and Veterans Affairs Legislation Amendment (Debt Recovery) Act 2001*, s. 3, schedule 2(1).

⁵⁰ See s. 6A of the *Social Security (Administration) Act 1999* and s. 223 of the *A New Tax System (Family Assistance) (Administration) Act 1999*.

Secretary may make decisions under the social security [or family assistance] law.

- (2) A decision made by the operation of a computer program under an arrangement made under (1) above is taken to be a decision made by the Secretary.

The social security and family assistance provisions are similar to the provisions in the *Migration Act 1958* and the *Australian Citizenship Act 1948*, as a result of amendments made in 2001.⁵¹ The amendments provide that the Minister for Immigration and Multicultural and Indigenous Affairs is taken to have made a decision that was made by the operation of a computer program for the purposes of a designated migration law⁵² or for the purposes for which the Minister may or must make a decision under the Australian Citizenship Act.⁵³ Accordingly, as noted in Chapter 3, references in this report to expert systems that *make* a decision or to decisions *made* by expert systems include decisions that are legislatively deemed to have been made by an agency officer.

The amendments to the Migration Act have been used in relation to electronic travel authorities, or ETAs, granted by the Department of Immigration and Multicultural and Indigenous Affairs. An ETA is an electronically stored authorisation for travel to Australia for either a short-term visit or business purposes.⁵⁴ Once information is entered into the system – for example, a travel agent enters the applicant’s passport details – the system automatically performs an online check of DIMIA warning records and if no adverse record is detected it advises that the ETA has been granted.⁵⁵ Although ETAs were introduced in 1996, the 2001 amendments mean that there is no need for a delegated officer to use the computer printouts of ETAs in their decision-making processes.

4.1.3 Delegating decision-making power to the expert system

None of the legislative schemes the Council identified seeks to authorise the computer as the decision maker; instead, the schemes deem the decision to have been made by a human.

Under the current law it may not be legally valid to delegate the decision-making power to a computer system. Both the *Administrative Decisions (Judicial Review) Act 1977* and the *Administrative Appeals Tribunal Act 1975* seem to assume that the decision maker is a person.⁵⁶ The *Acts Interpretation Act 1901* also provides that, unless a contrary intention appears in the legislation conferring the power to delegate, the power of delegation shall be construed as including a power to delegate a power not only to a specified person but to any person from time to

⁵¹ See the *Migration Legislation Amendment (Electronic Transactions and Methods of Notification) Act 2001*.

⁵² Section 495A of the Migration Act.

⁵³ Section 36A of the Australian Citizenship Act.

⁵⁴ See Department of Immigration and Multicultural and Indigenous Affairs 2004, *The Electronic Travel Authority*, Fact sheet no. 55, DIMIA, Canberra.

⁵⁵ *ibid.*

⁵⁶ For example, ss. 5 and 6 of the *Administrative Decisions (Judicial Review) Act* and s. 25 of the *Administrative Appeals Tribunal Act* make references to ‘his or her’ when discussing the person exercising the decision-making power.

time holding, occupying or performing the duties of a specified office or position.⁵⁷

4.1.4 Current case law

There is little case law providing guidance in relation to the validity and operation of computer-generated decisions – possibly because there is often nothing on the face of the decision to alert the affected person or a tribunal or court to the fact that the decision was computer generated or assisted.⁵⁸

The Administrative Appeals Tribunal has noted the use of a computer system as a decision-making tool by delegates of the Department of Veterans' Affairs. But that was because a major argument in the case in question concerned the delegate's failure to consider a newly promulgated statement of principles that had not been programmed into the decision-making tool.⁵⁹

One case that did consider the legitimacy of a decision made by an expert system was an unreported decision of the Social Security Appeals Tribunal. The Tribunal found that the computer program that had cancelled a person's family payment had never been approved by the then Secretary of the Department of Social Security, as required by the *Social Security Act 1991*.⁶⁰ The Tribunal decided that the cancellation was therefore invalid.

4.1.5 Conclusion

When an expert system makes a decision, legislative sanction for the computer's making of that decision should be obtained to ensure that the decision is compatible with the principles of authorised decision making. If an expert system is simply used as a tool for an officer who makes the actual decision, it would appear that legislative authority is not necessary.

Principle 5

The use of an expert system to make a decision – as opposed to helping a decision maker make a decision – should be legislatively sanctioned to ensure that it is compatible with the legal principles of authorised decision making.

4.2 Overriding an expert system

An officer's capacity to override an expert system is an important consideration that is relevant to the administrative law values of lawfulness, fairness and efficiency. If the officer can override the expert system, the expert system is being used only as a tool to support the officer in making a decision, even if the officer

⁵⁷ Section 34AA of the Acts Interpretation Act.

⁵⁸ See Creyke, R 2003, 'Current and future challenges in judicial review jurisdiction: a comment', *AIAL Forum*, vol. 37, April, p. 43.

⁵⁹ See *Re Jones and Repatriation Commission* [2002] AATA 629.

⁶⁰ See *MC and Secretary of DSS*, Unreported decision, SSAT, 11 October 1995.

chooses not to override the system. If the officer cannot override it, the system is responsible for the decision⁶¹, which is based on the data entered by the officer.

4.2.1 Current agency practices

Practice appears to differ between agencies. For example, in Comcare an officer can override a recommendation of the expert system by discussing the matter with his or her team leader and documenting the reasons for overriding the decision. The action in overriding the decision must be justified to the quality assurance officer. Failure to accept the expert system's decision means that Comcare's quality assurance process is automatically activated.

In the Department of Veterans' Affairs an officer cannot override a decision made by the expert system. An officer who believes a decision to be incorrect is required to check the accuracy of the information that has been entered into the system. If they are still concerned about the result, they must discuss the matter with their supervisor, and a course of action is then decided. The Department also encourages officers to ring its national office about matters of concern.

One submission argued that a rule-based system that faithfully models a particular piece of legislation will be capable of taking into account any circumstances contemplated by the legislation, including any legislative provision for a decision maker to have residual discretion.⁶² It did, however, note the importance of having a formal process for dealing with situations where the rule-based system is thought to be producing incorrect results.⁶³

4.2.2 Potential disadvantages and advantages of allowing overriding

When an expert system is used in administrative decision making the main disadvantage associated with allowing an officer to override the decision is that it might compromise the accuracy and consistency that can be provided by the use of expert systems. It is, however, possible that the situation could arise where an expert system does not take account of all the circumstances of a case and it would be preferable for an agency officer to be able to override a decision made by the system. Such a situation could occur, for example, if the expert system is malfunctioning, if particular circumstances were not contemplated and incorporated in the rules but should be considered, or if there has been a circumstance (such as a court judgment) that alters the interpretation of a rule.

If the problem could not be resolved within a reasonable period, the ability to override a decision would minimise disruptions to the agency and the affected person would not have to wait for changes to the expert system. It would be preferable, however, if malfunctions could be rectified, or updates made, promptly so as to obviate the need to override decisions.

It is also prudent to require the decision maker to contact a senior officer before overriding a decision – as is the practice of the Department of Veterans' Affairs.

⁶¹ Note the discussion in Section 4.1 about the circumstances in which decisions have been deemed to have been made by a designated individual.

⁶² SoftLaw, submission, p. 52.

⁶³ *ibid.*, p. 53.

It might be advantageous to have a legislative provision, similar to those in the Migration Act and the Australian Citizenship Act⁶⁴, for situations in which the power to override may be exercised only by a senior officer or other person.

4.2.3 Case law relating to reconsideration of administrative decisions

Concerns about when a decision is made and whether it can be reconsidered or subject to review also arise in relation to manual decision making.

The question of whether decisions can be overridden is complex and has been the subject of much judicial comment. In the High Court decision in *Minister for Immigration and Multicultural Affairs v Bhardwaj*, Gleeson CJ stated:

There is nothing in the nature of an administrative decision which requires a conclusion that a power to make a decision, once purportedly exercised, is necessarily spent. In *Ridge v Baldwin* (27), Lord Reid said:

I do not doubt that if an officer or body realises that it has acted hastily and reconsiders the whole matter afresh, after affording to the person affected a proper opportunity to present his case, then its later decision will be valid.

That general proposition must yield to the legislation under which a decision-maker is acting. And much may depend upon the nature of the power that is being exercised and of the error that has been made.⁶⁵

In a subsequent Full Federal Court decision, the majority of the Court considered that the decision in *Bhardwaj* showed that any legal and factual consequences of the decision depend on the particular statute involved.⁶⁶

4.2.4 Conclusion

Situations could arise where overriding an expert system would be appropriate. Before the expert system is overridden, however, the primary decision maker should first discuss the decision with a senior officer.

Principle 6

Before overriding a decision made by or with the assistance of an expert system, the primary decision maker should contact a senior officer to discuss the decision to override the system.

If decisions made by or with the assistance of expert systems can be overridden only by a senior officer, it might be advantageous for this to be legislatively clarified.

⁶⁴ Section 495B of the Migration Act; s. 36B of the Australian Citizenship Act.

⁶⁵ (2002) 209 CLR 597 at 603.

⁶⁶ *Jadwan Pty Ltd v Secretary, Department of Health & Aged Care* [2003] FCAFC 28 at para 42.

4.3 Grounds for review

As with administrative decisions made manually, decisions made by or with the assistance of an expert system can be subject to review. Use of expert systems in administrative decision making might raise particular considerations in relation to the grounds for review. These considerations relate to administrative law values such as lawfulness, fairness and rationality.

There are two types of review of administrative decisions – merits review by an administrative tribunal and judicial review.

Merits review involves determining whether a decision was the ‘correct or preferable’ decision.⁶⁷ In contrast, judicial review is not the re-hearing of the merits of a particular case: rather, it is where a court reviews a decision to make sure that the decision maker used the correct legal reasoning or followed the correct legal procedures.⁶⁸ The right to have a decision judicially reviewed can arise from a number of sources, among them the common law, the *Administrative Decisions (Judicial Review) Act 1977*, the *Judiciary Act 1903* and the Constitution.⁶⁹

The grounds for judicial review, as set out in s. 5 of the *Administrative Decisions (Judicial Review) Act* are a useful starting point for considering the requirements for valid decisions made using expert systems. Section 5 of the Act provides as follows:

- (1) A person who is aggrieved by a decision to which this Act applies that is made after the commencement of this Act may apply to the Federal Court or the Federal Magistrates Court for an order of review in respect of the decision on any one or more of the following grounds:
 - (a) that a breach of the rules of natural justice occurred in connection with the making of the decision;
 - (b) that procedures that were required by law to be observed in connection with the making of the decision were not observed;
 - (c) that the person who purported to make the decision did not have jurisdiction to make the decision;
 - (d) that the decision was not authorised by the enactment in pursuance of which it was purported to be made;
 - (e) that the making of the decision was an improper exercise of the power conferred by the enactment in pursuance of which it was purported to be made;

⁶⁷ See *Drake v Minister for Immigration and Ethnic Affairs* (1979) 2 ALD 60.

⁶⁸ Administrative Review Council 2003, *The Scope of Judicial Review*, Discussion paper, ARC, Canberra, p. 9.

⁶⁹ *ibid.*, pp. 10–11.

- (f) that the decision involved an error of law, whether or not the error appears on the record of the decision;
- (g) that the decision was induced or affected by fraud;
- (h) that there was no evidence or other material to justify making the decision;
- (i) that the decision was otherwise contrary to law.

4.3.1 Natural justice

Natural justice – sometimes referred to as procedural fairness – imposes on decision makers a flexible obligation to adopt fair procedures that are appropriate and adapted to the circumstances of the particular case.⁷⁰

The right to be heard

An important principle of natural justice is that decision makers afford a person whose interests might be adversely affected by a decision an opportunity to be heard.

Automation of administrative decision making could give rise to the potential for decisions to be made without reference to the person affected by the decision. For example, if data entered via an expert system were used with other information obtained through either data matching or the use of another expert system and the information was adverse to the applicant's interests, the applicant might not be aware of all the information being used to make a decision and therefore not have the opportunity to respond to it.⁷¹ This would not be in accordance with the principles of natural justice.

The Department of Veterans' Affairs advised the Council that its expert system obtains only some facts from the mainframe data – for example, service details, age and address – and that, in the case of service details, the system still requires the assessor to confirm the correctness of the details from source documents.⁷² Centrelink advised the Council that its expert system uses information stored in its mainframe database. If other relevant information is obtained as a result of data matching, then, regardless of whether an expert system or mainframe was being used, action would be taken only after contact with the customer.⁷³

No bias

Natural justice requires that a decision maker be disinterested, or unbiased, in relation to the matter to be decided. Expert systems might appear to reduce the possibility of bias on the part of the decision maker, but there could be inherent bias in such systems – for example, in the way questions are phrased. It has been suggested that some officers might enter particular data in order to produce an

⁷⁰ See *Kioa v West* (1985) 150 CLR 550 at 585, per Mason J.

⁷¹ See the discussion about data matching in Section 4.4.

⁷² Department of Veterans' Affairs, submission, p. 15.

⁷³ FaCS and Centrelink, submission, p.13.

outcome adverse to the applicant's interests: use of an expert system in this way could allow officers to shroud their decisions in legitimacy.

Probative evidence

It is sometimes argued that another aspect of natural justice is that a decision should be based on some rationally probative evidence.⁷⁴ An expert system can be designed in such a way that the veracity of any evidence provided in support of a decision can be considered by a human but the expert system guides the consideration of that evidence. When an expert system treats all evidence provided as probative – without discriminating according to levels of probativeness – this could skew an outcome unfairly.

Auditing the quality of the factual information on which a decision is based is critical to the accuracy of the outcome, and in the absence of any auditing function there could be a breach of the probative evidence rule.

4.3.2 Compliance with procedures required by law

A statute can provide that a power is to be exercised in a particular way or only after particular conditions have been satisfied.⁷⁵ When compliance with a procedure is a legal requirement, the question that arises is when does non-compliance with the procedure render administrative action unlawful?⁷⁶ Where an expert system is involved, such a question may arise in relation to whether the decision has been made by a nominated decision maker or wholly by an expert system.

The Administrative Decisions (Judicial Review) Act and the Administrative Appeals Tribunal Act assume that the decision maker is a person.⁷⁷ There may therefore be a requirement in some circumstances for legislative provisions deeming the computerised result to be that of a decision maker.

4.3.3 Improper exercise of power

Relevant and irrelevant considerations

Improper exercise of power is also a ground for review.⁷⁸ Taking an irrelevant consideration into account and failing to take a relevant consideration into account are examples of an improper exercise of power.⁷⁹ Whether these considerations arise with the use of an expert system will depend on the comprehensiveness of the rules and the extent to which the outcome can be influenced by an agency officer in, for example, choosing not to enter a relevant

⁷⁴ See Deane J in *Minister for Immigration and Ethnic Affairs v Pochi* (1980) 44 FLR 41 at 62 and in *Australian Broadcasting Tribunal v Bond* (1990) 170 CLR 321 at 366–9.

⁷⁵ See paras 5(1)(b) and 6(1)(b) of the Administrative Decisions (Judicial Review) Act.

⁷⁶ Allars, M 1990, *Introduction to Australian Administrative Law*, Butterworths, Sydney, p. 172.

⁷⁷ See ss. 5, 6 and 13 of the Administrative Decisions (Judicial Review) Act and s. 25 of the Administrative Appeals Tribunal Act. Section 22 of the Acts Interpretation Act provides that the term 'person' includes a body politic or corporate as well as an individual. 'Individual' means a natural person.

⁷⁸ See paras 5(1)(e) and 6(1)(e) of the Administrative Decisions (Judicial Review) Act. That ground of review is amplified in ss. 5(2) and 6(2) of the Act.

⁷⁹ See paras 5(2)(a), 5(2)(b), 6(2)(a) and 6(2)(b) of the Administrative Decisions (Judicial Review) Act.

fact into the database. The decision maker could use the expert system to work through complex legislation and then, when discretion needs to be exercised, take an irrelevant consideration into account.

Use of expert systems could involve an improper exercise of power if the decision maker fails to enter, or selectively enters, into the system facts provided by an applicant. This could skew the outcome towards the decision maker's predetermined view of a desirable outcome. The difficulties that arise in this context are the same as those that arise in relation to manual administrative decision making.

Dictation

Exercise of a personal discretionary power at the behest of another person is another example of the improper exercise of power.⁸⁰

Expert systems could result in decision makers acting under dictation if they fail to query a decision of the system they think is incorrect. Decision makers could possibly be acting at the behest of another if they refuse to exercise judgment even when the expert system informs them that this is required.

The non-fettering rule

The exercise of a discretionary power in accordance with a rule or policy but without regard to the merits of the case is another instance of an improper exercise of power.⁸¹ A decision maker's exercise of discretion could be fettered if the construction of the expert system database has inappropriately narrowed the policy in question.

Unreasonableness

The exercise of a power that is so unreasonable that no reasonable person could have exercised it in that way is also an example of the improper exercise of power.⁸² If the expert system is accurate, those components of the decision that are based on fact will not result in an exercise of power that is unreasonable. But the exercise of a power that is unreasonable could result if a decision maker uses discretion in an unreasonable manner – by, for example, ignoring particular options offered by the expert system, by selectively choosing facts to enter into the system, or by giving undue weight to particular facts.

4.3.4 Administrative review safeguards

In response to the issues paper, Centrelink and the Department of Family and Community Services advised the Council that they take several steps to ensure the preservation of traditional administrative law safeguards in the use of Centrelink's expert systems, as follows⁸³:

- All commentary to be included in the expert system is cleared by legal and policy sections to ensure that it accurately reflects the legislation, that relevant

⁸⁰ See paras 5(2)(e) and 6(2)(e) of the Administrative Decisions (Judicial Review) Act.

⁸¹ See paras 5(2)(f) and 6(2)(f) of the Administrative Decisions (Judicial Review) Act.

⁸² See paras 5(2)(g) and 6(2)(g) of the Administrative Decisions (Judicial Review) Act.

⁸³ FaCS and Centrelink, submission, p. 14.

considerations are taken into account, and that the duty of care owed to the customer is maintained.

- Safeguards built into the system are only asking relevant questions, telling customers why questions are being asked (which makes the decision-making process more transparent) and recording and explaining to a customer the reason for a decision.
- The appeal process is not altered. The expert system was considered to improve the basis for reviewing decisions by recording the decision-making process and giving reasons for discretionary decisions, which results in a better decision trail.

SoftLaw considers that a properly designed rule-based system can assist in preserving administrative law safeguards in a number of ways, among them the following⁸⁴:

- reducing the likelihood of bias by requiring decision makers to consider the applicant's claim against all the relevant legislative and policy requirements
- improving procedural fairness by collecting information in a logically probative way
- ensuring that decision makers take into account relevant considerations and do not take into account irrelevant ones. This is achieved by the system taking the decision maker directly to the relevant legislation and policy and closing off provisions that are irrelevant.

4.3.5 Conclusion

If an expert system complies with the requirements of authorised decision making⁸⁵ and appropriately reflects the legislation and policy, and any discretion is exercised appropriately by the decision maker, the decision should generally be upheld on review – be it merits review or judicial review.

Principle 7

The construction of an expert system must comply with administrative law standards if decisions made in accordance with the rule base are to be lawful.

Decisions made by or with the assistance of expert systems must comply with administrative law standards in order to be legally valid.

4.4 Privacy

Although privacy considerations are relevant to administrative decision making generally, the limitations of hard-copy data systems provide a degree of privacy

⁸⁴ SoftLaw, submission, pp. 56–7.

⁸⁵ See the discussion in Section 4.1.

protection.⁸⁶ The privacy concerns raised by the use of expert systems in administrative decision making are relevant to the administrative law values of lawfulness, fairness and openness.

4.4.1 Privacy obligations

The Information Privacy Principles set out in the *Privacy Act 1988* place obligations on Commonwealth agencies. Among them are obligations relating to the collection of, the quality and security of, rights of access to, and use and disclosure of personal information. The Federal Privacy Commissioner has issued guidelines to the principles, providing the Commissioner's view of how the principles affect federal government agencies.⁸⁷

One important principle is that Commonwealth agencies may collect personal information only if it is for a lawful purpose and it is necessary for or directly related to that purpose.⁸⁸ Although this is relevant to administrative decision making generally, the use of computer technology in decision making offers greater capacity for data collection, processing and transmission. Agencies should therefore ensure that the data collected by expert systems used in administrative decision making are necessary to the decision in question.

In general, a person must consent to the use of their personal information for a purpose other than that for which it was collected.⁸⁹ There could thus be a breach of privacy if data collected for another purpose are used by an expert system in the automation of all or part of the administrative decision-making process.

When an agency seeks personal information from individuals, it has specific notification obligations. It must tell the person why the information is being collected and inform them of the legal authority for collecting the information and who the agency usually gives that sort of information to.⁹⁰ Such notification means that there are fewer surprises for people in relation to use of their personal information, which would be especially pertinent if expert systems technology is used to collect information from different sources and automate decision-making processes.

Additionally, before using the information an agency must be assured of its accuracy.⁹¹ Rather than minimising the risk of inaccuracy, the use of data already held by an agency for another purpose could in fact increase the risk of inaccurate data being used; for example, the data might be old or the individual's circumstances might have changed, making the data inaccurate. Processes need to

⁸⁶ Office of the Federal Privacy Commissioner, <http://www.privacy.gov.au/internet/index_print.html>, viewed 27 April 2004.

⁸⁷ See Privacy Commissioner 1994, *Plain English Guidelines to Information Privacy Principles*, Human Rights and Equal Opportunity Commission, Sydney, p. 1.

⁸⁸ Section 14 of the Privacy Act: Information Privacy Principle 1.

⁸⁹ Section 14 of the Privacy Act: Information Privacy Principle 10.

⁹⁰ See Privacy Commissioner 1994, *Plain English Guidelines to Information Privacy Principles 1-3*, Human Rights and Equal Opportunity Commission, Sydney, p. 3; Information Privacy Principle 2.

⁹¹ Section 14 of Privacy Act: Information Privacy Principle 8. See also the discussion in Section 4.13.

be implemented to ensure the currency and accuracy of information used in administrative decision making.

4.4.2 Data matching

Government agencies are increasingly using information obtained by data matching, which involves the comparison of data collected from different agencies. Developments in computer technology have improved data-matching processes.⁹²

Although data matching benefits administration by allowing for the comparison of large amounts of data from different sources – which can help to identify and reduce fraud – it can also raise privacy concerns. Examples are information being used for purposes other than those for which it was collected and examination of the personal information of large numbers of people about whom there are no known grounds for suspicion.⁹³

Compliance with agency notification requirements is also important in relation to data matching. This is particularly the case when the data matching occurs without the individuals concerned being informed. As a result, in addition to specific legislation regulating data matching by the use of tax file numbers⁹⁴, the Federal Privacy Commissioner has issued advisory data-matching guidelines.⁹⁵ The guidelines were developed to help ensure that data-matching programs used by Commonwealth agencies are designed and operated in accordance with sound privacy practices.⁹⁶

The privacy concerns raised by data matching would be relevant if an expert system used information obtained through data matching in order to make or assist in making a decision.

4.4.3 Potential information-gathering benefits

The use of computer technology (including expert systems) offers significant capacity for data collection and retrieval.⁹⁷ For example, databases (including expert system databases) can be searched to find the number of applicants who are receiving a particular benefit and have a child under a specified age. An expert system can also allow for interactive data collection that can be highly personalised and can remove the need to 'genericise' the process.⁹⁸ For example, SoftLaw has argued that, depending on the goal of the interview, its systems can determine what questions to ask, which means that only the information that is

⁹² Henman, P & Adler, M 2001, 'Information technology and transformations in social security policy and administration: a review', *International Social Security Review*, vol. 54, no. 4, pp. 23–47.

⁹³ See Privacy Commissioner 1998, *The Use of Data Matching in Commonwealth Administration – guidelines*, Office of the Federal Privacy Commissioner, Sydney, section 6.

⁹⁴ See the *Data Matching (Assistance and Tax) Act 1990*.

⁹⁵ See Privacy Commissioner 1998, *The Use of Data Matching in Commonwealth Administration – guidelines*, Office of the Federal Privacy Commissioner, Sydney.

⁹⁶ *ibid.*, section 1.

⁹⁷ See Australian Law Reform Commission 1999, *Review of the Federal Civil Justice System*, Discussion paper, ALRC, Sydney, p. 181.

⁹⁸ Johnson, P & Dayal, S 1999, 'New tricks: towards best practice in the use of rulebase systems to support administrative decision-making', Paper presented to a seminar of the Institute of Public Administration Australia, Canberra, pp. 8, 6.

needed and lawfully permitted is collected during the interview.⁹⁹ This limits the potential for privacy breaches caused by the collection of unnecessary personal information.

Expert systems can also help break down information ‘silos’ that could adversely affect applicants. For example, an applicant in receipt of a payment might communicate a change in circumstances to the area that administers that payment. That change in circumstances might also be relevant to the payment of another entitlement by a different area. If payment systems are not linked the change in circumstances might not be recorded in the other area. Expert systems can help by identifying rules that are common to different types of payments. They can also explore the flow-on effects of a change in circumstances – for example, whether a change in circumstances notified in respect of one benefit also affects another benefit being paid to a recipient. In this context, it has been noted that:

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.¹⁰⁰

Although breaking down information silos in that way can benefit policy formulation and service delivery, it can also raise privacy concerns. For example, some individuals might think their privacy has been breached if they applied for a specific entitlement and received a response about a range of entitlements. In this circumstance, notification of the way in which information could be used would be important in order to give individuals their preferred service.

4.4.4 Privacy developments

The former Federal Privacy Commissioner, Malcolm Crompton, has stated, ‘New technologies are not necessarily destructive of privacy. They can be privacy enhancing technologies or privacy intrusive technologies, depending on how they are designed and the uses to which they are put’.¹⁰¹ Privacy-enhancing technologies have been described as information and communications technology measures that protect privacy by eliminating or reducing personal data or by preventing unnecessary or undesired processing of personal data.¹⁰²

A recent project between the Information and Privacy Commissioner Ontario (Canada) and IBM is an example of the development of privacy-enhancing technology. As part of the project, which aims to make compliance with privacy law easier and more cost effective, a digital template of Ontario’s privacy

⁹⁹ SoftLaw, submission, pp. 39–40.

¹⁰⁰ Johnson, P & Dayal, S 1999, ‘New tricks: towards best practice in the use of rulebase systems to support administrative decision-making’, Paper presented to a seminar of the Institute of Public Administration Australia, Canberra, p. 6.

¹⁰¹ Crompton, M 2002, ‘Under the gaze, privacy identity and new technology’, Paper presented at the International Association of Lawyers 75th Anniversary Congress, Sydney, p. 9.

¹⁰² See discussion in Borking, J 2003, ‘The PET story’, Paper presented at the 25th International Conference of Data Protection and Privacy Commissioners, 10–12 September, Sydney, p. 13.

legislation is being created.¹⁰³ With an IT-readable version of the legislation, the privacy rules can be built into computer systems.¹⁰⁴ Doing this means that the systems can prevent privacy breaches. This notion of ensuring that privacy is built into computer technology has been encouraged by the Office of the Federal Privacy Commissioner in Australia.¹⁰⁵

It should also be noted that some jurisdictions have specifically legislated in relation to privacy and automated decision making. For example, in 1995 the European Union issued its Directive on the Protection of Individuals with Regard to the Processing of Personal Data and on the Free Movement of Such Data. The Directive provides that member states guarantee data subjects the right to know the logic involved in automatic processing of data about them in the case of automated decisions.¹⁰⁶ Member states also guarantee that people have a right not to have decisions that affect them made solely on the basis of automated processing of data intended to evaluate personal characteristics such as performance at work, creditworthiness and reliability.¹⁰⁷ There are, however, exceptions to this guarantee – for example, where total reliance on automatic processing is authorised by a law that also sets out measures for safeguarding the data subject's legitimate interests.¹⁰⁸

A number of members of the European Union have enacted data protection legislation on the basis of the Directive. The United Kingdom's *Data Protection Act 1998* provides rights for people affected by decisions based solely on the automatic processing of their personal information. However, like the provisions in the EU Directive, these rights are not available where the decision in question is authorised or required by or under any enactment and the effect of the decision is to grant a request of the individual or steps have been taken to safeguard the legitimate interests of the individual (for example, by allowing him or her to make representations).¹⁰⁹ In the Australian context, this might limit the legislation's applicability to administrative decision making.

4.4.5 Conclusion

As with the use of any technology in administrative decision making, it is important that expert systems be designed and operate in such a way that they are compatible with the privacy obligations of government agencies.

¹⁰³ See Information and Privacy Commissioner Ontario 2003, 'IBM and Ontario Information and Privacy Commissioner to create first digital template of privacy legislation', Press release, 10 September.

¹⁰⁴ *ibid.*

¹⁰⁵ See Office of the Federal Privacy Commissioner 2004, *Federal Privacy Commissioner Submission: HealthConnect interim research report and draft systems architecture*, Office of the Federal Privacy Commissioner, Sydney, p. 2.

¹⁰⁶ EU Data Directive, article 12.

¹⁰⁷ *ibid.*, article 15.

¹⁰⁸ *ibid.*

¹⁰⁹ Section 12 of the Act.

Principle 8

The people responsible for constructing an expert system must ensure that it is compatible with their agency's privacy obligations.

4.5 Disclosure requirements

It is important for transparency and fairness that the rules in an expert system be available to any person wishing to know about them.

Section 9(1)(a) of the *Freedom of Information Act 1982* requires Commonwealth agencies to publish and make available for purchase by the public the internal law of the agency, including manuals and other documents containing interpretation, rules, guidelines, practices or precedents. The definition of 'document' contained in the Act would include information stored on computer software, such as the rules constituting an expert system.¹¹⁰

Generally, if a decision is subject to review by the Administrative Appeals Tribunal or if a provision of the Administrative Decisions (Judicial Review) Act applies to a decision, a person applying for review of the decision can seek reasons for the decision.¹¹¹ An obligation to provide reasons also arises where legislation conferring the power to make a decision requires that the decision maker give reasons for the decision when notifying the affected person.

4.5.1 Reasons produced by an expert system

One benefit of a properly designed expert system is its capacity to produce comprehensive reasons for a decision, including a step-by-step analysis of an applicant's circumstances against the criteria relevant to the decision.

Regardless of whether a person has formally asked for a statement of reasons, the Council considers that people should receive a clear explanation of the reason for a decision when they are notified of the decision. This might limit the prospect of an applicant seeking review or a formal statement of reasons.

4.5.2 Conclusion

An agency should comply with its disclosure obligations no matter whether it makes decisions manually or with the assistance of an expert system. Compliance with these obligations is in the interests of fairness, efficiency and transparency in administrative decision making.

Principle 9

Expert systems should comply with administrative law disclosure requirements – in particular, requirements associated with freedom of information and statements of reasons.

¹¹⁰ See s. 4 of the Act. It may even be wide enough to include the details of the 'engine' that conducts the search and the reasoning processes that enable the system to make the decision.

¹¹¹ See s. 28 of the Administrative Appeals Tribunal Act and s. 13 of the Administrative Decisions (Judicial Review) Act.

4.6 Possible narrowing of discretion

Several submissions to the Council noted the tendency for the statutory criteria governing decisions to be increasingly strict, with little room for the exercise of discretion.¹¹² This tendency is more apparent in high-volume areas of government decision making.¹¹³

The Hon. Deirdre O'Connor, former President of the Administrative Appeals Tribunal and former ex officio member of the Council, identified this practice, noting that in the last 20 years '... there have been significant changes in the nature of reviewable decisions. In particular, discretionary powers have largely been removed from legislation conferring benefits or regulating activity including immigration and social security law'.¹¹⁴

Justice O'Connor noted that one of the reasons for this reduction in discretion is a desire for the scope of legislation to be clearer and a desire to improve the targeting of benefits.¹¹⁵ She noted that the practice:

... removes any flexibility for tribunals to deal with those difficult cases in which strict legislative criteria fail to make provision for the unique and otherwise legitimate circumstances of a specific individual. The tendency to remove all discretion from primary decision-making or to shield the exercise of discretionary decision-making from merits review disadvantages individuals and diminishes the utility of administrative tribunals.¹¹⁶

For broadly similar reasons, it would be highly undesirable if the perceived savings and other benefits offered by the use of expert systems led to an increased tendency for discretion to be removed from administrative decision making.

Also relevant in this context is the undesirability, and possible unlawfulness, of an expert system incorporating policy that inappropriately narrows the available discretion. Further, there is a need to ensure that any commentary or other supporting material in the expert system does not give undue weight to material that does not have appropriate authority.

In short, the expert system should reflect policy rather than determine it. These considerations are relevant to the administrative law values of lawfulness, fairness, rationality and openness.

¹¹² Contrast this with the 'impossibly' wide discretions of the early 1970s : see the commentary in McNee, B 2001, 'Administrative review – observations and reflections', 2001 Blackburn Lecture, reproduced in *Admin Review*, September 2001, p. 11.

¹¹³ Carney, T 1989, 'Cloaking the bureaucratic dagger: administrative law in the welfare state', *Canberra Bulletin of Public Administration*, vol. 58, April, p. 123.

¹¹⁴ O'Connor, D 2000, 'Lessons from the past/challenges for the future: merits review in the new millennium', in C Finn (ed.), *Sunrise or Sunset? Administrative Law in the New Millennium: papers presented at the 2000 National Law Forum*, Australian Institute of Administrative Law, Canberra, p. 6.

¹¹⁵ *ibid.*

¹¹⁶ *ibid.*

4.7 Accuracy and consistency

One of the perceived benefits of using expert systems lies in their capacity to promote accuracy and consistency in decision making. The complexity of legislation creates an environment where errors in decision making – manual or computer assisted – are likely. Forty-nine per cent of agency responses to a questionnaire issued as part of the Management Advisory Board's Quality in Customer Service Project identified the complexity of legislation and regulations as inhibiting the provision of quality customer service by the Australian Public Service.¹¹⁷ This complexity is exacerbated by ambiguity or uncertainty in legislation, frequent amendments to legislation, the need to administer different provisions for different cases at different times, high staff turnover, pressure of work, limitations on training, and reliance on staff keeping up to date with the legislation.¹¹⁸

Decision makers might not consult the relevant legislation in processing an application but instead use policy manuals that attempt to summarise the law and might not include all recent legislative amendments and changes in policy. Determinations can also require consideration of matters that arise infrequently and are not commonly understood by decision makers.

4.7.1 Difficulties with applying legislative rules

There are four areas in which an error can be made in the application of legislation to determine an entitlement:

- the substance and breadth of the legislation
- the structural complexity of the legislation
- semantic complexity in the legislation
- the exercise of discretion.¹¹⁹

The first area of potential error – the substance and breadth of the legislation – relates to the fact that the relevant provisions can often be found at various locations throughout a statute, and a correct determination is dependent on identification and application of all those provisions; for example, definitions and clarifying terms might be inserted at the front of the statute and not near the operative provision.

The second potential problem – structural complexity – relates to the form of the relevant provision; for example, preconditions can be conjunctive or disjunctive or there may be exceptions to preconditions. There are numerous instances of provisions with those characteristics (see, for example, s. 94 of the *Social Security Act 1991*).

¹¹⁷ Management Advisory Board 1997, *Quality in Customer Service in the Australian Public Service*, Commonwealth of Australia, Canberra, p. 7.

¹¹⁸ Sutherland, P & Johnson, P 1996, 'The impact of technology on decision-making and administrative review', Paper presented to Australian Institute of Administrative Law Conference, Canberra, p. 13.

¹¹⁹ P Johnson, SoftLaw demonstration, 13 December 2001.

The third potential problem – semantic complexity – relates to the interpretation of certain terms, while the fourth potential problem – the exercise of discretion – relates to determining the width of the discretion and whether it is being exercised by the decision maker in accordance with the legislation conferring it.

It has been suggested that the use of rule-based systems can eliminate the potential for error in the first two areas.¹²⁰ Potential errors in relation to semantic complexity and the exercise of discretion can also be minimised through the use of commentary that sets out relevant policies and rules, as an adjunct to the rule-based system. A rule-based system cannot directly support the making of a judgment in a complex case, but it can automate and control the process used by the decision maker to reach a judgment.¹²¹ It can improve the accuracy and consistency of decision making by facilitating the same interpretation of the rules in each case.

4.7.2 Expert systems and interviews

An interview using an expert system might help with gathering information from a client: it could determine the facts on which a decision will be based and thus identify what requires proof; then the client can be given a list of the evidence required. Once the necessary evidence has been furnished, the system can be a useful adjunct in the consideration of the evidence. It can load the case and begin a tailored evidentiary investigation, and it can focus the assessor's mind on the consideration of each item of evidence, the requirements for that item, and the need for accountability in the consideration of evidence.¹²²

4.7.3 Accuracy and consistency

Information obtained by the Council suggests that the accuracy and consistency of primary decision making can be improved if expert systems are used.

Comcare advised the Council that an external audit of its decision making was conducted six months after the expert system was introduced. The audit focused on accuracy and consistency and found that there was a 70 per cent improvement in these areas following introduction of the system.

Similarly, the Department of Veterans' Affairs advised the Council that implementation of its expert system, the Compensation Claims Processing System, has resulted in improved productivity, greater consistency and a significant reduction in the rate of appeals to external review bodies.¹²³

The Department of Family and Community Services and Centrelink submitted that when they ran a pilot of their Edge expert system in November 2001 they

¹²⁰ *ibid.*

¹²¹ Johnson, P & Dayal, S 1999, 'New tricks: towards best practice in the use of rulebase systems to support administrative decision-making', Paper presented to a seminar of the Institute of Public Administration Australia, Canberra, p. 20.

¹²² *ibid.*, pp. 10-11.

¹²³ Department of Veterans' Affairs, submission, p. 6; Johnson, N 2003, 'Compensation Claims Processing System (CCPS)', Paper presented at Automated Assistance in Administrative Decision Making Forum, Melbourne, 12 November.

found that a large number of administrative faults in Centrelink's traditional mainframe system could be avoided by using Edge.¹²⁴

The Axe Group submitted that some of its clients are experiencing major increases in their organisation's performance because of the introduction of rule-based systems.¹²⁵

Using an expert system can promote consistency in decision making across jurisdictions. The process of developing an expert system and the accompanying commentary also throws up matters in relation to which an agency's policy has not been recorded, is limited or does not exist. This prompts the agency to develop policies on those matters, thereby promoting consistency.

4.7.4 Conclusion

If designed, used and maintained properly, expert systems can offer benefits by reducing inaccuracy and human prejudices and providing the opportunity for making more accurate, consistent, efficient and transparent decisions.

Principle 10

Expert systems should be designed, used and maintained in such a way that they accurately and consistently reflect the relevant law and policy.

4.8 Design and maintenance

4.8.1 Design

The skills and qualifications of people who design expert systems are important in ensuring that the systems properly represent the law and that administrative law values such as accuracy, transparency and fairness are upheld.

The Council's research shows that in most cases policy and legal officers from an agency seem to have formulated the rules in collaboration with technical officers from the entity supplying the product. Another option is for the entire process to take place in house, with the expertise being available within the agency.

4.8.2 Conclusion

Neither approach is necessarily preferable: it depends on the skill mix and proficiency in a particular agency at the time. It is, however, desirable for system designers to have both technical knowledge of expert systems and legal and policy skills.

Principle 11

The team designing an expert system should be made up of a combination of people with technical expert systems knowledge and legal and policy experience.

¹²⁴ FaCS and Centrelink, submission, p. 6.

¹²⁵ Axe Group, submission, p. 4.

4.8.3 Maintenance

An expert system must be maintained to ensure its accuracy. Agencies might elect to rely on the system supplier for maintenance or they might wish to have sufficient expertise in house. Depending on the terms of the contract, a system supplier might charge a maintenance fee. There will also obviously be a cost if in-house expertise is used.

4.8.4 Conclusion

Regardless of whether an agency's expert system is maintained in house or by an external supplier, the team responsible for maintenance needs a detailed knowledge of the system, to ensure that modifications are consistent with the original model.

Principle 12

Expert systems must be regularly updated and maintained in order to ensure the currency of the information on which the rule base is constructed.

The people responsible for maintaining an expert system need a detailed knowledge of the system.

4.8.5 System testing

In its issues paper the Council said it was interested in learning about the procedures agencies used for developing and testing expert systems to ensure that they correspond with legislation and policy.

Both the agencies that responded to this advised that their own experts were able to review and test the rules because the rules in their systems are displayed in plain English.¹²⁶ The Department of Veterans' Affairs said its software designer also tested the system before it became operational and there was no independent scrutiny.¹²⁷ Once the system is operational, there is a robust feedback mechanism for staff who use the system and for ex-service organisations that have access to it.¹²⁸ The Department of Family and Community Services and Centrelink said outcomes of the testing of their expert systems were compared with the results of the same cases when processed through the existing mainframe computer.¹²⁹ They also conducted a small pilot with the social policy community, as well as a series of interviews, to obtain feedback.¹³⁰

4.8.6 Conclusion

It is vital that agencies using expert systems in administrative decision making have robust processes for testing the systems, both during their development and following their implementation.

¹²⁶ Department of Veterans' Affairs, submission, p. 2; FaCS and Centrelink, submission, p. 3.

¹²⁷ Department of Veterans' Affairs, submission, p. 5.

¹²⁸ *ibid.*, p. 3.

¹²⁹ FaCS and Centrelink, submission, p. 3.

¹³⁰ *ibid.*, p.4.

Principle 13

Agencies should have robust system-testing processes in operation to ensure the initial and continued accuracy and effectiveness of expert systems used in administrative decision making.

To the extent to which it is technically possible, expert systems should be designed to be self-evaluating – that is, designed in such a way that the system identifies errors in itself.

4.9 Time and cost

Expert systems can decrease the time and cost associated with making administrative decisions; this is relevant to the administrative law value of efficiency.

4.9.1 Savings

There is evidence that the Compensation Claims Processing System used by Department of Veterans' Affairs has enabled the Department to substantially improve its performance in finalising primary claims.¹³¹ In 1996 the Department evaluated the System's implementation; the report of the evaluation noted that the average time taken to process primary-level decisions fell from 157 days in 1991–92 to 102 days in 1995–96.¹³² As at November 2003, the average time taken to process claims was about 60 days.¹³³ Between 1991–92 and 1995–96 the average cost per case dropped from \$868 to \$541.¹³⁴

In a follow-up report by the Australian National Audit Office it was noted that the average cost per case had risen from \$477 in 2000–01 to \$512 in 2002–02. The report noted that there were costs associated with improving the quality of primary decision making and that it was too early to form conclusions about the impact of improving the quality of decision making on the costs involved.¹³⁵

4.9.2 Problems

Expert systems can be time consuming and expensive to create and difficult to maintain.¹³⁶ Each time a legislative amendment is passed or a new court or tribunal decision affects the interpretation of an existing provision the system must be amended to ensure its continued accuracy. Of course, manual decision-making systems also require updating, which can involve updating of hard-copy legislation, policy guidelines and manuals and providing advice and training to decision makers and internal review staff.

¹³¹ Australian National Audit Office 2001, *Review of Veterans' Appeals against Disability Compensation Entitlement Decisions*, Audit report no. 29 2000–01, ANAO, Canberra, p. 36.

¹³² *ibid.*, pp. 42–3.

¹³³ Presentation by the Department of Veterans' Affairs at the Automated Assistance in Administrative Decision Making Forum, Melbourne, 12 November 2003.

¹³⁴ Australian National Audit Office, *Review of Veterans' Appeals against Disability Compensation Entitlement Decisions*, Audit report no. 29 2000–01, ANAO, Canberra, pp. 42–3.

¹³⁵ Australian National Audit Office 2003, *Veterans' Appeals Against Disability Compensation Decisions: follow-up audit*, Audit report no. 58 2002–03, ANAO, Canberra, p. 32.

¹³⁶ See Parliament of Victoria Law Reform Committee 1999, *Technology and the Law*, Government Printer, Melbourne, p. 239.

At least one agency noted that cost was an inhibiting factor in keeping an expert system up to date. Some agencies are building the capacity to maintain the expert system in house because they think that will be more cost efficient.

Expert systems need to be constructed so that they can respond quickly and efficiently to rapid and ongoing changes to law and policy. One agency told the Council it had decided not to proceed with automation of an area of decision making because the relevant law and policy were constantly changing.

The costs involved in creating and maintaining expert systems mean that agencies required to make a high volume of administrative decisions are more motivated to use the systems. For example, one agency advised the Council that it considers the use of expert systems is not justified at present because the decisions it makes are relatively straightforward and few in number.

The importance of updating expert systems was highlighted in an Administrative Appeals Tribunal review of a decision by the Department of Veterans' Affairs. The Tribunal noted that a decision had been made without reference to a relevant statement of principles because the expert system used by delegates had not been modified to include reference to a newly promulgated statement of principles.¹³⁷

4.9.3 Interim maintenance strategies

When errors in the system cannot be fixed immediately, management-initiated 'workarounds' can be developed whereby officers are advised of the problem and given instructions for remedying it.¹³⁸

In this regard, the Department of Veterans' Affairs has said that if there are delays in incorporating changes because of a mismatch between the level of change required and the staff needed to implement the change, 'alerts' are placed in the expert system as soon as the policy change occurs. These alerts notify decision makers that the rules might have changed and those parts of the expert system can be 'turned off'.

Having a dedicated budget for maintaining an expert system or retaining sufficient support in house, or both, is the best way of ensuring that the system remains up to date and is updated promptly and accurately.

4.9.4 Conclusion

Because of the importance of maintaining an up-to-date expert system, sufficient funds need to be available for this function.

Principle 14

To ensure the continuing accuracy and currency of an expert system and the material it contains, there should be sufficient funding available for a program of periodic maintenance for the system.

¹³⁷ *Re Jones and Repatriation Commission* [2002] AATA 629.

¹³⁸ The problems caused by 'informal workarounds' are discussed in Section 4.10.

Principle 15

When amendments to an expert system cannot be made immediately, agencies should have interim strategies – for example, alerts on the system and notification of interim instructions to system users – to ensure that decision making remains accurate.

4.10 ‘Skilling’ or ‘de-skilling’ decision makers?

Proponents of expert systems argue that the systems can relieve decision makers of routine work such as identifying relevant policy guidelines. The decision makers must still make the human judgments – that is, consider the evidence and exercise any discretion – but the expert system can perform the remainder of the decision-making task.

It has been suggested that relieving decision makers of routine work increases their skills by allowing them to develop expertise in a broader number of areas, conduct research, focus on and negotiate with clients, and provide referral services.¹³⁹ There are also continuity benefits for the applicant and the officer, in that one officer is usually involved in the matter from beginning to end.

It can be argued, however, that use of an expert system could result in excessive reliance on the system in decision making and a diminution of the skills of the decision maker, who may effectively become a data processor, entering ‘yes’ or ‘no’ in response to questions without the need to exercise any substantial judgment in the process. Corporate knowledge of alternative or more complex paths through the legislation might in this way be lost.¹⁴⁰ Further, the ability to provide an accurate written or oral statement of reasons, independent of the computer process, might also be lost. If a computer system were to malfunction, for example, officers might not be able to make decisions manually.

Some agencies the Council consulted considered that decision makers might be de-skilled through the use of expert systems. One community organisation also expressed its concern that the trend towards automated systems has led to agency staff having less technical knowledge of the relevant legislation and principles, which significantly increases the risk of poor decision making.¹⁴¹ The organisation argued that there is potential for reliance on expert systems to lead some users to adopt an attitude that ‘the computer says x, so it must be right’.

¹³⁹ In this context, there is a question in relation to the extent of inquiries that officers should reasonably be expected to make. As one agency noted, should an agency test applicants for every possible benefit or should it just focus on the benefit the applicant is seeking? The law on this is canvassed in Creyke’s paper ‘The impact of judicial review on tribunals – recent developments’, which was presented to the Australian Institute of Judicial Administration Tribunals conference on 7 June 2002. The paper notes that, generally speaking, courts are slow to impose an obligation on a tribunal to undertake independent inquiries and that this reluctance reflects the need to balance efficient administration with administrative justice. It also notes that to date the courts have been reluctant to expand the duty.

¹⁴⁰ One agency head noted, however, that the agency’s legislation is so complex the only way officers can deal with the complexity is to rely on expert systems.

¹⁴¹ National Welfare Rights Network Inc., submission, pp. 2-3.

If officers are de-skilled and corporate knowledge is lost, this might adversely affect the administrative law values of lawfulness and efficiency.

4.10.1 Potential cost savings

One argument is that decision makers should be kept at the level they were at before the expert system was introduced and that their rate of output should be higher, which should still result in cost savings. Alternatively, the Department of Veterans' Affairs noted that use of its Compensation Claims Processing System has led to reduced classification and numbers of decision makers¹⁴², which in turn has resulted in cost savings.

4.10.2 Organisational change

Expert systems can also offer an opportunity for organisational restructuring and a capacity to achieve organisational goals.¹⁴³ The introduction of an expert system to make or help make administrative decisions is often part of a broader change-management process. The agency's business activity is redesigned and the use of the expert system technology is one element of that strategy.

4.10.3 Conclusion

Although the use of expert systems can offer benefits in terms of the accuracy and consistency of administrative decision making and can reduce the time and cost associated with such activity, the systems are no substitute for comprehensive, regular training of officers engaged in decision making. Officers still need to be able to make a decision manually (in the event of system malfunction) and explain the decision to an applicant; this includes an explanation of the relevant legislation and policy and any changes to it. These skills are especially important when applicants are not entitled to benefits or are no longer entitled to benefits or the same level of benefits. Such training should be provided in advance of legislative and policy changes where possible.¹⁴⁴

As one agency head noted in discussions with the Council, although expert systems provide useful assistance in the determination of entitlements, highly skilled officers are still the most critical element in the process. The goal is to reduce the cost of and time taken in decision making without there being a diminution in discretion or skills.

¹⁴² O'Sullivan, K 1999, 'Creating world's best practice in compensation claims processing', Paper presented to a seminar of the Institute of Public Administration Australia, Canberra, p. 7. This is also due to the fact that, following the introduction of the statements of principles, there is now a lesser requirement for the evaluation of medical contentions at primary decision-making levels. The SOPs state exclusively the factors that, when related to service, must exist to establish a causal connection between disease, injury or death and service. The SOPs are binding on decision makers and review bodies. See Johnston, N 1996, 'The role of legislative instruments in clarifying the objectives and enhancing the effectiveness of public decision-making', Paper presented to Administrative Law Conference, 21-22 November, pp. 5, 9.

¹⁴³ Sutherland, P & Johnson, P 1996, 'The impact of technology on decision-making and administrative review', Paper presented to the Australian Institute of Administrative Law Conference, Canberra, p. 13.

¹⁴⁴ See Management Advisory Board 1997, *Quality in Customer Service in the Australian Public Service*, Commonwealth of Australia, Canberra, p. 10.

Principle 16

Officers using expert systems should receive continuing training in order to ensure that they understand the relevant legislation and are able to explain a decision to the affected person.

Principle 17

In the event that the system malfunctions, there should be officers available who have sufficient training to make the decision manually.

4.11 Human manipulation

Officers using an expert system can become attuned to the system and learn to manipulate it in order to produce a desired result. This is referred to as an 'informal workaround'. Such workarounds can undermine some of the advantages inherent in using an expert system – namely, the accuracy and consistency of decision making.

It is important to note, however, that the potential for workarounds and manipulation exists with other computer technologies and with manual processing. Indeed, it could be argued that an expert system that correctly identifies the relevant legislative matters and closes off irrelevant paths as it goes would reduce the opportunity for human manipulation.

In informal discussions between the Council Secretariat and agencies it was noted that this problem could be minimised by ensuring that officers are regularly rotated in organisations. Auditing also has the potential to identify manipulation. One agency advised the Council that it found that some officers (particularly experienced decision makers) were manipulating the system to arrive at a pre-determined result. It used training and follow-up through quality assurance and other exercises to resolve the problem.

4.11.1 Conclusion

As with all computer technologies used in relation to administrative decision making, it is important that expert systems not be manipulated inappropriately by agency officers. Operation of a robust system of quality assurance or auditing should, however, ensure that officers are not using informal workarounds to manipulate the result of the expert system.

Principle 18

A process – for example, robust quality assurance or auditing – should be in operation to ensure that officers are not using informal workarounds to manipulate the result of an expert system.

4.12 The audit facility

Expert systems' ability to provide an audit trail of the administrative decision-making processes they are involved in is important to the administrative law values of transparency, fairness and efficiency.

Some computer-generated decisions pose difficulties in terms of understanding how the decision was arrived at. For example, the Social Security Appeals Tribunal advised the Council that reliance on computer systems can make it difficult for a tribunal to review a case 'de novo'. This is because of the complexity of interpreting the printouts from some computer systems – particularly in relation to complex calculations such as determining a person's rate of pension.¹⁴⁵

The Council's issues paper said, 'Every decision made using a rule-based system has an instant and documented audit trail for every step taken'. In response, both the Axe Group and SoftLaw said their systems automatically create audit trails. SoftLaw's submission also suggests, however, that not all systems have the capacity to produce a comprehensive audit trail. It suggests that only expert systems constructed using a representation scheme that is easy for humans to read and that model the source material isomorphically are capable of producing such comprehensive audit trails.¹⁴⁶

4.12.1 Conclusion

Compared with manual processes, in which it is highly likely that some of the steps taken on the way to the ultimate decision will not be documented, an expert system that can provide a comprehensive audit trail in plain English offers a significant advantage in terms of transparency. It is also important that regular quality assurance sampling, reporting and follow-up occur in relation to decisions made both manually and with the assistance of expert systems.

Principle 19

Expert systems should provide a comprehensive audit trail that can be used for review and audit purposes.

4.13 Data quality

Accurate records of all decision-making processes should be kept. In 2001–02 the Australian National Audit Office conducted an audit of the record-keeping policies and practices of the Attorney-General's Department, the Civil Aviation Safety Authority, Comcare, and the National Registration Authority for Agricultural and Veterinary Chemicals. The audit encompassed both electronic and traditional records. The Audit Office found that rapid developments in information and communications technology have resulted in the need for

¹⁴⁵ Social Security Appeals Tribunal, submission, p. 2.

¹⁴⁶ SoftLaw, submission, p. 38. SoftLaw defines 'isomorphic modelling' as referring to the idea that the rules must mirror as closely as possible both the structure and the content of the legislative or policy source material (p. 18).

Commonwealth agencies to change their record-keeping controls, to take account of data collected and stored electronically.¹⁴⁷

Integral to good record keeping and good decision making is the accurate collection of data from the applicant or other sources. If a decision is based on poor-quality information, the probability of making poor decisions increases.¹⁴⁸

The *Privacy Act 1988* also imposes obligations on Commonwealth agencies and certain private sector organisations to take steps to ensure that personal information is accurate, up to date and complete before it is used.¹⁴⁹ A recent complaint determination by the former Federal Privacy Commissioner highlights the importance of ensuring that steps are taken to keep records up to date and complete, rather than telling only part of a story.¹⁵⁰

When computer technology is used to automate all or part of the decision-making process, there is potential for errors to occur during the transfer of information collected from a paper-based source (for example, a claim form) to the computer system. On the other hand, using an expert system to collect information directly from an applicant (for example, if the expert system can be accessed online) could reduce errors by obviating the need for an agency officer to manually enter the data.

4.13.1 Conclusion

It is important for the quality of all administrative decisions that the information agencies collect and store is accurate. Agencies should adopt suitable procedures for accurately collecting and storing data used by expert systems in administrative decision making.

Principle 20

Agencies should use suitable practices for accurately collecting and storing data used by expert systems in administrative decision making.

Principle 21

Agencies should take steps to ensure that the data collected and used by expert systems for administrative decision making remain accurate and complete.

¹⁴⁷ Australian National Audit Office 2002, *Recordkeeping*, Audit report no. 45 2001-02, ANAO, Canberra, p. 11.

¹⁴⁸ Barrett, PJ (Auditor-General) 1999, 'A more systematic approach to effective decision-making for better outcomes or results', Address to an Institute of Public Administration Australia conference, Canberra, 10 March.

¹⁴⁹ See Information Privacy Principle 8 (public sector organisations) and National Privacy Principle 3 (private sector organisations).

¹⁵⁰ See Complaint Determination no. 2 of 2004, 16 April 2004. The database in question was a tenancy database that held personal information about many thousands of Australians.

4.14 Review procedures

4.14.1 Internal review

Internal review of decisions is a very important tool – in terms of both quality control and resource and time management – especially for agencies that make large numbers of primary decisions.

In the foreword to *Internal Review of Agency Decision Making: a best practice guide*, the former President of the Council, the late Mrs Bettie McNee, noted:

A good system of internal review is one which is transparent in process and affords a quick, inexpensive and independent review of decisions. Such a system is beneficial both to applicants and agencies. Its aim should be to encourage better primary decision making by agencies, and the delivery of a cost effective and time efficient review process to applicants.¹⁵¹

The National Welfare Rights Network Inc. submitted that administrative review processes that provide a credible means of ensuring that individuals are treated fairly in their dealings with government achieve the primary purpose of decision making, which is to give effect to the will of parliament.¹⁵²

There are two options for conducting an internal review of a decision made using an expert system: an internal review that is performed by a review officer using the expert system; or an internal review that is performed manually and does not involve using the expert system.

Using the expert system to conduct the review could involve revision of the information put into the system to check for errors, insertion of any additional information not available when the original decision was made, reconsideration of the evidence supplied, and reconsideration of any exercise of discretion. For such a review, the information inserted would need to be checked and, if necessary, added to or amended. If there is an error with the rules programmed into the expert system, however, a manual review has the potential to be more effective.

Agencies have differing practices in relation to the conduct of internal reviews. For example, internal review of decisions made by the expert system at Comcare is done manually. In contrast, the Department of Veterans' Affairs uses the expert system in its internal reviews. The Department noted that additional material (such as a new medical report) is sometimes submitted by veterans at the time of the review.

SoftLaw submitted that, in general, the review should be done using the expert system. However, if this is done and the matter is not resolved, the review officer should check for problems with the system.¹⁵³ SoftLaw also argued that it might be clear from the request for review that the matter in dispute will not be resolved

¹⁵¹ Administrative Review Council 2000, *Internal Review of Agency Decision Making: a best practice guide*, ARC, Canberra, p. iv.

¹⁵² National Welfare Rights Network Inc., submission, p. 1.

¹⁵³ SoftLaw, submission, p. 60.

by the expert system. For example, the claimant might argue that the decision maker's discretion was not exercised properly or might disagree with departmental policy on a particular matter. In these circumstances, SoftLaw suggested that it would be acceptable not to use the expert system to conduct the internal review.

4.14.2 Conclusion

Although an expert system can be used to conduct internal reviews of decisions made by or with the assistance of expert systems, there will be some occasions when the matter in dispute can only be comprehensively reviewed manually. Accordingly, if an expert system is used for reviewing decisions made by or with the assistance of expert systems, agencies should have both the capacity and the will to conduct internal reviews manually if that is appropriate.

Principle 22

Agencies should have the capacity and the will to conduct internal reviews of decisions manually where appropriate, particularly where review of a matter involving the decision maker's judgment is sought.

4.14.3 External review

The Administrative Appeals Tribunal's role is to make the correct or preferable decision when reviewing administrative decisions. In reaching its decision, the Tribunal can consider any matter that is relevant to the decision under review.¹⁵⁴ Thus, when reviewing a decision made either by or with the assistance of an expert system, the Tribunal could consider the operation of the expert system itself, including the rules making up the system. Use of an expert system could also be a consideration in an application for review under the *Administrative Decisions (Judicial Review) Act 1977* if that use is relevant to any of the grounds of review.¹⁵⁵

As noted, the Social Security Appeals Tribunal advised the Council, however, that, because of the complexity of the printouts from some computer systems, it can be difficult for a tribunal to review a case 'de novo'. It considers that, as a matter of practicality, some calculations in a decision (such as determining a rate of pension) are too complicated to presume that this could be done manually. In these circumstances the matter is remitted to the agency to conduct the calculations using the computer system.¹⁵⁶

4.14.4 Conclusion

Although a tribunal or court will conduct its review manually, in accordance with its particular practices and procedures, the expert system's explanations of both the decision and the rules are of great importance to the review body. A clear

¹⁵⁴ See *Re Greenham and Minister for Capital Territory* (1979) 2 ALD 137.

¹⁵⁵ See Section 4.3.

¹⁵⁶ Social Security Appeals Tribunal, submission, p. 2.

audit trail is necessary – particularly in relation to complex calculations – if an external review body is to be able to examine the correctness of a decision.¹⁵⁷

Principle 23

External reviews of administrative decisions should be done manually, in accordance with the procedures and practices of the particular tribunal or court conducting the review.

4.15 Independent scrutiny

It has been argued that there should be scrutiny of expert systems for the purpose of ‘ensuring that government rule bases are accurate and fair and that they reflect principles of public law and proper administration’.¹⁵⁸ Review of decisions by tribunals and courts is one form of independent scrutiny of expert systems, but often there is nothing on the face of the decision to alert the affected person or the tribunal or court to the fact that the decision was computer generated or assisted.¹⁵⁹

One agency advised the Council that, although it supported scrutiny of systems to ensure adherence to administrative law standards, it is important to recognise that there are already a number of scrutiny and review mechanisms available to agencies, among them consultative mechanisms and forums with community groups, internal quality assurance processes, and regulatory financial and audit controls by the Australian National Audit Office. It considered that an overall balancing of the level of scrutiny and review is necessary, in order to ensure the correctness and fairness of outcomes without diminishing the benefits through over-regulation and duplication.

4.15.1 Agencies involved in scrutinising expert systems’ decisions

Apart from the internal and other scrutiny that agencies themselves use in relation to system testing¹⁶⁰, a number of agencies currently have a role in independently scrutinising decisions made by expert systems.

The Australian National Audit Office has conducted a number of audits of the Department of Veteran’s Affairs compensation decision regime since the introduction of the Department’s Compensation Claims Processing System in 1994. The Audit Office performs audits to provide an independent view of the performance and financial management of public sector agencies and bodies. Its objective is to add value to public sector performance and accountability.

The Ombudsman investigates complaints about administrative actions, which can include automated decision-making processes. In addition to this complaint resolution role, the Ombudsman conducts own-motion inquiries into

¹⁵⁷ See Section 4.11.

¹⁵⁸ Sutherland, P 1992, ‘Expert system technology: implications for social welfare delivery’, *Alternative Law Journal*, vol. 17, no. 6, p. 282.

¹⁵⁹ See Creyke, R 2003, ‘Current and future challenges in judicial review jurisdiction: a comment’, *AIAL Forum*, vol. 37, April, p. 43.

¹⁶⁰ See Section 4.7.

administrative activities and monitors some activities – for example, the telephone interception activities of the Australian Federal Police and the Australian Crime Commission.

4.15.2 An independent scrutiny panel

In view of the increasing use of expert systems in administrative decision making – and the savings this can bring – the Council considers there should be independent scrutiny of expert systems, to ensure that administrative law values are reflected in the decision-making process. There should be external scrutiny of all decision making, but the use of expert systems in administrative decision making process is a developing area in which a mistake in the design or operation of such a system has the potential to affect many people. It is therefore important to scrutinise expert systems in order to identify errors as early as possible.¹⁶¹

Although the Council considers there should be external oversight of expert systems, focusing on administrative law values, it is also conscious of the mechanisms already in existence for system testing and auditing. It therefore considers that, while agencies should remain responsible for their own system testing and quality assurance, an independent interdisciplinary advisory panel should be established to oversee these systems and to provide advice to government on the operation of the systems in relation to administrative decision making.

The panel would not engage in quality assurance or audits itself: this would still be left to the agencies and to the external bodies that are currently responsible for such scrutiny. Rather, the panel would focus on the extent to which administrative law values are reflected in the use of expert systems in administrative decision making. It is envisaged that the panel would evolve as it gathers experience and insight.

The Council suggests that the panel include both the Auditor-General and the Ombudsman – to make use of the combined experience of these agencies in auditing and reviewing decision-making processes. It would also be preferable for the panel to include representatives from a number of Commonwealth agencies, as well as community organisations (such as the National Welfare Rights Network Inc.) that represent people affected by the use of expert systems in administrative decision making.

Principle 24

Independent scrutiny and oversight of expert systems should focus on ensuring that the administrative law values are reflected in the decision-making process.

¹⁶¹ Fremont, J 1994, 'Computerized administrative decision-making and fundamental rights', *Osgoode Hall Law Journal*, vol. 32, no. 4, p. 826.

Principle 25

A panel should be created to oversee and provide advice to government on the operation of expert systems in administrative decision making. The panel should be advisory in nature, with the agencies themselves and external overseeing bodies such as the Auditor-General and the Ombudsman remaining responsible for system testing and quality assurance. Among the members of the panel should be representatives of the following:

- the Office of the Ombudsman
- the Australian National Audit Office
- Commonwealth agencies
- community organisations.

4.16 Diverse service delivery mechanisms

The use of expert systems in administrative decision making offers the potential for diverse service delivery mechanisms, which could allow greater access to government services for a variety of people – such as people with a disability, older people, and people in rural and remote Australia.

Expert systems are being used in a number of ways, and this can expand access to agency decision making. For example, the ATO's *e-tax* allows people to use a home computer and the internet to complete and lodge tax returns and 'baby bonus' claims. Other examples are Centrelink's web and phone self-service options. Eligible customers (for example, students in receipt of the Youth Allowance) can report their fortnightly income by using the internet, or by phoning Centrelink and either speaking (which involves natural language speech recognition technology) or using the phone keypad (which involves touch-tone technology). Once the requested information is submitted, it is processed by the expert system and the customer's rate of payment is determined. The customer is then told what their rate of payment will be for the next payment period and is given receipt details.

But the use of expert systems in this way does not necessarily allow for access and equity in relation to government services. In response to the issues paper, Legal Aid Queensland advised the Council that, as a result of their backgrounds or experiences, many of its clients are unsophisticated in their comprehension skills, are illiterate or have low literacy skills, have poor functionality skills, or are intimidated by, or lack experience and confidence in using, new technologies.¹⁶²

In 2000 the Human Rights and Equal Opportunity Commission released a detailed report on the accessibility of new service and information technologies for older Australians and people with a disability.¹⁶³ One of the Commission's primary recommendations was that, as far as possible, agencies should ensure

¹⁶² Legal Aid Queensland, submission, p. 6.

¹⁶³ Human Rights and Equal Opportunity Commission 2000, *Accessibility of Electronic Commerce and New Service and Information Technologies for Older Australians and People with a Disability*, HREOC, Sydney.

that online and automated services are used to complement, rather than replace, direct human services.¹⁶⁴

The Commission also recommended the following measure, among others, for consideration by the Commonwealth and other interested parties: increased efforts by relevant government agencies in cooperation with industry associations and community organisations to ensure that people developing and implementing new technologies are aware of access considerations.¹⁶⁵

4.16.1 Conclusion

Although the use of expert systems in administrative decision making has the potential to provide diverse service delivery mechanisms, this does not necessarily allow for access and equity in relation to government services. It is important that expert systems used in administrative decision making take account of access and equity considerations.

Principle 26

In the development and operation of expert systems for use in administrative decision making, account should be taken of access and equity.

4.17 Involvement of community organisations

There are potential benefits in community workers having access to particular kinds of expert systems: the workers would be able to help people applying for benefits by providing general advice, verifying the correctness of departmental decisions, and preparing appeals.¹⁶⁶

Sutherland noted that, because of the community sector's chronic shortage of resources, it is difficult to envisage a viable strategy for implementation of expert system technology in the community sector.¹⁶⁷ He also noted that public sector agencies should provide the relevant expert system applications, together with support and resources, to the community sector because this will advance the interests of applicants and further the agencies' own corporate goals by improving access to services.¹⁶⁸ He concluded, however, 'This is inherently unlikely except as an attempt to shift resource-intensive pre-processing work to community agencies without a transfer of the necessary resources'.¹⁶⁹

¹⁶⁴ *ibid.*, p. 5. Since the release of the report, HREOC has published, in November 2001, a review entitled *Building Bridges over the Digital Divide*, where it reports on the considerable progress that it found had been made by government, business and the community sector in responding to many of the recommendations made in the original report. HREOC also worked with the Australian Bankers Association to establish the Accessible E-commerce Forum, which continues to discuss aspects of accessible e-commerce.

¹⁶⁵ Human Rights and Equal Opportunity Commission 2000, *Accessibility of Electronic Commerce and New Service and Information Technologies for Older Australians and People with a Disability*, HREOC, Sydney, p. 6.

¹⁶⁶ See Sutherland, P 1992, 'Expert system technology: implications for social welfare delivery', *Alternative Law Journal*, vol. 17, no. 6, p. 282.

¹⁶⁷ *ibid.*

¹⁶⁸ *ibid.*

¹⁶⁹ *ibid.*

An example of a situation where community organisations have been trained in the use of expert systems is the Training Information Program introduced by the Department of Veterans' Affairs to assist in the provision of advice and advocacy for applicants for benefits under the *Veterans Entitlements Act 1986*. The Program trains ex-service organisation advocates and welfare officers in how to help veterans prepare applications. It is designed to increase veterans' and war widows' awareness of entitlements, to improve liaison with ex-service organisations, and to ensure that applications are completed accurately and provide all the supporting information required for processing.¹⁷⁰ The program operates at three levels: training advocates to lodge applications at the primary level; training in relation to internal review and arguing a matter before the Veterans' Review Board; and, at the final level, instruction in running matters before the Administrative Appeals Tribunal.

Legal Aid Queensland advised the Council that many community organisations act as 'community access points' for its services. These organisations stock publications and other materials about Legal Aid Queensland, have access to video-conferencing facilities, and might have staff who can provide support for people wishing to apply for legal aid. It noted, however, that, in addition to the resourcing problem, considerable training would be required for community workers if they were to use expert systems to help people apply for benefits or services.¹⁷¹

4.17.1 The extent of involvement of community workers

Expert systems could allow community workers to be involved in the decision-making process to varying degrees.

One possibility is that, by using the expert system as a checklist, community workers could ensure that an application and all the supporting evidence were submitted to a government officer for consideration and a decision in relation to the exercise of discretion. This would relieve the government officer of the task of collating the supporting evidence.

Alternatively, community workers could be given the task of taking a case through the expert system and considering the evidence, so that the only part of the decision left for the government officer would be the exercise of discretion. Where there is no discretion, the community worker could consider the evidence and then implement the decision recommended by the expert system.

Another possibility would be to allow a community worker to consider the evidence submitted and, after using the expert system, make a decision in relation to the benefit, including exercising any discretion involved in the decision.

4.17.2 Conflicts of interest

The National Welfare Rights Network Inc. strenuously opposes the involvement of community workers in the decision-making process because of the serious

¹⁷⁰ See Australian National Audit Office 1996, *Compensation Pensions to Veterans and War Widows*, Audit Report no. 3, 1996-97, ANAO, Canberra, p. 9.

¹⁷¹ Legal Aid Queensland, submission, p. 7.

conflict of interest that it raises. It considers that community workers are there to advocate for or assist an individual, and for that reason they should not be co-opted into the decision-making process. In this regard, the Network argues that community workers should not be expected to take on the role of umpire – any more than a judge should be involved in investigating the case before him or her.¹⁷² It also considers that involving community workers in decision making would entail an inappropriate transfer of government responsibility for administering the social security system.

The Council agrees that the role and purpose of many community organisations might limit their ability to be involved in the decision-making process. For example, if an organisation's purpose is to provide advocacy services for a particular group of people, it could be appropriate for that organisation to have access to a government agency's expert systems in order to better advise its clients. But that same organisation could be presented with a conflict of interest if it were also to assume the role of decision maker.

4.17.3 Conclusion

The involvement of community workers in the administrative decision-making process raises many issues – such as the authority of non-government workers to make administrative decisions, the review and audit processes applicable to such decisions, accountability of non-government employees, possible conflicts of interest, and questions about resourcing. These important considerations would have to be examined by both government and community organisations contemplating involvement in administrative decision making.

4.18 Self-assessment

Australians are familiar with self-assessment in the taxation context and with the concept that the taxpayer must have evidence to justify a claim. That experience could be helpful in gaining public acceptance of self-assessment in other spheres.

The potential for expert systems to be used in self-assessment does, however, raise some questions. Self-assessment is dependent on applicants having online access, on their being able to read or hear the questions asked by the expert system, and on the assumption that they want to apply for benefits online. But not everyone has access to the internet or phones; others are not at ease using the internet; and not everyone can read.

The considerations relating to self-assessment vary for different interest groups. For example, tertiary students and some recipients of welfare benefits might be more likely than others to have access to the internet and be at ease using it. Older Australians might be less likely to want to use a computer or the internet without

¹⁷² National Welfare Rights Network Inc., submission, p. 4.

support.¹⁷³ People of non-English speaking background, people with poor reading skills and people with a disability might need help in order to understand and answer the questions.

Even if expert systems are designed and delivered in such a way as to try to take account of some of these problems – for example, the use of phone technology can resolve the literacy problem – self-assessment might not be a preferable option for some people.

Consistent with the Human Rights and Equal Opportunity Commission's recommendation, the Council considers it is essential that the use of expert systems to provide self-service options (such as self-assessment) should complement, rather than replace, direct contact with a decision maker.

It also seems clear that self-assessment by way of expert systems would need to be accompanied by access to computer facilities and support in places such as government shopfronts, post offices and community centres. The administrative law values relevant in this context are fairness and efficiency.

The question of comprehension arises regardless of whether an applicant applies for a benefit in the traditional way or online. In both cases this problem needs to be remedied by the provision of advice and assistance.

If self-assessment in the welfare area were to become an option, any evidence required to support the payment of a benefit might still need to be evaluated by someone other than the applicant. It could, however, be the applicant's responsibility to produce the evidence on request, as is the case with taxation matters.

Self-assessment is probably best suited to decisions that do not involve the exercise of discretion. If a question involves the exercise of discretion, the applicant would obviously, and understandably, be likely to respond in the manner that is most favourable to him or her. There is, however, a view that decisions that involve the exercise of discretion could still be made by a self-assessing applicant using the commentary that accompanies the expert system. It could be the individual's responsibility to answer the questions correctly, again as is the case with taxation matters.

4.18.1 Conclusion

Any move towards self-service options – such as self-assessment – delivered by expert systems should not replace other service delivery options, including direct human services.

¹⁷³ Australian Bureau of Statistics data show that, in the 12 months to November 2000, as age increased the likelihood that an adult was a computer user or an internet user decreased (see *Use of the Internet by Householders, Australia*, 16 February 2001, <<http://www.abs.gov.au>>), although internet use among people over 55 years is increasing (see Human Rights and Equal Opportunity Commission 2000, *Accessibility of Electronic Commerce and New Service and Information Technologies for Older Australians and People with a Disability*, HREOC, Sydney, p. 9).

Principle 27

Self-service options delivered by the use of expert systems, including self-assessment, should supplement – rather than replace – direct human services.

Appendix A Section 51 of the Administrative Appeals Tribunal Act

Section 51 of the Commonwealth's *Administrative Appeals Tribunal Act 1975* describes the functions of the Administrative Review Council:

(1) The functions of the Council are:

(aa) to keep the Commonwealth administrative law system under review, monitor developments in administrative law and recommend to the Minister improvements that might be made to the system; and

(ab) to inquire into the adequacy of the procedures used by authorities of the Commonwealth and other persons who exercise administrative discretions or make administrative decisions, and consult with and advise them about those procedures, for the purpose of ensuring that the discretions are exercised, or the decisions are made, in a just and equitable manner; and

(a) to ascertain, and keep under review, the classes of administrative decisions that are not the subject of review by a court, tribunal or other body; and

(b) to make recommendations to the Minister as to whether any of those classes of decisions should be the subject of review by a court, tribunal or other body and, if so, as to the appropriate court, tribunal or other body to make that review; and

(c) to inquire into the adequacy of the law and practice relating to the review by courts of administrative decisions and to make recommendations to the Minister as to any improvements that might be made in that law or practice; and

(d) to inquire into:

(i) the qualification required for membership of authorities of the Commonwealth, and the qualifications required by other persons, engaged in the review of administrative decisions; and

(ii) the extent of the jurisdiction to review administrative decisions that is conferred on those authorities and other persons; and

(iii) the adequacy of the procedures used by those authorities and other persons in the exercise of that jurisdiction; and to consult with and advise those authorities and other persons about the procedures used by them as mentioned in subparagraph (iii) and recommend to the Minister any improvements that might be made in respect of any of the matters referred to in subparagraphs (i), (ii) and (iii); and

(e) to make recommendations to the Minister as to the manner in which tribunals engaged in the review of administrative decisions should be constituted; and

(f) to make recommendations to the Minister as to the desirability of administrative decisions that are the subject of review by tribunals other than the Administrative Appeals Tribunal being made the subject of review by the Administrative Appeals Tribunal; and

(g) to facilitate the training of members of authorities of the Commonwealth and other persons in exercising administrative discretions or making administrative decisions; and

(h) to promote knowledge about the Commonwealth administrative law system; and

(i) to consider, and report to the Minister on, matters referred to the Council by the Minister.

(2) The Council may do all things necessary or convenient to be done for or in connexion with the performance of its functions.

(3) If the Council holds an inquiry, or gives any advice, referred to in paragraph (1)(ab), the Council must give the Minister a copy of any findings made by the Council in the inquiry or a copy of the advice, as the case may be.

Appendix B The Council's stocktake of expert systems

As part of the research for its issues paper, the Council conducted a stocktake of the current and proposed use of expert systems by Commonwealth agencies. The following questions were asked:

- Are expert systems currently used within your agency to make administrative decisions? If so, what decisions are the systems used to make?
- Does your agency propose to use other expert systems in the future or to expand the categories of decisions currently made using existing expert systems? If so, please provide details.

Following are the survey results for agencies that informed the Council that they use expert systems in administrative decision making. (The agencies were advised that the results of the stocktake would be published.) The Council is also aware that some state government agencies use expert systems; some examples are noted here.

Commonwealth agencies

The Department of Agriculture, Fisheries and Forestry

The Department of Agriculture, Fisheries and Forestry appears to have at least four rule-based systems. The Australian Quarantine and Inspection Service Import Management System, or AIMS, is used to make decisions on whether imported commodities should be subject to inspection at the border and to provide advice on the appropriate tests to apply. AIMS has a component called the Automatic Entry Processing System, which collects information from an import entry and uses a set of rules to apply quarantine directions allowing the movement of cargo.

The Import Conditions Database is used to make decisions to permit or reject an import under the *Quarantine Act 1908*. The Phyto Internet-Grains/Horticulture Expert System and the Live Animal Exports System are used to make decisions to permit or to reject an export under the *Export Control Act 1982*.

The Department also uses a number of other expert systems:

- the Ballast Water Decision Support System – a risk-assessment tool that enables vessels to undertake a risk assessment on their ballast water intended for discharge in Australian ports or waters
- the Vessel Monitoring System – a risk-assessment tool used in conjunction with vessels' pre-arrival reports to determine the level of inspection required

- the EXDOC system, which is used to validate importing country requirements on Australian exports of meat, fish, dairy, grain and horticulture products
- systems used by the Dairy Adjustment Authority in its administration of the Dairy Structural Adjustment Program and the Supplementary Dairy Assistance Scheme for determining dairy farmers' eligibility for payment
- the Australian Special Information Systems, which include a database for levy-payer management and use numeric weighting to determine the risk associated with each case.

In terms of expert systems to be used in the future, the Quarantine Risk Indicator (QRI) project will determine the risk associated with goods of quarantine interest (both commodity and non-commodity items) approaching or detected at the barrier. This will allow a comparative ranking of risk. The Australian Quarantine and Inspection Service is in the process of conducting a pilot using QRIs. The pilot requires the development of an electronic system to store the risk data and apply the decision rules required to calculate the QRIs. AQIS is currently developing a model of the likelihood and consequences of particular threats associated with those goods. The outcomes of the pilot will determine the direction the project takes.

AQIS also advised the Council that an expert system that will assist with border risk-management decisions is being developed by it in collaboration with Biosecurity Australia.

The Australian Fisheries Management Authority

The Australian Fisheries Management Authority does not use rule-based systems or other expert systems to make administrative decisions that are reviewable under the *Fisheries Management Act 1991*, but it does use a rule-based system when making some decisions about whether to prosecute under that Act. The decisions are those in which Vessel Monitoring System information is available: the VMS tracks fishing vessels and can be used to provide evidence about breaches of fisheries regulations and permit conditions.

The Australian Taxation Office

Use of automated systems in the Australian Taxation Office is not new: a large number of rule-based systems and other expert systems are used. The rule-based systems are used, for example, to determine the rate of shortfall penalty, residency status¹⁷⁴, whether a scholarship is taxable, whether to use the discount or indexation method for declaring a capital gain, and entitlement to the Family Tax Benefit and the 'baby bonus'. Systems have also been installed on the internet for clients' use. Over 30 other rule-based applications are being developed. It is thought there will be a high and growing demand for rule-based and other expert systems from all areas of the ATO.

¹⁷⁴ Numeric weighting is also used for determining residency status.

It was noted in the course of the Council's discussions with the ATO that *TaxPack* (in both paper and electronic form) is essentially a rule-based system in that the questions in it form a decision tree.

The ATO also uses a neural network system called NetRisk. This system is a debt risk-profiling application that uses 'client circumstances and past behaviour to predict the level of intervention required to best resolve an outstanding [tax] obligation'.¹⁷⁵ The ATO advised the Council that it expects neural networks to become increasingly relevant to its work. The ATO also uses case-based reasoning.

Centrelink and the Department of Family and Community Services

As with the ATO, the use of automated systems is not new in Centrelink and the Department of Family and Community Services. Under a business partnership agreement, FaCS contracts Centrelink to administer specific payments.

When the was Council preparing its issues paper, Centrelink and FaCS were implementing the Edge Project, which had two expert system applications – the Claims Processing Application and the Policy Development Application. As noted, however, Centrelink subsequently advised the Council that it had decided not to proceed with the Edge Project in its current form.

As described in Section 4.16, Centrelink currently uses other expert system technology in relation to its self-service options, including web and phone self-service. Eligible customers (for example, students in receipt of the Youth Allowance) can report their fortnightly income by using the internet, or by phoning Centrelink and either speaking (which involves natural language speech recognition technology) or by using the phone keypad (which involves touch-tone technology). The system automatically processes information provided to determine the customer's rate of payment.

Comcare

In 1998 Comcare implemented a rule-based system, the Initial Liability Module, for determining the Commonwealth's initial liability in relation to workers compensation claims under the *Safety, Rehabilitation and Compensation Act 1988*. The system requires an officer to answer a series of questions in order to establish the employment relationship of the applicant employee to the employer, the medical relationship of the injury or disease to the employment, the nature of the injury or disease, and a number of other technical questions. Answering the questions requires judgment and skill. The system makes no decisions; rather, it prompts the user to follow a structured approach to arriving at a decision. A recommendation based on the answers to the questions is offered by the system but can be overridden by the officer.

¹⁷⁵ Australian Taxation Office 2001, *Technology in Receivables Management: NetRisk and predictive risk profiling*, ATO, Canberra, p. 1.

A document-assembly system operates in conjunction with the rule-based system, allowing standard letters to be generated. The system has been used for all initial liability decisions since 1998, amounting to about 6500 claims a year.

At this stage Comcare has no plans to expand the use of expert systems technology to support other decision-making processes.

Customs

Customs currently applies rule-based decision-making in a number of functional areas. By eliciting information from clients in a structured manner in import declarations (self-assessed fiscal and statistical declarations made by importers to gain clearance of goods) and applying to it rules based on customs, tariff and tax legislation, the current COMPILE system determines and standardises the value of importations and calculates the revenue due (customs duty and GST). A number of other Customs systems – among them CLEAR, ACA, SCA and EXIT – also use rule-based decision making via profiling to identify restricted and controlled goods and to select high-risk import and export transactions for further scrutiny.

The Integrated Cargo System, to be released progressively in 2004–05, will replace all the systems just mentioned, building on their capabilities. For example, the ICS provides for complex matching criteria to be used for risk assessment, using combinations of matching techniques that include Boolean logic, arithmetic calculation and comparison, weighting, and like and pattern matching.

Customs proposes to adopt ‘proactive’ profiling, whereby an expert system uses existing data together with knowledge of past transactions found to be aberrant to itself identify anomalous transactions requiring treatment for risk – obviating the need for officers to research and construct profiles.

The Department of Communications, Information Technology and the Arts

The Department of Communications, Information Technology and the Arts advised the Council that it does not currently use any expert systems in administrative decision making but has made use of such systems in the past and proposes to do so in the future.

Numeric weighting was used to make decisions in the Federation Cultural and Heritage Projects grant program in 2000. The Department is also developing a web-based grant-management system to assist in application assessment and ongoing administration for the various grant programs it manages. The system will allow grant managers to include their reasoning for decisions at various stages of the process.

The Department of Defence

The Department of Defence uses rule-based systems to determine initial liability for workers compensation, compensation payments, degrees of permanent incapacity and ensuing payments and to administer its occupational health and safety system. Administrative responsibility for the determination of

compensation and invalidity payments was transferred to the Department of Veterans' Affairs in 1999; Defence retains policy responsibility for the function.

Rule-based systems are also used in Defence for guiding engineering decision making as part of the Integrated Logistic Support process and for career planning. With the systems used for career planning, numeric weighting is applied to assess human input and then predefined rules are applied to produce a ranking of officers eligible for promotion.

The Department of Employment and Workplace Relations

The Department of Employment and Workplace Relations does not currently use expert systems to make administrative decisions. Application of such systems is, however, being contemplated in strategic enterprise management and in the continuing implementation of the Job Seeker Classification Instrument. The Department advised the Council that an expert system could be developed in this context to include the administrative rules relevant to the Job Network policy.

The Department of the Environment and Heritage

Until recently, the Department of the Environment and Heritage was using a rule-based system to help administer the *Environment Protection and Biodiversity Conservation Act 1999*. The system helped development proponents determine whether their proposed development would affect matters protected under the Act and whether they needed to make a referral under the Act.

The Department is in the process of improving the service by replacing this now superseded system with simpler question-answer pathways to take clients to the relevant information or tools on the Environment Protection and Biodiversity Conservation website. The Protected Matters Decision Support Tool (also known as the Interactive Mapping Tool), available through the website, will help proponents use the expert system. It spatially locates matters protected by the Act – such as world heritage areas, internationally protected wetlands and listed threatened species – and is an easy-to-use interactive tool that gives proponents rapid access to information that will contribute to their decision making.

The National Heritage List Decision-Support Tool is a rule-based system that uses a query on a large body of mapped environmental information to return a map-based answer. It is used to help identify regions of Australia in which to conduct more detailed natural heritage identification work using conventional means. It is expected that the system will ultimately be expanded to return an estimate of the comparative level of natural heritage significance for the vicinity of heritage nominations and referrals under the Environment Protection and Biodiversity Conservation Act.

Environment Australia is also considering the use of a rule-based system in the corporate management area. A review of current Antarctic science approvals is being conducted. The Department would like to provide a 'one-stop shop' in which the relevant legislation can be identified and a person's application assessed. It is possible that an expert system will be introduced in this context.

The Department of Finance and Administration

The Department of Finance and Administration advised the Council that benchmarking is used as a self-assessment system by Comcover fund member agencies to assess their level of risk-management implementation and to benchmark with other Commonwealth and non-Commonwealth public and private sector agencies. Finance also uses a tender-evaluation system that evaluates the relative ranking of tenders for the provision of risk-management services. It advised the Council that at this stage there is no definite intention to pursue a rule-based system or other expert system solution in the Department.

The Department of Health and Ageing

The Department of Health and Ageing operates a rule-based system called COMPASS, which assists in making decisions about approved providers' compliance with the *Aged Care Act 1997*. Some of the most critical approved-provider responsibilities relate to the quality of care the providers must offer to residents of their homes and users of their services. When there is a breach of those responsibilities the Department can impose sanctions. COMPASS includes a document-assembly system that assists the preparation of complex sanctions notices. The relevant decisions – including the decision whether to issue a sanctions notice and a notice that actually imposes sanctions – are made by delegates of the Secretary of the Department, and COMPASS assists in this.

COMPASS covers very prescriptive legislative provisions and was developed to foster a nationally consistent approach to compliance action. After a decision has been made with COMPASS assistance, it is checked by a quality assurance officer and then by a legal officer. The system was developed in house because the Department had officers with detailed knowledge of the legislation and sufficient in-house IT expertise.

It is proposed to expand COMPASS to assist with decision making in relation to other areas coming within the *Aged Care Act* – including decisions about the transfer of places from one approved provider to another and the renewal of extra service status (see Divisions 16 and 34 of the Act).

The Therapeutic Goods Administration

The Therapeutic Goods Administration has a Listed Medicines Assessment Engine that is used in the assessment of listed medicine submissions for entry on the Australian Register of Therapeutic Goods. The system does a preliminary assessment of a submission, to check rule-based information such as combinations of ingredients and the upper limits of concentrations. The results are then considered as part of the manual decision-making process. The system is used only for analysis of scientific data submitted as part of an application for marketing approval for lower risk (listed) medicines such as vitamins, minerals and herbal products. It is intended that it will be extended to fully automate the decision-making process, with random and targeted manual reviews of a subset of submissions. The system will be available online to sponsors wishing to market a listed medicine product in Australia.

The Department of Veterans' Affairs

The Department of Veterans' Affairs has been at the forefront of the development of rule-based systems in Commonwealth government agencies.

In 1994 it introduced a rule-based system known as the Compensation Claims Processing System to support decision makers in determining veterans' entitlements under the *Veterans' Entitlements Act 1986*. The System was progressively introduced in all states and territories between March and September 1994, and in 1998–99 it was extended to cover internal review. The Department also uses another rule-based system, the Above General Rate stand-alone module, to determine eligibility for rates of pension that depend on employability. The module will be integrated into the Compensation Claims Processing System.

There are also two rule-based systems that are accessible via the internet. ELMNET (Eligibility Module Net) is a self-assessment tool that determines whether a veteran's military service entitles him or her to benefits. The second system, Just-in-Case, is a self-assessment tool built by the Departments of Veterans' Affairs and Defence. It allows veterans and members of the Australian Defence Force to determine the Act under which they are eligible to lodge a claim – that is, the *Veterans' Entitlements Act 1986* or the *Safety, Rehabilitation and Compensation Act 1988*.

Examples of rule-based systems used by state agencies

The South Australian Community Housing Authority

The South Australian Community Housing Authority, a statutory body within the South Australian Government's Human Services portfolio, operates a rule-based system. In South Australia community housing properties are managed by community housing organisations, which are generally run by volunteers. SACHA's rule-based system – the Community Housing Eligibility Register, or CHER – is used by community housing organisations and helps them assess applicants' eligibility for housing. It is a decision-support tool: judgments are left for human decision makers. It is envisaged that CHER could ultimately be used by referral bodies and that self-assessment by applicants will become possible.¹⁷⁶

SACHA has suggested that it may be able to use rule-based systems to determine whether the eligibility process is misunderstood by community housing organisations and, if so, conduct education sessions to remedy that. In recognition that community housing organisations need to retain control of the process within their organisation, use of the rule-based system is voluntary.

The New South Wales Roads and Traffic Authority

The New South Wales Roads and Traffic Authority uses a rule-based system to make decisions on licences, vehicle registrations, and the allocation of penalties

¹⁷⁶ Ainsworth, S 2000, 'Conducting complex business processes such as rent and tenancy management on-line: cyber-relating government and community', Paper presented at 13th National Technology in Government Conference, Canberra, March, p. 7.

for traffic infringements. The rules embody relevant legislation, regulations, policy and practice. A customer service operator can override the system in certain circumstances; the reason for overriding it is documented and audited.

The New South Wales Premier's Department

The New South Wales Premier's Department is piloting a rule-based system that will deal with injuries to personnel and advise on extended leave and retirement matters in relation to the state's public servants. The rules embody the relevant parts of the *Public Sector Management Act 1988* (NSW) and the regulations and policies that apply to this area. The impetus for piloting a rule-based system comes from the cost of processing leave forms – particularly given error rates, the time and resources needed to deal with inquiries, and the possibility of inconsistent advice being given. It is expected that the system will be made available via the internet to managers in the New South Wales Public Service.

Appendix C Submissions in response to the issues paper

The Council received substantive submissions in response to the issues paper from the following:

- Mr Greg Ross
- the Axe Group
- the Department of Veterans' Affairs
- the Department of Family and Community Services and Centrelink
- Legal Aid Queensland
- National Legal Aid
- SoftLaw
- the Social Security Appeals Tribunal
- the Department of the Environment and Heritage
- the National Welfare Rights Network Inc.

REPORTS OF THE ADMINISTRATIVE REVIEW COUNCIL

- 1 *Administrative Decisions (Judicial Review) Act 1977* – exclusions under section 19 (1978)
- 2 Repatriation Appeals (1979)
- 3 Review of Import Control and Customs By-Law Decisions (1979)
- 4 *Administrative Appeals Tribunal Act 1975* – amendments (1979)
- 5 Defence Force Ombudsman (1979)
- 6 Entry to Cocos (Keeling) Islands and Christmas Island (1979)
- 7 Citizenship Review and Appeals System (1980)
- 8 Social Security Appeals (1980)
- 9 Administrative Decisions (Judicial Review) Amendment Bill 1980 (1980)
- 10 Shipping Registration Bill (1980)
- 11 Student Assistance Review Tribunals (1981)
- 12 Australian Broadcasting Tribunal Procedures (1981)
- 13 Commonwealth Employees' Compensation Tribunal (1981)
- 14 Land Use in the ACT (1981)
- 15 *Australian Federal Police Act 1979* – sections 38 & 39 (1982)
- 16 Review of Decisions under the *Broadcasting and Television Act 1942* (1982)
- 17 Review of Taxation Decisions by Boards of Review (1983)
- 18 *Compensation (Commonwealth Government Employees) Act 1971* – amendments (1983)
- 19 Rights of Review under the *Migration Act 1958* and Related Legislation: interim report on the constitution of the Administrative Appeals Tribunal (1983)
- 20 Review of Pension Decisions under Repatriation Legislation (1983)
- 21 The Structure and Form of Social Security Appeals (1984)
- 22 The Relationship between the Ombudsman and the Administrative Appeals Tribunal (1985)
- 23 Review of Customs and Excise Decisions: stage two (1985)
- 24 Review of Customs and Excise Decisions: stage four – censorship (1985)
- 25 Review of Migration Decisions (1985)
- 26 Review of the Administrative Decisions (Judicial Review) Act: stage one (1986)
- 27 Access to Administrative Review: stage one – notification of decisions and rights of review (1986)
- 28 Review of Customs and Excise Decisions: stage three – anti-dumping and countervailing duty decisions (1987)
- 29 Constitution of the Administrative Appeals Tribunal (1987)
- 30 Access to Administrative Review: provision of legal and financial assistance in administrative law matters (1988)
- 31 Review of Decisions under Industry Research and Development Legislation (1988)
- 32 Review of the Administrative Decisions (Judicial Review) Act – the ambit of the Act (1989)
- 33 Review of the Administrative Decisions (Judicial Review) Act – statements of reasons for decisions (1991)
- 34 Access to Administrative Review by Members of Australia's Ethnic Communities (1991)
- 35 Rule Making by Commonwealth Agencies (1992)
- 36 Environmental Decisions and the Administrative Appeals Tribunal (1994)
- 37 Administrative Review and Funding Decisions – a case study of community services programs (1994)
- 38 Government Business Enterprises and Commonwealth Administrative Law (1995)
- 39 Better Decisions: review of Commonwealth merits review tribunals (1995)
- 40 Open Government: a review of the federal *Freedom of Information Act 1982* (1995)
- 41 Appeals from the Administrative Appeals Tribunal to the Federal Court (1997)
- 42 The Contracting Out of Government Services (1998)
- 43 Administrative Review of Patents Decisions (1998)
- 44 Internal Review of Agency Decision Making (2000)
- 45 A Report on the Council of Australasian Tribunals (2002)