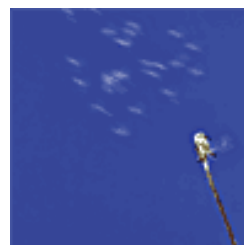
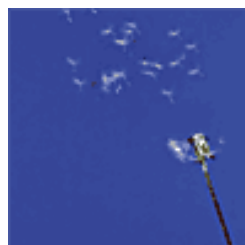
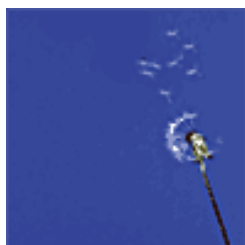
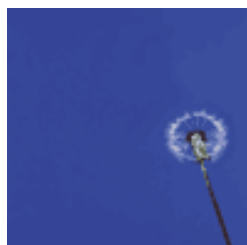


A Short Primer on Patenting Procedures

Origin Ltd, *intellectual property consulting*
www.origin.co.uk



Patents – a short primer on procedures

“Patents are the new Gold rush” Bill Gates

Patents are now both a core business asset and an essential and effective weapon in commerce. Patents are available not only for software but also algorithms and, in many countries such as the US, business methods. The right patents can (i) give control of entire new product sectors and (ii) ensure access to product sectors in which competitors are also innovating. But you need foresight and persistence to win these patents. This guide outlines Origin’s recommended procedures for doing so. The appendices cover the following:

Appendix A: Estimates of recent US software patent filings (by applicant and technology)

Appendix B: Countries which can be covered in a PCT International patent application

Appendix C: Typical patenting costs

Appendix D: Keeping a research notebook

Appendix E: Flowcharts of patenting procedures

Appendix F: Invention grading

Stage 1:

You, the programmer, engineer, scientist etc. responsible for the innovation start off by formulating a short description of the invention, and sending it by e-mail to yourself and, ideally, to your Technical Director and your In-House Lawyer, to indicate the date of conception. They should briefly review your scheme and reply by e-mail stating

that they've read and understood your proposal. You should retain permanently any notebooks or other papers relating to the conception or refinement of the idea. Appendix D covers the use of research notebooks in more detail. These notebooks can be critical in litigation. Also, you must keep the idea completely confidential.

Don't assume that patents are only available for ground-breaking innovations. Many good engineers and programmers let good patenting opportunities pass by because they set too high a standard. As you may know, the free patent Internet sites, such the US Patent Office site at <http://164.195.100.11/netahtml/search-bool.html>, and the IBM Intellectual Property Network at <http://www.patents.ibm.com> are very helpful. On the IBM site, you can read and print abstracts of US and European patents, as well as European and International patent applications without charge. You can also download PDF files of the complete US and European patents as well as European and International patent applications for \$3, so that you can start building up your own library of patents at minimal cost.

Don't assume that the patenting process can only begin once your idea is fully developed. In many cases, the most important thing is to file as early as possible. Filing a conceptual outline before proof of principle has even been established is often, in fast moving technical fields, the safest approach. Don't be an Elisha Gray, the man who filed his patent for the telephone some 2 hours after Alexander Graham Bell.

Stage 2

You should try to think both *commercially* and *defensively* about the impact of a patent to your idea – that is because if your idea is good, then someone else may have got there and patented it first. If your Company adopts it anyway, it can be sued for patent infringement. That can cost millions of pounds in damages and result in your Company's products being withdrawn, which may cause it even greater loss.

Equally, you should try and think *offensively*: what commercial leverage will adoption of the technology and ownership of the patent give to your Company? Does that fit in with your Company's business model? Then, if you feel comfortable doing so, draft a short (1 paragraph) assessment of (a) the closest competitive activity and (b) your personal view on why your Company might benefit from patenting your idea and (c) your personal assessment of the revenue implications of your idea.

Stage 3

Send the invention description and your other assessments to your Company's external patent lawyer or attorney. Since you are reading these Guidelines, there's a good chance that Origin advises you on intellectual property (e-mail: Peter.Langley@Origin.co.uk). (If you're not currently represented by Origin, you probably shouldn't be reading this anyway.)

Stage 4

A decision will typically be taken with you within 14 days on whether or not to pursue patent searches (to see if anyone has already done something similar before) and to file a patent.

Stage 5: +0 months

Soon after the decision to proceed has been made, you will engage in (probably extensive) e-mail correspondence with your patent attorney as he or she refines his understanding of your idea and thinks about what might be the closest technical areas in which similar work might have already occurred. Although your patent attorney will have a technical degree and some general technical knowledge, you will clearly know far more than he or she does about the area of your invention.

Stage 6: +0 months

Your patent attorney may then prepare a written opinion on the patentability of the idea, the closest earlier work (called 'prior art' by patent lawyers) and an assessment of whether or not your Company might infringe any one else's patents. This Opinion will also include copies of any of the patents your patent attorney has located. It can run to several hundred pages. You should read the Opinion and the located 'prior art' carefully. These patents can be a very useful source of information and inspiration. Expect to spend 5 hours or so reviewing the Opinion. The typical costs of this initial Opinion are between £4K and £5K. In some circumstances, this stage will be varied or omitted entirely, depending on how well you yourselves know the prior art and the applicable budget (Appendix C covers budgets in more detail).

Stage 7: +0 months

If it looks as though your Company should proceed with a patent filing, your patent attorney will ask you to prepare a full, technical description of your idea. Because you will have read other patents in the area in the Opinion (see Stage

6), you'll have an idea of what is needed. In essence, it's your in-depth description of your idea, in sufficient detail for it to be actually constructed or programmed by a skilled implementer (typically a graduate level engineer). You may well have internal working documents that can form the large bulk of this description. It will typically take you 5 to 10 hours for you to write up a description. Your patent attorney will then focus on drafting a full patent specification around your technical description. Your patent attorney will draft the 'claims': these are single sentence descriptions starting off with the broadest possible generalisation of the invention, narrowing down to progressively finer points of detail. These claims are critical in litigation: only if someone does everything stipulated in a claim, will they directly infringe. You should get the first draft of the patent specification back within a month or so (sooner if there is a real urgency).

Working with your patent attorney, your task will be to probe and test the claims he has written to see how a competitor might try and get around them. Once you're happy that the claims are reasonably watertight, your patent attorney files the patent application at the UK Patent Office. The typical costs for preparing and filing a patent application are £5K to £10K or so. For particularly esoteric software or financial models, the costs can be higher. For simple mechanical devices, the costs will likely be far lower. Your patent attorney will send you copies of the patent application once it has been allotted an application number by the UK Patent Office.

Stage 8: +1-9 months

If it's essential that your Company gets a patent as soon as possible, discuss strategy with your patent attorney. You can get a UK patent within 10 months of filing if really necessary. Ordinarily, there will not be such a rush. Normally, the next stage will be for you to let your patent attorney know, about 9 months from the UK Patent filing date, what improvements have been made. Your patent attorney then prepares a refined draft, if needed. Take also this opportunity to carefully review the claims and see if you can't work out some way of getting around them. Expect to spend at least 5 hours on this task. Once you are happy that the patent discloses the best approach known to you for implementing the invention, and in sufficient detail to enable an ordinary (e.g. degree level) programmer/engineer to implement your idea in practice, you should, together with the appropriate managers, decide in which countries around the world you would like to try for patents. Europe, USA and Japan is typical for high technology inventions. But broader or more restricted scope may be commercially appropriate in different circumstances.

Stage 9: + 12 months

Your patent attorney will then file an International Patent Application and, sometimes, a fresh UK Patent Application as well. This must be done before 1 year from the UK filing date. A patent filing made within the year is in effect backdated to the first UK filing date. This backdating can be very important in the fast moving technical fields in which your Company works. The typical total costs for this stage are about £5K.

In many cases, the approach which adds the greatest value with the least cost is a twin track approach in which a UK patent is pursued in parallel with the International patent application. Then, every effort can be made to argue the UK case through to grant, with the International patent application allowed to proceed along a slow track (see stage 11 and Appendix E). This typically adds between £3K and £5K. Once the UK patent is granted, your Company may benefit from the asset valuation enhancement (sometimes) associated with owning proprietary technology, without having yet spent the considerable amounts needed to secure patents in multiple foreign jurisdictions. There are approaches to securing overseas protection other than filing an International patent application. Discuss your commercial needs with your patent attorney. Appendix B lists the countries which can be covered using an International Patent Application.

Stage 10: +16 months

About 4 months later, you will receive from your patent attorney a report prepared by the European Patent Office. The report contains the results of the European Patent Office's own search of relevant prior art. You must study this carefully with your patent attorney to see if the idea can still be patented. If a UK patent is being pursued on a twin track, the UK Patent Office will also issue a report. Often, prior art is located that was not found in any prior art report prepared by Origin and vice versa. That is because the searching process is highly subjective. Typical costs in studying this report are £2K. 18 months from the first UK filing, the International application is published: it is made available via the Internet.

Stage 11: +18 months (fast track) or +30 months (deferral track)

If the search results do not show a clear bar, and your Company therefore decides to proceed, we must turn the International Patent Application into a series of individual applications before the European Patent Office, the US Patent Office, and the Japanese Patent Office etc.. That can be done either immediately (i.e. about 18 months from the first UK filing), or it can be deferred until about 30 months from the first UK filing. We refer to these as the fast

track and the deferral track, although officially they are called Chapter I and Chapter II respectively. The countries which subscribe to PCT Chapter II are shown on Appendix B. Which track is chosen depends on how quickly your Company needs the patents. Often, companies will pursue the various national patents immediately, if their budgets allow it. The initial costs of doing so are about £10K to £15K. Where your Company does so, it will typically have spent between £25K to £35K over 18 months, from the first UK filing. If your Company defers, the costs solely of deferring are about £2K, giving a total of under £25K (sometimes, significantly under) over 30 months from the first UK filing.

Stage 12: +24 months (fast track) or +40 months (deferral track)

The next stage is for the various Patent Offices to issue examination reports. These can take a year or more to issue, although expedition is possible. If the application covers several inventions, now will be the time to split them out into their own patent applications, each in effect back-dated to the first UK filing date. In most cases, a Patent Office will find some problem with the patent application, perhaps arguing that the invention is obvious in light of the prior art. Your patent attorney will draft a detailed written rebuttal. He will almost certainly need technical input from you. Expect to spend 5 hours or so on this. The costs of these rebuttals can vary tremendously. It can range from £1K to £20K per country. Sometimes the Patent Office will maintain its rejection and further arguments will have to be filed. In Europe, annual maintenance fees are also due; the total costs are about £1K or so.

Stage 13: +30 months (fast track) or +50 months (deferral track)

Assuming that a Patent Office in a particular country is satisfied, it will then grant a patent covering that country (the European Patent Office is an exception: the patents it grants cover all the EU countries and some beyond). Congratulations are in order: you now enjoy an objectively recognised standing as an innovator in your chosen technical field. Anyone will be able to search against your name on the various Internet patent databases and quickly locate your patent. In the US, the whole grant process is relatively straightforward, incurring costs of £2K or less. In Europe, it is far more complicated, since translations into several different languages may be required, depending on where your Company decides it needs coverage. The total costs relating to grant in 4 European countries is about £5K.

Stage 14: +60 months

Over a 5 year period, your Company will probably have spent perhaps £50K (sometimes far more) to secure grant of a patent in key European countries, the US and Japan. It is an expensive business. And your Company has to be

relatively sure that these costs are justified. But patents are now a core asset for any technology company. If your Company ever gets sued for patent infringement, it will be incredibly valuable if it can counter-attack with its own patents (the adage that *if you want peace, prepare for war* comes to mind).

If your Company gets the right patents, it can ensure access to those product categories clouded by competitors' patents and can own and control entire new product categories.

If you have any queries or would like to discuss a specific project, please contact us: info@origin.co.uk

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Appendix A**1998 estimated US software patent filings**

1200	IBM
360	Motorola
330	Fujitsu
330	Canon
310	Microsoft
300	Lucent / BellCore
280	NEC
260	Sun
260	HP
190	Apple Computer
140	Ericsson
80	Nokia Telecommunications
80	U.S. Phillips

If you would like us to research the numbers of patents filed outside of the broad software sector (for example, you may be a hardware focussed company), please contact us at info@origin.co.uk for a fee estimate.

What software is being patented? 1998 estimates of subject matter and associated numbers are:

3800	Networking / Communication
2200	Operating Systems
2000	Image Processing
1350	(Graphical) User Interfaces

1200	Graphics
990	Signal Processing
980	Office Automation
840	Database
500	Speech Recognition/Synthesis
510	Pattern Recognition
410	Word Processing
360	Entertainment / Multimedia
310	Compression
300	Internet
300	Object Oriented
220	Character Recognition
200	Neural Networks
190	Multiprocessing
190	Natural Language Processing
160	Algorithms / Data Structures
95	Parallel Processing
90	Fuzzy Logic
20	Spreadsheets
6	Quantum Computing
6	Java
6	Year 2000

Source of estimates: Greg Aharonian, independent commentator

If you would like us to profile the patents filed by your competitors, please contact us at info@origin.co.uk for a fee estimate.

Appendix B

PCT International Patent Applications: Country List

Country	European Patent	National Patent	Chapter II
Albania		X	X
Armenia		X	X
Austria	X	X	X
Australia		X	X
Azerbaijan		X	X
Bosnia & Herzegovina		X	X
Barbados		X	X
Belgium	X		X
Bulgaria		X	X
Brasil		X	X
Belarus		X	X
Canada		X	X
Switzerland	X	X	X
China		X	X
Cuba		X	X
Cyprus	X		X
Czech Republic		X	X
Germany	X	X	X
Denmark	X	X	X
Estonia		X	X
Spain	X	X	X
Finland	X	X	X
UK	X	X	X
Grenada		X	X
Georgia		X	X
Ghana		X	X
Gambia		X	X
Greece	X		X
Croatia		X	X
Hungary		X	X
Indonesia		X	X
Ireland	X		X
Israel		X	X
Iceland		X	X
Italy	X		X
Japan		X	X
Kenya		X	X

Kyrgystan		X	X
North Korea		X	X
South Korea		X	X
Kazakhstan		X	X
Saint Lucia		X	X
Liechtenstein	X	X	X
Sri Lanka		X	X
Lesotho		X	X
Lithuania		X	X
Luxembourg	X	X	X
Latvia		X	X
Monaco	X		X
Moldova		X	X
Madagascar		X	X
Macedonia		X	X
Mongolia		X	X
Malawi		X	X
Mexico		X	X
Netherlands	X		X
Norway		X	X
New Zealand		X	X
Poland		X	X
Portugal	X	X	X
Romania		X	X
Russian Federation		X	X
Sudan		X	X
Sweden	X	X	X
Singapore		X	X
Slovenia		X	X
Slovakia		X	X
Sierra Leone		X	X
Tajikistan		X	X
Turkmenistan		X	X
Turkey		X	X
Trinidad & Tobago		X	X
Ukraine		X	X
USA		X	X
Uzbekistan		X	X
Vietnam		X	X
Yugoslavia		X	X
Zimbabwe		X	X

There are 4 regional groupings which can be covered: the European (indicated above as well as below), 2 African groupings (OAPI and ARIPO) and the Eurasian grouping. All are PCT Chapter II signatories.

Grouping	Countries
European	Austria, Belgium, Switzerland, Cyprus, Germany, Denmark, Spain, Finland, France, UK, Greece, Ireland, Italy, Liechtenstein, Luxembourg, Monaco, Netherlands, Portugal, Sweden.
Eurasian	Armenia, Azerbaijan, Belarus, Kazakhstan, Krygystan, Moldova, Russian Federation, Tajikistan, Turkmenistan
ARIPO	Ghana, Gambia, Kenya, Lesotho, Malawi, Sudan, Swaziland, Uganda, Zimbabwe
OAPI	Burkina Faso, Benin, Cameroon, Central African Republic, Chad, Cote d'Ivoire, Congo, Gabon, Guinea-Bissau, Mali, Mauritania, Niger, Senegal, Togo

Appendix C

Typical cost profile for a patenting programme using the PCT International Application route – PCT Chapter II (deferral track)

Month	Event	Typical cost	Cumulative total cost
0	Initial patent searching	£1K to £5K	£1K to £5K
0	Initial drafting of 1 patent of filing of UK patent application	£2K to £15K	£3K to £20K
12	File International patent application	£5K	£8K to £25K
16	Review International Search report	£2K	£10K to £27K
18	Request Preliminary examination	£2K	£12K to £29K
22	Review examination report	£1K	£13K to £30K
30	Turn International Patent Application US, European and Japanese	£8K to £15K	£21K to £45K
+40	Argue US case to grant and complete grant process	£2K to £10K	£23K to £55K
+40	Argue European case to grant and complete grant process in 4 European countries	£5K to £15K	£28K to £70K
+40	Argue Japanese case to grant and complete grant process	£2K to £10K	£30K to £80K

NB The lower bound costs relate to a simple technology facing minimal objections. The upper bound costs relate to complex technology (such as advanced software or esoteric financial algorithms) facing extensive objections.

Where a patent filing programme consists of more than 1 patent application, then the fees and costs are a multiple of the above amounts. However, there is usually some overlap in the patents, so that the drafting fees for example, say, 5 applications, will rarely be 5 times the costs of a single application.

Please note that costs can be considerably reduced by limiting the countries in which patents are sought. For example, in many technology sectors, adequate protection is obtained simply through a US patent and, perhaps, a UK patent. For a relatively straightforward invention which faces few objections, that might lead to a total expenditure of £14K over 3 years. The following table breaks this down further:

Typical cost profile for a patenting programme covering UK and US only

Month	Event	Typical cost	Cumulative total cost
0	Initial patent searching	£1K to £5K (Origin fees)	£1K to £5K
0	Initial drafting of 1 patent and filing of 1 UK patent application.	£2K to £20K (Origin fees) There is no UK filing fee, although a search fee (£150) may be paid if a search is required.	£3K to £25K
12	Prepare updated patent applications including any improvements made in the preceding 12 months and file in US and UK	£5K (Origin fees) £2K (US lawyers' fees and costs)	£10K to £32K
+20	Argue US case to grant and complete US grant process	£1K to £5K (Origin fees) £1K to £5K (US lawyers' fees)	£12K to £42K
+20	Argue UK case to grant and complete UK grant process	£1K to £5K (Origin fees) £1K Patent Office fees	£14K to £48K

Appendix D

Using a Research Log Book

A Research Log Book can be invaluable to evidence the date of conception of an invention and related development. It should be the comprehensive written record of all developments and should therefore serve as a diary and calculation book. If a computerised record system is also used, please seek legal advice so that the system can be checked to ensure that its output is potentially admissible as evidence.

1. All meetings, conferences, discussions relating to the conception, development and testing of your innovations should be recorded in the Research Log Book. Even incidental events should ideally also be included since, many years later, these may prove an important aid to jogging your memory.
2. Always use a pen rather than pencil. Never tear out any pages. Leave no blank pages or blank sections; draw lines through sections which you do not wish to fill.
3. Do not make changes or corrections. Instead, start afresh.
4. Start each day with a new sheet. Always date the top of each sheet.
5. Sign the bottom of each page. Also, a manager should sign and date each page stating that he or she has read and understood that page. Routine pages disclosing nothing of high significance need not be signed in this way. For particularly critical sections, ask that a senior engineer, manager or patent lawyer promptly review the pages and sign off on them as being read and understood.

APPENDIX F: INVENTION GRADING

In many organisations, inventions are graded so that more potentially valuable innovations can be more broadly and rapidly protected than less important ones. Invention grading is an important element in any systematic patenting process and can significantly reduce wasted expenditure on less valuable innovations.

A grade	ACTION	COST
	Immediately file high level description as 'provisional' UK patent application	0
	Aim to search, prepare full description and file full UK patent application within 4 to 6 weeks	£5K - £10K depending on technical complexity
	If UK Patent Office searches are clear, file PCT and UK fast track patent applications at 12 months	£5K
	Convert PCT to separate US, European, Japanese and Chinese applications at 20 months, with expedited European and Japanese prosecution	£20K
	Argue case to grant: 20 – 60 months	£5K per jurisdiction (relatively straightforward prosecution)
	Approximate total 5 year costs	£50K - £55 ¹ K

B grade	ACTION	COST
	Immediately file high level description as 'provisional' UK patent application	0
	Aim to prepare and file condensed UK patent application (including claims) within 6 to 8 weeks	£2K
	If UK Patent Office searches are clear, prepare full description and file PCT at 12 months	£5K - £8K depending on technical complexity
	Request International Examination at 18 months (or promote to A Grade if coverage in Japan and China and conversion at the 20 month deadline becomes desirable)	£2K for International Examination
	Convert PCT to separate US and European applications at 30 months	£8K

¹ Grant costs can add £5K to £8K in Europe, where translations of the specification are needed. US, Japanese and Chinese grant costs are approximately £2K. Annual maintenance fees are also due – typically £500 per country.

	Argue case to grant: 20 – 60 months	£5K per jurisdiction (relatively straightforward prosecution)
	Approximate total 5 year costs	£27K - £30K

C grade	ACTION	COST
	Immediately file high level description as 'provisional' UK patent application	0
	Revisit value at 9 months	0
	Prepare full description and file in US only at 12 months; or Promote to B grade and file PCT at 12 months	£5K
	Argue case to grant: 20 – 40 months	£5K (relatively straightforward prosecution)
	Approximate total 5 year costs	£10K
