Intellectual property in internet software

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By David Webber

The Internet is an iconoclastic system which has introduced exciting new concepts in commerce and communications, whilst upsetting a number of traditional principles, including principles associated with intellectual property law. Intellectual property is a term coined to describe to the collective set of exclusive rights which creators can obtain for their works. The rights are provided by patents, trade marks, designs, copyright, circuit layouts and trade secrets, each of which are codified and administered by respective statutes, with the exception of trade secrets.

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Trade marks, such as Explorer™ and Navigator™ for Web browsers, are used to denote a distinctive connection between the owner and the software being sold. A registered design provides an exclusive right to apply particular features of shape, configuration, pattern or ornamentation to an article of manufacture. Making of an eligible circuit layout gives rise to exclusive rights to copy and exploit the layout, and make an integrated circuit in accordance with the layout, which are used to prevent copying of semiconductor circuit layouts.

The nature of the design and circuit layout rights means they are generally of little value in protecting software from misappropriation, whereas for trade marks unauthorised software can be sold under a different mark. The most secure and cost efficient form of protection is provided by an action for breach of confidential information, if the software can be kept secret.

The nature of the Internet, and the ease with which it allows for the dissemination of software and information, unfortunately normally renders this form of protection, both commercially and practically, unsustainable.

Copyright and patent rights are the predominant rights relied upon to prevent the unauthorised use of software, and will be the focus of this Chapter. Reference is made to Australian law, but a number of the comments apply equally to other jurisdictions, particularly Europe, Japan, New Zealand and the US.

Internet software is unique in that collectively it not only facilitates the connection of a number of machines to form a global communications network, but also provides tools which enable the publication and distribution of an almost limitless range of video, audio, graphic and textual information. Internet software
can be sold, along with other software, on the medium which it establishes, and includes code, such as applets, which is transmitted throughout the network for execution on receiving machines.

**Copyright**

Copyright protects original expression, such as a literary or musical work, from unauthorised reproduction or adaptation. The right comes into existence automatically, as it is not intended to be a monopoly right for any use of a work and only independent creation needs to have occurred for its subsistence.

Traditionally used to protect works of some aesthetic or artistic merit directed to a human audience, legal practitioners sought protection for software by copyright, given that most software, or computer programs, are written using high level languages that use English terms. Initially this did not always prove successful because of the dual nature of computer programs, and the decision in Computer Edge Pty Ltd v Apple Computer Inc is one example of failure. The Copyright Amendment Act 1984 was introduced, as the Apple case proceeded through the Courts, to ensure the Copyright Act 1968 (Cth) provided full protection for computer programs as literary works.

The amendments generated much controversy and comment and have continued to do so, but as will be apparent from the discussion below their purpose was clearly met. Computer programs are protected as literary works under the Copyright Act 1968, and will continue to be so in order for Australia to meet its obligations under the TRIPs agreement which requires that: Computer programs, whether in source or object code, shall be protected as literary works under the Berne Convention (1971). The Act defines a “literary work” as including “a computer program or compilation of computer programs.” A “computer program” is in turn defined by the Act as: An expression, in any language, code or notation, of a set of instructions (whether with or without related information) intended, either directly or after either or both of the following: (a) conversion to another language, code or notation; (b) reproduction in a different material form; to cause a device having digital information or processing capabilities to perform a particular function.

It may have been best if the definition had been omitted from the Act, for the broad nature of the definition has lead to courts bringing subject matter within the scope of the definition which ordinarily would never have been considered to constitute computer programs by artisans. Nevertheless, the breadth of the definition has provided copyright holders with a number of avenues for pursuing misappropriation of their work.

The Copyright Amendment (Digital Agenda) Bill 1999 (Cth) proposes to replace the present definition of “computer program” with that recommended by Copyright Law Review Committee (CLRC) in its 1995 final report on Computer Software Protection (Final Report) Once the amendments are enacted, “computer program” will be defined as meaning: a set of statements or instructions to be used directly or indirectly in a computer in order to bring about a certain result. Protection as a literary work provides the owner of the copyright in a computer program with all of the exclusive rights provided by s 31(1) of the Copyright Act 1968, including the right to reproduce the work in a material form and the right to make an adaption of the work.

Section 10(1) defines “adaption” in relation to a literary work being a computer program as “a version of the work (whether or not in the language, code or notation in which the work was originally expressed) not being a reproduction of the work”. The rights also include the right to enter into a commercial rental arrangement in respect of a computer program, as inserted by the Copyright (World Trade Organisation Amendments) Act 1994. The provisions have proved to be very effective in preventing the sale of counterfeit programs and the parallel importation of original programs. As Australia is a net importer of
computer programs it is the parallel importation provisions, ss 37 and 38, which are used extensively to prevent sale by unauthorised parties of original programs.

The parallel importation provisions have also been the subject of unending controversy over whether they should remain available for computer programs, and this is evidenced by an entire chapter being devoted to them in the Copyright Law Review Committee’s Final Report. Criminal provisions are also available to allow prison terms to be imposed for serious infringement. Court decisions Parallel importation The Federal Court has confirmed that copyright affords copyright owners with strong protection from unauthorised reproductions or parallel importation of computer programs. Hardware used to produce infringing copies can be seized, as in Irvine v Hanna-Rivero, significant damages can be awarded as discussed in Autodesk Australia Pty Ltd v Cheung and the court has considered a motion to imprison an offender for continued infringement. Ozi-Soft Pty Ltd v Wong and Broderbund Software Inc v Computermate Products (Australia) Pty Ltd confirm that ss37 and 38 forbid parallel importation and any argument that an implied licence may exist because the programs are obtained from the copyright owners or their distributors, without any expressed restriction for further sale, will not assist.

Accounting Systems 2000 (Developments) Pty Ltd v CCH Australia Ltd required a determination as to whether a substantial reproduction had occurred when at least 25 per cent of the original program had been copied. To find infringement, a substantial part of the program has to be reproduced with “substantial” referring to quality rather than quantity. The court was of the view that once it is found that a large proportion of the work has been reproduced it may be fair to infer that it has a qualitative in addition to quantitative significance. Reverse engineering The extent of protection provided by the Copyright Act 1968 has been tested the most in decisions which have had to consider infringement by products produced by reverse engineering the original work. The High Court’s decisions in Autodesk v Dyason showed how infringement could be found by indirectly copying 127 bits of a program in a large software package, such as AutoCAD. Focusing primarily on functional considerations, the court felt that the 127 bits were a substantial, indeed essential, part of the program.

However, the High Court made it clear that the traditional dichotomy in the law of copyright between an idea and the expression of an idea needs to be preserved, and said: It is nevertheless fundamental that copyright protection is given only to the form in which ideas are expressed, not the ideas themselves. The protection of ideas, and all events when the subject of manufacture, is the province of patent law. Recent decisions of the courts both in the United States and Australia have shown a tendency to read down the extent of copyright protection afforded to software, and confine it strictly to the protectable expression of a computer program. In Powerflex Services Pty Ltd v Data Access Corporation the Full Federal Court confined consideration of infringement to the taking of copyright expression, and rejected arguments based on similarity of function between the alleged infringement and the original work.

The correctness of this approach was confirmed by the High Court in Data Access Corporation v Powerflex Services Pty Ltd. Data Access owned the copyright in a database development system known as Dataflex. Powerflex had developed and sold a database development system, now known as PFXplus, which was highly compatible with the Dataflex system in that it used the same commands, file structure and function keys to execute the same operations so that users of the Dataflex system would have no difficulty in adopting PFXplus.

PFXplus had been developed by a process of reverse engineering to be compatible with Dataflex, but all the source code for PFXplus had been written independently and was quite different from that of Dataflex. Nevertheless, to achieve compatibility, PFXplus took certain elements of Dataflex, such as a substantial number of the reserved words in the Dataflex language. At first instance in Data Access Corporation v Powerflex Services Pty Ltd, Jenkinson J
held that each of the reserved words was an expression of a set of instructions falling within the definition of “computer program” in s10 of the Copyright Act 1968 (Cth). The Full Court disagreed and declared that each of the words was “but a cipher” and could not be regarded as the expression of a set of instructions. Rather, the set of instructions is the underlying computer program which directs the computer what to do when the cipher is used. The Full Court considered that a cipher or command is not an expression of a set of instructions, although it may appear in a set of instructions. It is the trigger for the computer to give effect to the set of instructions. The High Court rejected the appellant's arguments that each of the reserved words was a computer program in itself or that copyright subsisted in the collocation of reserved words making up the Dataflex language. For something to come within the definition of “computer program” in s10(1) it must: [intend] to express, either directly or indirectly, an algorithmic or logical relationship between the function desired to be performed and the physical capabilities of the “device having digital information processing capabilities.” Thus, in the sense employed by the definition, a program in object code causes a device to perform a particular function “directly” when executed. A program in source code does so “after … conversion to another language, code or notation.” Applying these principles to each of the reserved words, the High Court held that they could not be regarded as computer programs in the Dataflex language. Each of the reserved words comprised a single instruction in the Dataflex language not a set of instructions. Nor could the collocation of the reserved words in the Dataflex language be regarded as a computer program. The simple listing of the reserved words together, without more, does not cause a computer to perform any identifiable function. The instructions were not interrelated with one another such that there was an expression of a logical or algorithmic relationship between an identifiable function and the physical capabilities of a computer by means of the Dataflex language. The High Court also considered and rejected arguments put by the appellants that the collocation of reserved words was a substantial part of the Dataflex program and that the table or compilation of reserved words in the Dataflex user's guide was protected by copyright as a literary work. Even if the reserved words were considered to be a collocation, they did not possess sufficient originality as data to constitute a substantial part of the Dataflex system. The High Court doubted whether the simple alphabetical listing of the reserved words in the Dataflex user's guide involved sufficient skill or labour to attract copyright protection but concluded that even if copyright does subsist in the table or compilation, it had not been infringed by the respondents.

In relation to three macros, Jenkinson J at first instance found that the objective similarity of the Dataflex and PFXplus versions of the source code for the macros was “strong”, yet did not find that copying or reproduction had occurred but held that “an adaptation” had been made. The Full Court considered the definition of “adaptation” in the Copyright Act and concluded that as the PFXplus macros had not been created by a process of translation or conversion there was no infringement of the Dataflex macros.

In the view of the Full Court, a process of devising source code (expressed in original language) to perform the same function as is performed in some other source code does not involve creating a version of the original source code. The meaning of “adaptation” was considered by the High Court, and after referring to the Explanatory Memorandum to the 1984 amendments accepted the Full Federal Court's interpretation of the term, namely that for "adaptation" there must be either “translation from one language to another” or “compilation followed by decompilation, or vice versa.” The High Court stated: Paragraph 12 of the Explanatory Memorandum states that "only translation is likely to be relevant to adaptation of programs". This indicates that Parliament did not intend the word “version” to cover situations where, although the functionality of a computer program was copied, original code has been written to perform that function.

The focus on translation indicates that Parliament was concerned to ensure that the different languages in which a computer program may be expressed did not
provide a means by which copying could occur and infringement be avoided on
the ground that the expression in the new language was not a “reproduction”. The
use of the words “derived from the original” in par 14 of the Explanatory
Memorandum also indicates that the focus is on copying. In accordance with the
fundamental principle that copyright protects expression and not ideas, this
must relate to the copying of the code (the “expression ... of a set of
instructions”), rather than a copying of the idea or function underlying the code.
In holding that there was no adaptation of the macros, the High Court essentially
endorsed the reasoning of the Full Federal Court, as well as adopting the
approach used in earlier, single judge decisions of the Federal Court. In order to
read or write Dataflex files which had been compressed using Huffman
compression, PFXplus included a Huffman compression table which was the
same as that used by Dataflex. The table had been indirectly copied by
analysing how Dataflex performed compression. At first instance, Jenkinson J
found the compression table to be a literary work as a “compilation”. On appeal,
it was argued that insufficient skill, judgment and labour were involved in the
creation of the table to attract copyright protection. The Full Federal Court
disagreed and considered the process of construction of the table to be one of
“some difficulty and complexity”.

Having concluded that the table was the subject of copyright, the Full Court
upheld the first instance finding of infringement in relation to the table. The High
Court upheld the Full Court's finding that the compression table was a
compilation within the definition of s10(1) of the Copyright Act 1968 and an
original literary work protected by copyright. As a table expressed in figures and
symbols, the Dataflex Huffman table was held to fall squarely within the
statutory definition of “literary work”. Support for this conclusion was found in
the reference in the Explanatory Memorandum to the Copyright Amendment Act
1984 to "data ... stored in a computer as a table." As to whether the requirement
of originality was satisfied, the High Court agreed with the Full Federal Court that
the Dataflex Huffman table was an original literary work since it was the product
of "substantial skill and judgment" exerted by Dataflex. As to the exercise of skill
and judgment by Dataflex, the High Court regarded this as: perhaps more
directed to writing the program setting out the Huffman algorithm and applying
this program to a representative sample of data than to composing the bit
strings in the Huffman table. The output of the black box reverse engineering
technique used by Dr Bennett to determine the bit string assigned to each
character was held to amount to a reproduction of the Dataflex compression
table, no less than if he “had sat down with a print-out of the table and
copy-typed it into the PFXplus program.” The conclusions of all three courts on
the Dataflex compression table are somewhat questionable given that the
Huffman compression algorithm is well known and it is doubtful that software
developers would consider tables created by the algorithm should attract
copyright protection. The High Court recognised that its finding of infringement
of copyright in the Dataflex Huffman table could have “considerable practical
consequences” not only for the parties to this case but for any software developer
wanting to produce a program compatible with that of another developer.
However, the High Court regarded the solution as being a matter for the
legislature which could, if it so chose, “rewrit[e] the whole of the provisions that
deal with copyright in computer programs.” The file structures used by the two
systems were also the same and the court at first instance found that PFXplus
included an adaptation of the set of instructions which determine file structure,
as there was an identity of function.

The Full Court disagreed, because the source code governing the two file
structures was entirely different and stated that the fact that one set of
instructions brings about the same result as another set of instructions requires
neither the conclusion that the one set is necessarily a reproduction of the other,
nor that the one is an adaptation or translation of the other. PFXplus also
assigned the same functions to function keys of a computer keyboard as
Dataflex, however, the Full Court rejected Jenkinson J's finding that this involved
infringement by reproduction or adaptation of the instructions executed on
depressing a function key. The Full Court considered that once it is conceded
that the set of instructions is objectively quite different and not in fact a
reproduction, the mere fact that the function proposed is the same does not
result in infringement. The error text tables in the systems which allocated
numbers to error text were similar, but the court at first instance found that any
reproduction was not reproduction of a substantial part of Dataflex. The Full
Court agreed.

In Admar Computers Pty Ltd v Ezy Systems Pty Ltd, the Federal Court was asked
to consider the admissibility of evidence from experts which compared the
alleged infringement, the Ezy program, with the original work, the Admar
program, by converting the source code of various modules of the programs to
“pseudocode” to show that the design and programming logic of the programs
were the same. The source code of each was in excess of 90,000 lines, with the
Admar program being written in the FoxBASE language and the Ezy program
written in the dBMAN language, both of which evolved from dBASE III. Ezy
Systems argued that the evidence of the pseudocode analysis and the
conclusions drawn from it should be ruled inadmissible as they were not relevant
to any issue of copyright infringement. It was argued that the pseudocode
evidence did not relate to any issue as to whether Admar source code had been
copied, reproduced or an adaptation made of it. Hence, it was argued, the
evidence compared the functions of the two programs and did not assist in
determining whether there had been any copying of expression. The court
adopted these arguments, and held that the evidence was not admissible to
consider the issue of copyright infringement. The court applied the principles in
Autodesk and Powerflex and made it clear that to the extent to which one is
entitled to move away from the literal text of a work to determine infringement
and look at its structure and design features, the court is limited to “analysing
the contents and arrangement within the four corners of the literary work”.
Consideration of the source code itself is required to determine infringement,
and not a pseudocode analysis describing the structure, sequence and
organisation of the code that articulates the program logic of the source code,
because the latter is design rather than expression.

These decisions make it clear that developers are able to create functionally
compatible programs and avoid copyright infringement, provided no underlying
expression is misappropriated. Infringement exemption provisions, based on this
principle, have recently been introduced into the Copyright Act 1968 by the
Copyright Amendment (Computer Programs) Act 1999. Prevention of copying on
the Internet A range of rights and remedies are available to copyright owners to
prevent copying of software on the Internet. The difficulty however is the extent
to which they can practically be used to enforce the owner’s rights due to
enforcement problems which to some extent are introduced by the Internet itself.
The Internet is the largest and most efficient copying machine known to man.
Any computer user is able to use current browser technology to download and
save software for subsequent execution on their machines, as desired, from an
extraordinary large number of sites.

Although a number of sites include security to prevent downloading without
proper payment, no Internet server is completely immune from breach by a
persistent hacker. A number of sites which offer shareware programs have
minimal security and rely on parties downloading the software to subsequently
send payment.

The primary problems associated with legal enforcement against individual
computer users are identification and the cost of enforcement. Whilst the
domain name and type of equipment of an authorised copier can be retained by
an Internet server, this may provide little assistance in identifying the infringer.
This is particularly the case when accesses have been made anonymously or the
domain name is associated with an unidentifiable server or uncooperative server
owner.

Even if identified, action against an individual infringer for minor infringements,
may not prove cost effective, or impossible to practically administer when a
large number of infringers are involved. Both of these difficulties, until resolved, will see the rights and remedies used only in situations where a significant number of copies of the software are being commercially dealt with by an infringer.

Nevertheless, there are a number of steps which software developers and copyright owners can take to assist in preventing unauthorised copying on the Internet:

1. Although most countries are now members of the Berne Copyright Convention and there is no requirement for marking, all software should include at least a copyright notice stating the name of the owner, and the year of creating the work in the following form: © 1998 Name of Owner. The notice should be prominent in the code, and appear in any initial displays generated by the code. The site and any screens which appear prior to downloading of the code should also include disclaimers that expressly set out the extent to which any software, or any other material, downloaded from the site can be copied or used.

   This is particularly important, as the absence of any disclaimer or notice may give rise to an argument by a copier that the act of placing software or material on the Internet is accompanied by an implied consent, given the nature of the Internet, and that the material is available for copying by any another party.

2. Technical enforcement or protection techniques should also be exploited, as discussed below.

3. Inclusion of unique identifying code in the software is of particular assistance. In many situations infringers do not take the time and effort to remove any identifying code. Identifying code which is difficult to detect and is redundant, in the sense that it serves no function or purpose, is particularly useful in establishing before a Court that a copy has been made, and that no independent creation has occurred.

4. Hidden watermarks can also be used to perform a similar purpose, and are particularly useful in digital images and video files.

5. Time bombs should also be included to ensure the program will no longer execute after a certain period of time, unless code to diffuse the bomb is obtained. Provided acquirers of software code are properly informed that it includes a time bomb and will expire on a certain date, time bombs can prove a useful tool in allowing prospective purchasers of software to evaluate the software before a purchase is made. The purchase can then be made to obtain the code to diffuse the time bomb.

   Although a sufficiently skilled copier may be able to remove a time bomb, omitting the time bomb simply makes it easier for unskilled infringers to make an unauthorised copies.

   Including a time bomb, will of course place an onus on the vendor to provide access to diffusing code for authorised users. Care should also be taken to ensure inclusion of a time bomb does not breach any local legislation restricting their use.

**Patents**

Patents grant exclusive monopoly rights for a limited term for novel and inventive products and processes, in return for publication of details of the products and processes to encourage dissemination of information and promote further development. A patent can provide a monopoly for ideas and concepts as embodied in the product or process. The monopoly however is only granted after an application process to determine whether prescribed eligibility requirements are met. Patentable subject matter The Patents Act (Cth) 1990 sets out the requirements which need to be met for an invention to be considered patentable.
The invention must be useful, novel and involve an inventive step.

The invention must also be “a manner of manufacture within the meaning of s 6 of the Statute of Monopolies 1623. The reference to the Imperial Act is included so as to render applicable a body of case law dealing with the issue of what constitutes patentable subject matter. The leading decision is that of the High Court in National Research Development Corporation v Commissioner of Patents (NRDC). The Court concluded that to be patentable an invention: ... must be one that offers some advantage which is material, in the sense that [it] belongs to a useful art as distinct from a fine art ... that its value to the country is in the field of economic endeavour.

The case law considers certain subject matter to be inherently unpatentable, no matter how inventive. The existing exclusions are based largely on policy considerations and a belief that no party should be able to hold a monopoly in respect of them. Subject matter traditionally protected by copyright is also excluded. Exclusions include artistic works, schemes, ideas per se, mathematical algorithms, scientific principles and laws of nature.

Australian Patent Office practice Patent claims for computer program related inventions were for a number of years viewed negatively and largely rejected on the basis that they related to certain classes of unpatentable subject matter, such as schemes for operating a known machine, abstract ideas, intellectual processes or mathematical or scientific algorithms. This is somewhat understandable as computer programs were initially limited in scope and primarily used in academic and government environments to execute complex, scientific and mathematical algorithms.

In 1986 the Australian Patent Office conducted a review of its restrictive practice and decided to adopt a two-part test to determine if a claim to a computer program invention could be considered as constituting patentable subject matter. The test, known as the Freeman-Walter-Abele test, had been developed by the US Court of Custom and Patent Appeals (CCPA) taking into account three U.S. Supreme Court decisions, Gottschalk v Benson, Parker v Flook and Diamond v Diehr.

The test allowed method or process claims for inventions implemented by computer programs, and de facto apparatus claims in a “means for” format, provided the claims did not attempt to monopolise or preempt traditional unpatentable subject matter, such as mathematical algorithms or laws of nature.

The test involved first determining whether a patent claim recited as a mathematical algorithm. If it did, then the second part of the test involved a cumbersome analysis to determine whether the claim preempted the recited mathematical algorithm. The US case law was difficult to apply and almost impossible to reconcile.

Following the Federal Court of Australia’s decision in International Business Machines Corporation v Commissioner of Patents (IBM) in 1992, the Patent Office adopted a new practice for determining whether computer program inventions constituted patentable subject matter.

Examiners were instructed to no longer apply the US Freeman-Walter-Abele test and were advised that the test to be applied is: “Does the invention claimed involve the production of some commercially useful effect?” Most inventions meet the criteria required by the test because unless they are commercially useful, it is unlikely a patent application would be filed.

According to the Patent Office, the test still allows claims directed to mathematical algorithms per se to be excluded. Since adoption of the test it has become extremely rare for the Patent Office to object to a patent claim on the basis that the test has not been satisfied. Applications for computer program inventions are now simply examined on the basis of the same criteria as for any other invention. Court decisions IBM was an appeal in the Federal Court from a
decision of the Commissioner of Patents rejecting a number of claims in a patent application on the basis of the Freeman-Walter-Abele test. The application related to a computer program for producing an improved curve image on a visual display. Two old algorithms, the B-spline technique and the interpolating spline technique, were used to compute the coordinate values for the curve, and the invention was said to provide a significant advantage in that integer control points were used instead of floating point control points which gave rise to the improved display.

The main claim at issue, claim 1, read as follows:

A method for producing a visual representation of a curve image from a set of control points which define the curve and which are input for each dimension and a number of intervals of the curve to be computed, said method comprising the steps of:

(a) computing a set of scaled vector coefficient integers for each dimension from the set of input control points for that dimension and from a scaling parameter;

(b) computing forward difference interval coefficient integers for each dimension for each interval from the scaled vector coefficient integers for that dimension and the interval integer number;

(c) computing the curve coordinate values for each interval for each dimension from the forward difference interval coefficient integers for that dimension for each interval and the scaling parameter; said computer steps being carried out without the use of floating point arithmetic; and

(d) displaying the curve by displaying curve coordinate points in accordance with the computed curve coordinate values for each dimension and a plurality of straight lines which successively connect said computer curve coordinate points.

Although the claim does not confine the method to performance in any particular environment or on any particular equipment, the court concluded that in considering the specification as a whole, there was a necessary inference confining the claim to the operation of computers. After limiting the claim to a computer environment, the court considered whether it recited patentable subject matter and referred to NRDC as being the leading authority. The court stated: It is by this, by the production of some useful effect, that patent law has distinguished, so far as it has distinguished, between the discovery of a principle of science and the making of an invention. The court found the production of an improved curve image is a commercially useful effect in computer graphics and allowed the appeal.

The US authorities were considered and found not to preclude the view adopted by the court. The invention claimed in a petty patent, in CCOM Pty Ltd v Jiejing Pty Ltd, related to a Chinese word processing system in which characters stroke categories are entered using a dedicated keyboard. As each character stroke category is entered, the system executes a search for sets of Chinese characters which include strokes in the selected categories. The search compounds as categories are entered so as to produce continually reducing sets of characters by taking into account the order in which the stroke categories are entered. Apart from unique indicia on the keyboard, the system is implemented in software using a particular database structure and corresponding search algorithm.

The main claim of the petty patent read:

Computer processing apparatus for assembling text in Chinese language characters, said computer processing apparatus including:
• a memory including character stroke data storage means which stores data relevant to Chinese character stroke-type categories, Chinese characters and the order in which character strokes of respective Chinese characters are written and complementary graphic data storage means from which data relevant to the graphic representations of each said Chinese character may be retrieved;
• display means for displaying Chinese language characters retrieved from said graphic data storage means;
• a keyboard having a plurality of input entry keys including character stroke-type category entry keys designated by indicating means indicative of respective ones of said Chinese character stroke-type categories and selection means for selecting one of a plurality of characters displayed by said display means;
• and wherein said character stroke data storage means are searched by entering through said input entry keys search criteria including the entered Chinese character stroke-type categories and the order in which the character stroke-type categories are entered through said input entry keys, whereby upon entry of said search criteria the graphic representation of the or each Chinese character which meet said search criteria are retrieved from the corresponding graphic data storage means and displayed by said display means; and
• said selection means being operable to select one of said retrieved graphic representations of Chinese characters whereby text in Chinese language characters may be assembled.

At first instance, the Federal Court held that the invention did not constitute patentable subject matter. The court considered a number of recent UK authorities and adopted a broad construction of the claim. It concluded that the claim related to a conventional function of a computer, particularly when programmed with a word processing program, and that it did not overcome any problem in the computer as such or in the way in which it operates. The court regarded the claim as seeking to monopolise the use of stroke-type categories and strokes as defined in the specification to organise and process data relevant to Chinese characters in a database and to retrieve and display Chinese characters on a computer screen.

In the view of the court, this was the product of human intellectual activity lying in the fine arts and not the useful arts. The court’s decision was based on an incorrect application of the recent UK authorities, an oversimplification of the monopoly sought, and an erroneous application of novelty principles when determining if patentable subject matter was present. The Full Federal Court corrected the errors on appeal and found that the claim did recite patentable subject matter.

The Full Court confirmed that the most recent UK and European authorities were not applicable as the Patents Act 1990 does not have an extensive list of express exclusions which include computer programs. The court also made it clear that a determination with respect to whether a claim recites patentable subject matter needs to be treated as distinct from the separate requirements of novelty and inventive step. The court’s task involved only “consideration of concepts which have evolved, and are still evolving, in accordance with the classic decision in the NRDC case”. The court found that NRDC requires “a mode or manner of achieving an end result which is an artificially created state of affairs of utility in the field of economic endeavour”. For the present case, the economic field of endeavour was said to be Chinese word processing, the end result being the retrieval of desired characters on screen for assembly of text, and the mode or manner being the storage of Chinese characters analysed by stroke categories for searching and selection by reference thereto.
**Australian trend figures**

Whilst Australia has had an established liberal practice with respect to software patents since 1992, the software industry has been relatively slow to take advantage of the practice. Nevertheless, in the last four years there has been a considerable increase in the number of applications filed which can be considered to be directed to software inventions.

Australia uses the International Patent Classification system which divides patent literature into a large number of technology specific classifications. A number of the classifications are defined according to the function performed and, as software can be used for a wide variety of purposes, it is difficult to select specific classes which can be considered as containing only software patent applications. For this reason, it is difficult to produce accurate figures on the number of software patent applications from a selection of International Patent Classes (IPCs).

Nevertheless, from discussions with the Australian Patent Examiners it has become clear that two classes - G06F-17 and G06F-19 - can be considered as containing predominately software patent applications. Figures for the number of published applications included in both of these classes are set out in the table below.

The percentage increase shown in the figures between consecutive years is similar to percentage increases which can be produced from similar figures obtained for US patents.

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<tr>
<th>Year</th>
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<td>1998</td>
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*Table 1: Australian Software Patent Publications in IPCs G06F-17 and 19*

**US Patent Office practice**

In February 1996, the US Patent Office issued new guidelines for the examination of computer related inventions. The guidelines adopt a more liberal approach to the examination of computer program inventions following a number of decisions of the Court of Appeals for the Federal Circuit (CAFC), which went against the previous Patent Office practice based primarily on the Freeman-Walter-Abele test. The decisions include Arrhythmia Research Technology Inc v Corazonix Corporation, In re Alappat, In re Lowry and In re Beauregard. The guidelines are extensive and provide Examiners with instructions on how to conduct a search of
the relevant prior art, how to determine the monopoly sought, whether the invention relates to patentable subject matter, whether the disclosure requirements are met by the specification, and whether the invention meets the novelty and inventive step requirements. The guidelines make it clear that if the claimed invention relates to either of the following it does not constitute patentable subject matter:

1. A natural phenomenon (e.g., energy or magnetism).
2. Functional descriptive material per se, such as a data structure or computer program per se not stored on a computer readable medium.
3. Non-functional descriptive material, such as music, literary works, or mere data.
4. A process which merely manipulates an abstract idea or solves a purely mathematical problem without any limitation to a practical application. The guidelines allow patenting of all other types of products and processes involving or implemented using computer programs.

In particular, claims directed to a computer program or data structure stored on a computer readable medium, such as a CD-ROM or floppy disk, are allowed. Claims of this nature were previously refused on the basis that mere storage of the computer program could not confer novelty on the storage medium, or that it related simply to printed or descriptive material. Internet software patents are a wide variety of patents have been obtained and applied for software that is to be used on or in connection with the Internet.

Searches of patent literature databases reveal a few predominant themes for Internet software patents, as follows:

1. E-commerce, and in particular the execution of financial transactions over the Internet.
2. The distribution of video and audio data on the Internet.
3. Internet specific technology, such as protocols, servers, browsers, search engines, and agents.

Notwithstanding a high level of activity in seeking to secure patent protection for Internet software, there are jurisdictional, patent process and prior art search problems which the applicant needs to take into account.

The monopoly provided by a patent is restricted to a single jurisdiction, which is normally one country. When patent claims are drafted for the processes executed by Internet software, this needs to be borne in mind, particularly for systems which are distributed.

A patent which recites the steps executed in a process that may not be performed in one jurisdiction is of minimal value. Similarly, a claim directed to software having a number of modules which are distributed throughout a number of jurisdictions, is also of little value.

Patent claims therefore need to be obtained which cover steps or software features which an infringer would take at one point in the Internet. For example, claims directed to the features of an interface which are presented to an end user may be of the most value, if the end users will always be located in an important market, such as the US or Australia.

All other features of an Internet system may be located in any jurisdiction which can be connected to the end user by a telecommunications connection. For example, Internet servers can be satellite based or located in a country which does not have an established patent system. Applicants also need to be aware of the time it takes to secure different types of patents through the application process.

Development in the Internet software industry is extremely rapid, whereas most standard patents take a number of years to move through the application process to a patent grant. Accordingly, for developments which will have a short
commercial life, a standard patent may be of no value. A patent grant of course is normally only necessary to obtain if action needs to be taken against a third party. The Patents Act 1990 allows petty patents to be obtained and these can be secured in a matter of months. Petty patents have a reduced number of claims and a shorter term of six years.

There are also cost savings associated with obtaining a petty patent compared to a standard Australian patent. Petty patents are therefore particularly suitable for obtaining fast and short protection for Internet technology. Finally, there are difficulties associated with conducting searches of prior art documents to determine if an Internet software invention is truly novel and inventive. One consequence of the anomaly that software patents have only recently been allowed, is that the patent literature which is available to Patent Examiners does not trace the history of development of the software industry. Also the patent literature which is searchable on the various databases is limited to literature which has been published, and most patent applications are only published 18 months after filing of a first application.

Whilst efforts have been made to address this problem, at this stage the best source of prior art material is probably the Internet itself together with selected journal articles. Using any database, however, it is still difficult to develop a search strategy that uniquely defines the features or functional aspects of an Internet software invention.

Whilst the above problems exist, the Internet industry is young, and the application of patents to the industry is even younger. Solutions to the problems should therefore arise over time. For example, prior art and patent literature databases will only improve, together with the facilities provided to conduct a prior art search. Litigation based on the patents will also provide guidance as to their scope.