

Auril/UUK/Patent Office

A Guide to
MANAGING
Intellectual Property

*Strategic Decision-Making
in Universities*



We would like to express our thanks to UK Business Incubation, HSBC, and Murgitroyd's for their sponsorship of this project.

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A Guide to Strategic Decision-Making in Universities

Universities play a key role at the heart of the knowledge-based economy. They educate people with the high level skills we need, and they generate and apply new knowledge to enhance economic prosperity and quality of life. Their ability to support the application of new knowledge depends increasingly on effective management of Intellectual Property. Universities generate Intellectual Property through their research and other activities, and they need to have in place strategies and policies to ensure that such Intellectual Property is managed successfully.

The issue has a high profile currently, in view of the raised expectations that policymakers and funders have of universities in relation to knowledge transfer. It is also taken seriously by universities themselves, as they wish to see their work put to effective use for the public good and also to enhance their own potential for income and further research opportunities.

There exist a number of sources of guidance for professionals and other practitioners in the field. This Guide, by contrast, is designed to inform and support the activities of senior managers in universities - who may not themselves be specialists in the management of Intellectual Property - as they develop their institutions' strategies and policies. Hence the title of the Guide. It is based on the assumption that this is not just a matter to be left to specialists, but depends for its success upon the engagement of Vice-Chancellors and Principals and senior managers.

In this Guide, we have sought to highlight the key themes and to share the good practice to be found in the broadly successful record of UK universities in managing Intellectual Property. The Guide identifies key issues that senior managers need to address in developing their strategies and illustrates a number of ways in which commonly encountered challenges can successfully be met.

This guide is the result of a joint undertaking, which sought to meet a commitment in *Excellence and Opportunity*, the Government's science and innovation white paper. We thank our various partners, and members of the project Steering Committee. We should like to acknowledge our indebtedness to all those, within and outside higher education, who contributed to the production of the Guide.

The work was made possible by financial support from the DTI and the Patent Office. It was taken forward on our joint behalf most professionally by consultants SQW Ltd.

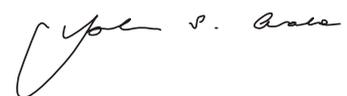
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Executive summary

Introduction

Good IP management is important, not only because of the financial returns that it can help generate, but because it also contributes to other university aims and objectives. These include: knowledge and technology transfer; research; teaching; and the recruitment and retention of staff. This Guide is targeted at vice-chancellors and senior managers in universities. It identifies issues which need to be addressed if the potential benefits of effective IP management are to be realised. These key considerations provide a strategic framework for managing IP. They are summarised below.

The nature of returns to IP exploitation

Returns to IP exploitation are uncertain and typically realised over the medium to long term. IP management, therefore, requires up-front investment and acceptance of a lengthy payback period. Institutions need to consider these characteristics when framing their IP management objectives and when monitoring performance in meeting these objectives. Care should be taken to avoid an over-emphasis on applied research, in the expectation of quicker financial returns.

Negotiations with sponsors

A substantial proportion of university research is undertaken with collaborators or sponsors who will expect to be able to use the ensuing results and/or benefit from the commercial exploitation of the IP. Universities need to negotiate agreements that give them an appropriate share in any revenues, but they also need to ensure that university staff can use results in future research. Agreements also need to be framed so that the financial interests of universities, and individual researchers, do not compromise the institutions' independence.

Incentives

Incentives can have an important role in encouraging staff to exploit IP and revenue sharing arrangements are common. Incentives need to be consistent with those for other knowledge transfer activities and should apply to those directly involved in generating IP. There is also an argument for allocating a share of revenue to the department, since extra demands may be made on colleagues if a researcher is actively pursuing exploitation. Legally, universities have no automatic claim to IP generated by students but they may have a role in its exploitation. The application of incentives to students is, therefore, an important issue.

Executive summary

IP management functions

IP management needs to be integrated with other management activities. Staff should be aware of IP issues, both opportunities and dangers, and the aim should be to generate an environment in which researchers come forward with ideas. IP issues also need to be considered at the initial contract negotiation stage of research projects. In addition, businesses with which the institution has previous links may be potential partners in IP exploitation.

Scope for collaboration

Some institutions may find it advantageous to work in collaboration with other universities in order to exploit economies of scale. There may also be commercial advantages in combining IP from different institutions, in order to create an exploitable patent portfolio. There are also opportunities to work with others, such as NHS Trusts and public agencies which have local development remits, in order to enhance the effectiveness of institutions' IP management. Contracting out to private companies may be a cost-effective option for the delivery of some IP management functions. However, a minimum level of expertise must be maintained in-house to ensure that the institution acts as an intelligent buyer.

Guide Overview

About this Guide

This Guide is concerned with the strategic aspects of managing Intellectual Property (IP) within universities and other higher education institutions. It provides guidance on issues relating to IP and how universities might address these in their strategic plans and policies. It does not seek to provide guidance on operational issues, such as the most appropriate methods of protecting IP in specific situations. The importance of operational and technical issues is fully recognised, but other guides addressing these issues already exist. This Guide focuses on IP arising from research and its exploitation through its sale and licensing, including the establishment of spin-out companies. Many of the issues are, however, generic to other types of IP.

1 Why is IP management an important consideration for universities?

Virtually all university teaching and research activities give rise to IP which is, in principle, exploitable. However, there are other factors besides scale that make IP management an important issue.

1.1 Knowledge transfer

A central part of universities' missions is the generation and application of knowledge and its transfer to users in the public and private sectors. Open dissemination and making results freely available, through publication in academic journals, will often be the most effective way of achieving this. However, use of results may require the investment of significant resources in the further development of research outputs, and such investments may only be commercially attractive if the underpinning research results are protected, thereby restricting competition. IP management is, therefore, an essential component of knowledge transfer. Protection need not prevent publication, although short delays may be necessary until patents are filed.

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1.2 Dealing with research sponsors and collaborators

A substantial proportion of university research is either sponsored by external bodies and/or undertaken in collaboration with other organisations. IP management is more complex in such cases. Sponsors will, ordinarily, expect to be able to use or exploit results and collaborators will bring existing IP (background) to the project and will also expect to benefit from

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the IP generated during the project (foreground). Agreements between the different parties need to be structured so that:

- potential conflicts of interest are recognised and accommodated
- returns to each party reflect their inputs to the project, inputs to exploitation post-project and also the intellectual assets they bring to the project
- university staff are able to use results in future research.

1.3 Income and other benefits to the university

Commercialisation of IP generates income for the university. University research results are characteristically highly uncertain as regards future applications, and this implies high levels of risk associated with the investment required to bring results to market. In addition, the investment required is typically many times larger than the costs of research. Returns to the initial owner of the research results (the university) will therefore be low, relative to the post-research investor, reflecting the distribution of investment risk. Expectations over the potential returns from technology commercialisation are sometimes

unrealistically high, because of a focus on cases of major returns to single deals rather than upon the overall portfolio. However, while historically there has been a tendency to over-estimate the revenue potential of IP generated within the Higher Education (HE) sector, there can be little doubt that real potential does exist and there are examples of UK universities which are generating surpluses on their IP management activities.

Other direct benefits include:

- a well-managed IP portfolio can make a university a more attractive partner to research sponsors. The IP itself may be important to sponsors, but a demonstrated capability to handle complex IP management issues will give confidence that the university will be an effective partner. *Section 1.1.3*
- an effective IP strategy and policy may also help universities to recruit and retain high quality staff. Opportunities to supplement university salaries, through commercialisation, are an increasingly important consideration for many academics. In addition, many will wish to see their research outputs commercialised, and therefore used, because they consider this to be an integral part of their academic responsibilities. *Section 1.1.4*

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Guide Overview

2 Why is IP management a strategic issue?

These factors indicate why IP management is important to universities and, for many, the scale of IP generation is a sufficient reason for taking a strategic approach. There are, however, other aspects of IP management which imply that a strategic approach is required.

2.1 Interrelations with other university policies

The most important reason for adopting a strategic approach is that IP management cannot be considered in isolation from other university strategies and policies. This is true at a number of levels:

- universities transfer knowledge in other ways besides the sale and licensing of IP, including consultancy, contract and collaborative research, continuous professional development and so on. The costs and benefits of commercialising IP need to be considered in relation to these alternative knowledge transfer mechanisms
- universities cannot automatically claim ownership of student generated IP but there

are arguments for the university managing its exploitation. Universities need to evolve policies, and practices, which are advantageous to themselves and students

- staff incentives to commercialise IP need to be set in relation to incentives for other knowledge transfer activities and also to reflect the more general framework of rewards within the university
- more generally, as knowledge-based activities have become more important to the economy, and external income more important to universities, IP issues have increasingly impinged on a wide range of university activities. This has presented university management with a new range of issues to consider, such as the ownership of copyright arising from normal teaching/research activities the implications of e-learning for the traditional waiving of university claims on copyright over published works, and the need to avoid infringing IP owned by others.

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2.2 Managing conflicts of interest

Relatively few concerns have been expressed in the UK to date over possible conflicts of interest arising from universities' exploitation of IP, and interactions with business more generally. Nevertheless, the potential for conflict is evident and policies and strategies are needed to manage:

- pressures to increase the emphasis on applied research at the expense of basic research on the expectation that this may generate faster financial returns from IP exploitation
- protection of, and restriction of access to, IP in order to generate returns when open access might be more in the public interest
- balance between an institution's independence and the benefits of strategic partnerships with business designed to exploit IP
- situations in which staff may benefit individually from university decisions that they are in a position to influence.

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2.3 Returns to IP exploitation

The returns to IP exploitation are typically uncertain and realised over the medium to long-term. In addition, the majority of revenue is usually derived from a few highly successful cases rather than being evenly spread over the IP portfolio. The implication is that IP management requires up-front investment and acceptance of a lengthy payback period. As such, universities need to:

- articulate clear strategies as to their objectives in relation to managing IP
- decide how success in meeting these objectives will be assessed
- take decisions based on the performance of the portfolio as a whole rather than individual items of IP.

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2.4 Setting budgets

IP is of sufficient, and pervasive, importance that all universities need strategies and policies for its management. However, the nature of these strategies and the resources devoted to IP management may vary substantially. The following are key considerations:

- the returns and costs of other means of transferring knowledge, such as consultancy and training: effective IP management complements, rather than substitutes for, other knowledge transfer activities, but the most appropriate level of investment in marketing IP will depend, to some extent, on the size and nature of the research portfolio
- many university IP strategies, and budgets, represent evolutionary developments over several years rather than radical changes. In part, this reflects complex interdependencies between IP-related and other policies, but also difficulty of projecting likely returns to increased investment. There are, however, examples of substantial increases in investment, e.g. when there has been clear evidence of pent up demand for IP services from within the university
- as in many other areas, benchmarking against comparable universities can be valuable, but the scope to do so is restricted currently by the limited availability of UK data relating to IP management
- IP management budgets need to be based on longer-term views of revenue, and other, objectives. Costs and revenues are often predictable over the next year, but too volatile to project over a longer period.

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3 Negotiating IP ownership with research sponsors

Who should own IP often emerges as an issue when negotiating agreements with sponsors, although ownership per se should not be a crucial issue. In general, universities seek to establish that they own the IP generated by their employees and they have mostly brought forward rules under which revenues are shared with staff, and where appropriate sponsors and exploitation partners. Both the university and sponsor (may) require access to the IP for commercialisation purposes and both may also wish to secure access for future research. In principle, these requirements could be accommodated through licensing arrangements between the owner to the other party but, in practice, such arrangements can be costly to define and to police. As a result, many universities prefer to own the IP arising from sponsored research. In practice, the outcome will be decided in negotiations with the sponsor.

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The key considerations in negotiating IP arrangements with sponsors are:

- clarity concerning ownership and exploitation rights, joint-ownership of IP is normally a sub-optimal compromise since the agreement of both parties is required for effective development and exploitation, but it can be useful if handled carefully

- the proportion of full research costs paid by the sponsor—whilst also taking into consideration of provision of benefits-in-kind by both parties and any dependence upon a larger IP portfolio necessary for future exploitation
- the demonstrated capacity of the university IP management office to maintain an IP portfolio effectively *Section 3.2.1*
- any specific risks that future university research carried out under licence-back arrangements with IP owned by the sponsor would be constrained *Section 3.2.3*
- the potential loss to the university consequent on assigning ownership of IP, given the potential for bundling IP arising from several different research projects and the increased difficulty of achieving this through licence-back arrangements. *Section 3.2.4*
- in principle all those directly involved in generating IP should benefit, including non-academic staff when their inputs are above and beyond their normal responsibilities
- allocating a share of returns to the department/unit may compensate other staff for the indirect contributions they make to generating IP *Sections 4.1 4.2*
- students can be treated at least on the same basis as staff, in order to encourage them to use university IP management resources
- incentive structures need not be restricted to financial benefits. Means of supporting academic staff engaged in IP commercialisation and consideration of IP-related activities as a criterion for promotion can also be important.

4 Incentives

Incentives can have an important role in encouraging staff to engage in exploiting IP, and a number of factors should be considered in designing the incentives structure:

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5 The IP management function

IP functions need to be integrated with university management for the following reasons:

- university staff need to be aware of IP issues, both opportunities and dangers, and the aim should be to generate an environment within which researchers come forward with ideas

rather than a reliance on IP managers having to seek out useful IP

- IP issues need to be considered at the initial research contract stage, and this requires close working with contracts staff, as well as with principal investigators
- businesses with which the university has previous links may be potential partners in IP exploitation, implying a need for links with the industrial liaison staff.

For these reasons, there may be advantages in locating IP management functions within the university management structure. There are successful examples of research support services undertaking IP management functions - in some cases with staff dedicated to IP activities, in others with research support staff assuming IP functions as an additional responsibility.

There are also successful examples of separate companies, owned by the university, undertaking IP management functions. Such arrangements may give the office greater commercial flexibility, and also enable the university to monitor performance more accurately. It is, however, important to ensure effective liaison with other university activities and that the office is not perceived by staff as an external party.

6 Working with others

Whatever the location and structure of their IP management function, universities may find it necessary, or advantageous, to work with other universities on IP management:

- staff movement and research collaboration between universities means that other institutions may have interests in the IP generated by members of staff
- joint marketing of IP portfolios may be more cost-effective than institutions acting in isolation
- may have a greater aggregate value than the sum of its individual parts, because it is seldom the case that a single invention will generate increased competitiveness and economic advantage. A single university can bring together IP from different departments, but the potential to create high value packages is greater if the scope of the research is wider
- to exploit economies of scale. While many universities may have large enough portfolios to justify the employment of dedicated IP staff, collaboration may enable a group of universities to employ sector or technology specialists.

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The opportunities for collaboration are not, however, limited to other universities:

- working with public agencies, including NHS Trusts and Public Sector Research Establishments, and with regional development bodies (for example) can enhance the effectiveness of universities' IP management
- contracting with private companies for the delivery of some IP management functions may also be a cost-effective substitute for in-house provision. However, there is a need to maintain at least a minimum level of IP expertise in-house, so that the university can act as an intelligent buyer.

7 Monitoring performance in IP management

Performance in IP management needs to be carefully monitored to help ensure that the university is receiving value for money and to identify whether the current level of resources is appropriate or not.

Key considerations for the monitoring framework are:

- explicit recognition of the long timescales between investing additional resources in IP management and financial returns
- acknowledgement of the relevance of non-financial elements of IP management benefits in the monitoring and evaluation framework.

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Government may also wish to collect time series statistics on IP management and commercialisation activity so that the long-term impact of support strategies can be assessed.

Each university needs to develop performance indicators which reflect its own aims and objectives. Such indicators, designed for internal management purposes, are unlikely to be a robust basis for comparing the IP management performance of different universities.

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Furthermore, since IP management is only one of many ways transferring knowledge, internal performance indicators cannot be used to judge relative success in transferring knowledge more generally.

