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International research management: benchmarking programme

**Report to HEFCE by the Association of
Commonwealth Universities**

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Authors' note

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Executive Summary

The environment in which universities conduct research has changed radically within the past two decades. A significantly higher proportion of research work is project based, and conducted through external grants and contracts. At the same time much more work is competitively won and the legal environment for research has become more complex. Even that core funding for research which comes as part of the universities' annual grant is allocated as a result of competitive assessment. As our analysis below demonstrates, these trends are international, and reflect a wider recognition amongst governments of the role that research and innovation can play in developing national prosperity.

One effect of these developments has been the increasing need for universities to centrally 'manage' and support areas of research that would previously have been regarded as the responsibility of individual academics. Whilst there is evidence that the development of such a research management 'profession' has been uneven throughout different parts of the world, the trend itself is a global one. Moreover, it is far from complete. Both universities and governments have found the question of how to secure best value from academic researchers – whether by maximising their research output or ensuring that it is utilised for wider benefit – to be a complex one. It is clear that processes are still in a state of evolution and likely, therefore, that much is to be gained by sharing experiences and good practice.

The benchmarking exercise reported in this document sought to facilitate this process amongst 15 universities from nine countries. In most cases, as responses from the United Kingdom, Australia, Canada, the United States, New Zealand, and South Africa suggested, the basic issues were familiar. There was much common ground in the environment in which universities were operating, and the processes that they were developing in response to this. In Japan, China and India the environment differed in that government played a larger role in university research matters, although it was significant that the basic problem – of how the output and impact of university research could be maximised – remained relevant. Although 'core' funding supports a significantly higher proportion of university research in these systems, even here there were signs of change, particularly in the need to account for work on a project by project basis, and the development of new funding mechanisms.

The exercise utilised a benchmarking process, unique to the Association of Commonwealth Universities and designed specifically for use in university management processes. Discussions were based on two events, which took place in September 2004 and April 2005, but in each case relied on considerable preparatory work by the participants in recording their current processes and practice. This ensured that discussion could be focussed on key issues. Each session produced a series of good practice statements, against which participants and the wider higher education community could evaluate their current provision.

Discussions in the two meetings were based around seven themes, broadly divided into issues that might emerge prior to a research project commencing (pre-award) and those encountered during and after the research (post-award). In the former category were the Development of an Internal Research Strategy, Retention and Support for Research Staff, the External Promotion of University Research Capacity and the Submission and Authorisation of Externally Funded Work. In the latter section Project Management and Control, the Commercial Exploitation of Research and the Dissemination of Research Results to Wider Society were considered. In the main body of the report the results of the discussions are reported under each of these sections, leading to the identification of 87 good practice statements covering the area as a whole.

In addition to these specific outcomes, a number of more generic themes can be highlighted from the sessions, which institutions might wish to consider in devising specific procedures and policies. These include the following:

- The issue of *how internal research policy is driven*, and how this is reflected in committee structures. Institution 1, for example, described a novel Research Committee composition including a wide range of senior administrative, as well as academic, staff.
- The relationship between *internal research strategy and internal funding*. This appeared to be blurred in many institutions; however, there were interesting examples of resources being concentrated on priority areas. In Institution 7, for example, a specific portion of internal funding was allocated for new appointments in priority areas, regardless of where the initial vacancy had arisen.
- The need to gain *academic buy-in* for institutional policies and procedures. Some institutions had developed novel ways of achieving this that went beyond the traditional methods of regulation and dissemination of information. Institution 4, for example, described a new Research Facilitation Scheme, through which central research support staff had their physical base in academic departments.
- The need to *target* institutional support on specific groups of staff or initiatives. At Institution 5, internal funds were targeted on supporting external applications that had been well rated, but unfunded, to get to the next level. Institution 11 stressed how important it was to identify staff that had unfulfilled potential, but were capable of effective research.
- The need for co-ordination – one delegate used the term ‘knitting together’ of external promotional activity throughout the institution. Several good examples of effective liaison between, for example, Research Support and Public Relations offices, were highlighted but there was recognition that this was an area where much more could be achieved.
- The need to better track the progress (internally and externally) of research proposals, without imposing unduly restrictive or unenforceable regulations on academic staff. The meeting was particularly interested in the electronic systems developed for this purpose by Institution 13.
- The need to incorporate risk concerns more thoroughly in the project approval process. Unlike most systems, where approval requirements are determined by the financial value of the project, Institution 13 has devised a system where these are determined by a wider range of risks.
- The need for *project management* systems that balance the need for principal investigators to direct research work without undue administration, and the need of the institution to ensure that external obligations are being met.
- The need for mechanisms to *monitor* feedback from external sponsors of research, and to ensure that academic recognition and promotion procedures reflect skills, such as project management and dissemination, that are critical to the new research environment.
- The need for *training* in research management issues which reach mid-career and senior, as well as junior staff.
- The need for clear strategies for the commercialisation and dissemination of university research findings, including a clear view of the *financial objectives* of the institution in such issues.

Overall, the project confirmed our initial hypothesis that research management structures were continuing to evolve at a rapid pace. This was driven largely by developments in the external environment for research, but increasingly also by specific initiatives from governments, which in most participating countries explicitly recognised the importance of university research for wider economic and social needs.

Introduction

Research management is a particularly suitable topic for international benchmarking for four interrelated reasons. Firstly, for most institutions it is a relatively new area of activity – typically dating back no more than 10 or 20 years in its present form. Secondly, it is an area which is evolving rapidly, partly because institutions themselves are still seeking the correct balance of activity, and partly because of increasing external demands. Thirdly, the area is of increasing importance, both to the financial health of individual universities and their contribution to wider societal and economic objectives, and finally, because the issues facing universities are comparable internationally, if not globally.

It is against this background that, in 2004, the Higher Education Funding Council for England (HEFCE) supported an international benchmarking exercise, facilitated by the Association of Commonwealth Universities (ACU), the results of which are presented in this report.

Defining Research Management

Before discussing the project, it might be helpful to consider in more detail what is meant by research management in the university context, and whether clear boundaries can be identified for the emerging profession. For the present study, we adopted a definition of research management as 'any activity instigated at the level of the institution which seeks to add value to the research activity of staff, without being part of the research process itself'. Our definition needs to be distinguished from research methodology – the conduct of the research itself – and the administrative and management activities undertaken by the academic leaders of research projects as part of their role. These issues were too far removed from institutional policy to be covered in detail, although there were some areas of overlap, for example the extent to which the institutional arrangements were accessible to, or provided training or other information for, project leaders or individual researchers.

The definition adopted, however, remains a broad one and the precise functions and structures vary considerably between universities. In a simplified model, research management activities can be divided into a number of areas, two of which are based on the model of project based research, and follow the research process itself. These are commonly defined as *pre-award* and *post-award* activity. The former includes all activities taking place up to the commencement of a research project. Where external support is involved, this might include sourcing and applying for funding as well as the negotiation of timetables, legal and financial terms. Even without external funding, it might involve the agreement of internal funding and external collaborative partnerships. Post-award activity might involve assistance to the research team in project management and administrative functions such as financial reporting. It would also embrace externally facing activities such as the commercialisation of intellectual property and dissemination of research results to the wider community. It will be seen that the range of activities requires vastly different skills. There is no assumption that they will be carried out by the same individuals, or even the same offices.

The areas above assume a model of research as being based on defined projects, often won competitively and involving external funding or collaboration. Most institutions taking part in the project confirmed that the proportion of research undertaken through this route had grown in recent years, and this is supported by wider evidence.

In many cases, it was precisely this trend that led to the creation of the distinct research management office. However, externally funded research represents only a part of the total activity. Institutions also had access to substantial internal resources, through staff time and other infrastructure, the deployment of which has a critical impact on total performance. The effective utilisation of research resources also depends on wider institutional policies, for example in staff

recruitment and retention, library facilities and other infrastructure and public relations and marketing.

We can therefore conceive of a model in which project-based, externally funded research is surrounded by two forms of institutional activity. The first relates to the totality of the institution's research activity, including the way in which internal research resources are deployed. The second relates to wider issues of institutional policy that directly impact on research capacity, but are not confined to research. The discussion below concentrates primarily on the project based research model, but recognises that success in this area depends critically on the wider environment in which the work takes place. We recognise, however, that synergy between such policies in the respective areas is vital to the development of a coherent institutional strategy, and will return to this point below.

Policy Background

The growth of structures for research management within universities is largely a response to a combination of external factors. These are, for the most part, well rehearsed, but provide an important background to the project. Taken together, they provide evidence of a rapidly developing environment, and suggest that the institutions taking part in our discussions exist not in a 'stable state', but in one of continuing change.

The most obvious of these factors has been the rapid rise in university income deriving from project based grants, usually competitively won and supported by a range of external bodies. In the United Kingdom, university revenue from externally funded grants and contracts rose by nearly 90% (87%) from GBP 1,453 million in 1994/95 to GBP 2,715 million in 2003/04, with increases ranging from 5% or 6% per year to a peak of 10-12% per year from 1999 to 2001. This also represented a steady rise in the proportion of overall income. This increased from 14% in 1994/95 to 17% in 2002/03 falling slightly to 16% in 2003/04 (Higher Education Statistics Agency [HESA] 1999:2005).

Both the increase in total income and increasing proportion of competitively won project based work were trends recognised by the majority of participants. In Australia, external research income almost trebled over the decade to 2003, with revenue in the industry and related category increasing from AUD 119 million and comprising 23% of research income in 1993, to AUD 454 million comprising 33% of research income in 2003 (Australian Vice-Chancellors' Committee [AVCC] 2005). Within this trend, significant diversification of income can be reported, allowing the AVCC to point out that 'for every dollar provided by Commonwealth block grants in 2001, universities earned just under AUD 1.40 from other sources. In 2003, this rose to almost AUD 1.60' (AVCC 2005).

Similar trends can be seen in Canada, where the sponsored research income of Canada's 50 leading research universities reported annual growth of between 12% and 24% in each of the five years to 2004 (Research Infosource Inc. 2005). Perhaps contrary to the Australian situation, however, public sector sources remained dominant, with government being responsible for 70% of all university income in 2004, income from the corporate sector growing by 10% during the year, against an overall rise of 18%, and income from overseas sources actually declining. Non-corporate funding of university research, deemed to include funding from foundations, non-government grants, donations and bequests, also declined both in absolute and relative terms. It is too early to say whether this will lead to a long-term trend, but the figures did lead the report's authors to qualify a generally upbeat analysis with a warning that 'the share of government-funded research is growing rapidly, eclipsing other forms of support'.

Evidence from New Zealand also confirms the trends towards increased university research income, and a stronger proportion of that income being competitively won. Approximately two-thirds of university contract research income comes from competitively won contracts whilst the income from such contracts more than doubled between 1997 and 2003 from NZD 131 million to

NZD 264 million (New Zealand Ministry of Education 2004). Over the same period income from research contracts increased from 11% to 14% of all university income.

A different picture emerges in Japan, China and India, where central control over research funding remains strong. In Japan, in particular, the level of research funding also shows a different trend. According to Sawa, Terazawa and Inoue (2004), research sponsorship from private companies declined by 9% in the decade to 1999, whereas the figure almost doubled in the United States, whilst university income from technology licensing fees in Japan represented less than 0.5% of that for US universities.

Even here, however, some of the global pressures for competitiveness have been felt. Japan has seen a range of legal reforms in recent years designed to provide incentives for universities. These have included a 2000 law providing for professors to undertake paid consulting work under certain conditions, further legislation two years later to give greater opportunities for university-based venture companies, and the 2003 Basic Law on Intellectual Property to change the status of universities (Hashimoto 2003; Kodato 2003; Tanaka 2003).

In India, too, new and competitive methods of funding are being developed, as part of government initiatives to make science and technology 'one of the most powerful instruments of growth and development, especially in the emerging scenario and competitive economy' (Department of Science and Technology, India 2005a). In the area of drugs and pharmaceutical research, for example, the Pharmaceutical Research and Development Support Fund established by the Indian Department of Science and Technology in 2004 has mounted a new programme which provides for collaborative projects between universities and industry on a cost shared basis with the resulting intellectual property being divided on 'agreed' terms. Through measures such as this, competitive, project-based funding is becoming established in the system, and universities are encouraged to develop systems in response to this (Department of Science and Technology, India 2005b).

The real impact of this on the financial health of universities is difficult to establish. From the figures produced by HESA, it appears that between 86% and 87% of income from externally funded grants and contracts is matched by expenditure (HESA 1999:2005). However, the situation is complicated by the different policies of contracting organisations towards the payment of full economic costs for research projects. In the case of UK Charities, a long running dispute involving sponsors and governments has meant that universities have, for much of the period, been unable to recover significant sums towards their indirect costs. Likewise in the case of the European Union (which provided 8% of externally funded revenue in 2003/04) much work has taken place on the basis of cost sharing, in which universities are able to recover only a proportion of their indirect expenditure. In such circumstances, universities are undertaking work for non-financial reasons, and bearing some of the cost.

During recent years, there has been considerable pressure to ensure, as far as possible, that universities receive the full economic cost for externally funded projects. This has long been the view of the universities themselves, dating back to the Hanham Report of 1988, (Committee of Vice-Chancellors and Principals [CVCP] 1988) which suggested a method for calculating such costs, but in recent years has increasingly been accepted by government. This view was set out in a letter from the Chief Secretary to the Treasury to the government's Chief Scientific Advisor, Sir David King in 2004, which states that 'fundors of our research base must accept that they may need to pay more for the research that they commission (and that they have been underpaying in the past)' (as cited in Office of Science and Technology 2004). Significantly, this was intended to include government departments themselves, who provided 19% of UK university research income in 2003/04. The government's 'Investing in Innovation' strategy of 2002 confirmed that 'government departments must increasingly expect to pay nearer the full costs of much of their research' (Department of Trade and Industry et al 2002). The most significant step in this direction, however, is the introduction, from early 2006, of full economic costing principles in the grants of the Research Councils – the most significant funders of university research (31% in 2003/04). Prior to this, since 2000, HEFCE required institutions to use the Transparent Approach to Costing (TRAC)

method in calculating the costs of their publicly funded research, which has increasingly informed public funding policy as well as institutional planning (Joint Costing and Pricing Steering Group 2005).

The Canadian government has also moved towards full costing in recent years providing earmarked funding to cover indirect costs of government funded research since 2001 (Association of Universities and Colleges of Canada 2002). This funding was made permanent in 2003, increased in the 2004 budget, and in 2005 the government announced CAD 1.2 billion over the next five years for an Indirect Cost programme to bring funding for research overheads incurred by institutions gradually up to 40% of direct costs (Department of Finance Canada 2005)

The move towards full economic funding is one of several examples of the extent to which research management has become a specialised function over the past two decades. The growth of contract based research has brought liability issues into sharper focus than ever before, and fundamentally altered the balance between the individual researcher and non-academic administrator. Whilst recognising that research staff remain overwhelmingly the most significant drivers of an institution's research performance, they are no longer the *only* players at the table. Unless academics are to develop new skills in contract negotiation, financial and project management (surely a waste of valuable academic time, even if it were feasible), then institution based assistance is increasingly required. To a lesser extent, the same argument is also being applied to the generation of work, as well as its management. As the number and range of funding opportunities has grown, so it has become increasingly difficult for these to be tracked through conventional subject based academic networks.

These arguments essentially suggest that the development of administrative support structures for research has been in the interests of universities themselves. The growth of university research management has also been fuelled, however, by recognition on the part of governments that such expansion is in the national interest. In the case of the UK, this latter view is summarised in a report by Christine Adams for the Department of Trade and Industry (2004):

'The UK government considers successful knowledge transfer as crucial for stimulating demand for private investment in research and development and enabling industry growth. Government can act to ensure that the basic building blocks necessary for an environment conducive to easier knowledge transfer are in place.'

In the early stages of policy development, it was hoped that such objectives could be achieved either through one-off corrections, or short-term initiatives which would change culture and become self-sustaining. In 1992, for example, the UK government provided funding for universities to conduct 'technology audits' aimed at identifying intellectual property capable of commercial exploitation, and short-term (up to three year) grants to expand university offices concerned with industrial liaison, with a view to such activities becoming self-financing.

Such initiatives proved to be optimistic. As we have noted above, in a period when most research income was being obtained at significantly less than full economic cost recovery, the overall financial impact on expansion was difficult to determine. Moreover, direct grants from industry have continued to be responsible for only a small proportion of overall research income, 9% in 2003/04 and 10% in 2002/03 (HESA 1996:2005).

The expectation that better identification and communication of intellectual property would lead to significant income from licensing activity has also proved to be problematic. Although successive annual reports from HESA show such income to be increasing rapidly in percentage terms (10-20% per year over the last four years), it remains a small part of overall research income. The most recent annual survey by the University Companies Association (UNICO), reported that total licensing activity increased from GBP 31.3 million to GBP 40 million during 2004, with the number of licensing agreements doubling during the period 2003/04. It also noted that 20 spin-out companies from UK universities had floated, with a combined value of over GBP 1 billion, during the two years 2003 and 2004. It none the less concluded that 'commercialisation activity in many

universities is still in its infancy, and that 30% of participating universities had only started their activities since 2000' (UNICO 2005).

Such income also tends to be concentrated heavily on a small number of inventions and institutions. For the majority of other universities, it was always unlikely that such technology transfer activity, narrowly defined, would even cover costs (Kirkland 1993). This point has been recognised by the Higher Education-Business Interaction Surveys conducted by HEFCE, which confirm that in most cases universities do not cover their direct costs of such activity (HEFCE 2005).

Work by Tony Heher of the University of Cape Town, using data from several countries, suggests that this problem is not confined to the United Kingdom (Heher 2005). Figures quoted from the Association of University Technology Managers suggest that, even though the United States is often regarded as advanced in the field of technology transfer, the same picture applied to the majority of American universities. A comparative analysis of the United States and South Africa, conducted at the International Intellectual Property Institute with support from the United States Agency for International Development (Garduño 2004), noted a significant increase in professionalism amongst South African universities during recent years but, quoting the US experience, warns that 'the benefits of technology transfer will not materialise overnight, and investments in building a technology transfer system today will not begin to pay off for at least 10 years'. A further international comparison of activity between Australia, Canada and the United States for 2002 (by the Australian government's Department of Education, Science and Training 2004) confirmed the limited nature of licensing income compared with overall activity. Taking the top 20 institutions for licensing income in each country, the average licensing income as a percentage of research expenditure represented only 2.5% in the case of Australia, 6.3% for the United States and 3.4% for Canada.

Part of the solution to this problem may be for universities to take a broader view of the benefits to be gained from such activity. In the UK, for example, HEFCE evidence to the Lambert Committee points out that 'while intellectual property (IP) exploitation only delivers a net profit for a small minority of higher education institutions, a great many generate significant income from, and deliver valuable benefits through, services such as bespoke training courses, continuing professional development and consultancy' (Newby 2003). It could also be argued that the non-financial benefits accruing from such activity are even greater. It is now widely recognised, for example, that technology transfer should be seen as a two-way, rather than linear activity, which could have for example, significant benefits in curriculum development.

Even accounting for such benefits however the total return for universities on their technology transfer activities is likely to be long-term and difficult to quantify. In recent years government has recognised that support offered needs to be equally long-term in nature. Since 1999, HEFCE and relevant government departments have worked together to put in place policies and funding mechanisms to allow universities to develop their capacity on a sustained basis. By the time of its submission to the Lambert Review, HEFCE was able to state that 'it is government policy to continue this as a permanent third stream of funding for higher education'.

The development in the UK of this 'third stream' funding – so called because it recognises a distinct third element to the mission of universities, alongside teaching and research – began in 1999 with the introduction of the Higher Education Reach-out to Business and the Community Fund (HEROBC), funded through HEFCE and the Office of Science and Technology. This committed over GBP 82 million for 'higher education institution business and community activities to generate culture change, build capability and capacity, and deliver beneficial outcomes'. HEROBC was followed by two further schemes. The Higher Education Innovation Fund committed GBP 265 million from 2002/03 to 2005/06, and has since been extended to 2008, whilst the Higher Education Active Community Fund involved a further GBP 37 million over the same period.

In recent years, issues of university research dissemination and technology transfer have become increasingly associated with those of regional development. This is not entirely new – government

as long ago as the late 1980s provided short-term funding for the creation of Regional Technology Centres – but has grown in momentum significantly since the devolution of government to Scotland and Wales and the creation, in 1998, of eight Regional Development Agencies.

The issue was particularly prominent in the Lambert Report of 2003, which identified an important role for universities in supporting their regional economies, and argued that collaboration within the sector could play an important role. This theme was taken up in the Eighth Report of the House of Commons Select Committee on Science and Technology (2004/05), which concluded that:

'Implementation of the hub and spokes model of university provision would mean placing a greater emphasis on the role played by the regions in the higher education system. Some research-intensive universities have been reluctant to endorse such a shift of emphasis because they see their focus as being international, rather than regional in scope. It is a common assumption that, by attaching greater weight to the role that a university should play within their region, their international standing will somehow be compromised. We believe that this is not the case; by collaborating with other institutions within a region, universities have the opportunity to widen and deepen their portfolio of activities, thereby enhancing their reputation' (House of Commons Science and Technology Committee 2005)

This approach is important, since it demonstrates how allocations in the third stream of funding are likely to differ from those for research. In the latter category, the trend of funding mechanisms over the last 20 years in the UK has been towards selectivity – to concentrate support on those universities and departments which obtain the highest Research Assessment Exercise ratings. In the areas of technology transfer, particularly in the regional context, there is recognition that contributions may differ between universities and markets, and that greater diversity of approach might be required. This view mirrors the findings of Lambert, who spoke of each region having 'a number of universities with different strengths that can attract talent, investment and professional services, raise the quality of education and skills and serve as a entry point for the latest international thinking' (Lambert 2003).

This section has highlighted a number of issues which might, at first sight, appear to be only loosely connected. Some also appear to move beyond the specific field of research management. What the issues have in common however is the requirement that universities target and manage, or at least monitor, their research activities. This applies equally to the need for mechanisms to ensure that the full costs of the work are properly calculated and claimed, to ensuring that every possible publication and research grant is submitted for national research evaluations, that valuable intellectual property is not lost and that research results, whether they have financial value to the university or not, are identified and disseminated.

There is no assumption that all of these activities should be undertaken by a single, central office, or any other uniform structure. In fact, the discussions reported below suggest that, as central structures have grown, a need has been recognised for these to work in collaboration with academic departments even to the extent in some cases of making joint appointments and locating Research Office staff within faculties. The policy developments do, however, all point to the need for institutions to be pro-active, to have management structures and strategies in place and, in some way, to add value to the efforts of their individual academics. In this context, they relate directly to the definition of research management that we have adopted above.

The Benchmarking Process

The project utilised a benchmarking process developed over the past 10 years by the ACU, which is unique in its approach to benchmarking university management processes. Rather than using the more familiar benchmarking approach of gathering quantitative performance indicators on a range of issues, the ACU process is more formative and developmental. Its purpose is to help institutions examine their current policies and practices in a range of areas including: development of strategies, policy development, dissemination and implementation of policies and evaluation of practice.

The process begins with an extensive institutional review document which participating institutions complete. This provides the opportunity for institutional leaders to review current practice based on a series of questions relevant to each set of issues. Many participants indicated the value of undertaking this initial process as it enables institutions to reflect upon current practice and to begin to question and evaluate what might be institutionalised processes. Once completed, the institutional review documents are synthesized and a summary report is prepared which distils from the documentation examples of good practice in each of the areas in question.

A seminar for senior leaders from the participating institutions then takes place which provides an opportunity to hear first-hand from various institutions as to how the senior management approach strategic development, implementation and evaluation based on the institutional review. The statements of good practice are then reviewed and revised in detail. Participants return to their institutions with concrete examples of good practice for discussion and/or implementation in their institutional context.

Participation in this project was limited to a relatively small number of institutions, given the intensive nature of the process. Fifteen institutions formally participated in the project – four from the United Kingdom, three from Australia, two from Canada and one each from New Zealand, the United States, India, China, South Africa and Japan. Profiles of the institutions are provided below. The aim was not to recruit a representative sample of institutions, either globally or within individual countries. It was intended, however, that the group would embrace a range of approaches and experiences and hence stimulate different examples of good practice.

The group met on two occasions. In each case, 11 institutions were represented with others taking part in the institutional review process. The first seminar, in September 2004, examined pre-award issues (as defined above) and the second, in April 2005, considered post-award activities. In total, 14 of the 15 institutions attended at least one of the two of the events. The fifteenth, from India, provided basic data but did not participate in the discussions and should not, therefore, be regarded as contributing significantly to the analysis below.

There is considerable value added for those institutions that participated in the project as they were able to undertake a process of institutional self-review and benefit from the shared experiences discussed at the seminars. The statements of good practice which were derived from the process are outlined in detail later in this report. These statements can be used by institutions as a tool for planning and discussion as a basis on which to review current practice.

Participant Profile

In selecting participants for the project, our aim was to combine international balance with a range of approaches to several other key variables. These included:

- (a) Length of time the research management function has been established.
- (b) Size of institution.
- (c) Extent of external and core research funding.
- (d) Extent of activity in identification and exploitation of intellectual property.

Prior to the discussion seminars, those selected were asked to provide further context regarding

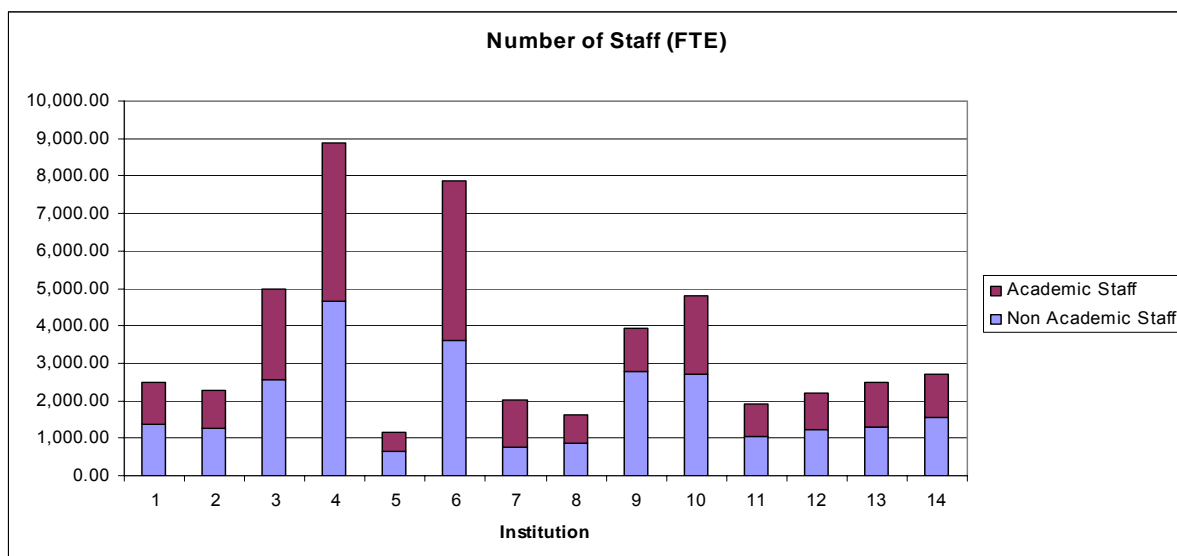
their current activities. A summary of the information provided is given below:

Table 1. Profile of Research Management Structure

Instit. Code	When Established	Number of Staff in Research Office	Overall Budget (Including Staff Costs)*	Overall Budget (Excluding Staff Costs)*	Proportion of Office time/resources spent on following areas:		
					Income Generation (%)	Grant Management (%)	Technology Transfer (%)
1	1995	34	2,079,044	763,462	30	30	40
2	1995	20	1,056,783	171,199	40	20	10
3	1995	17	975,763	652,387	30	65	5
4	2002	69	3,433,289	381,477	10	60	30
5	1999/1980s	8	n/g	n/g	52	30	18
6	pre1984	29	482,992	362,244	50	30	20
7	2001/2003	45	3,810,955	840,786	40	30	30
8	1992	16 (14.2FTE)	701,808	195,578	10	65	25
9	1984-present structure2001	26	1,010,605	339,842	12.5	60	27.5
10	1997	58	4,354,572	985,027	25	50	25
11	1989	20	n/g	n/g	35	60	5
12	2002	41	3,898,173	1,419,815	33	33	33
13	1993 (Current office 2001)	31 (28 FTE)	2,063,353	412,671	60	15	25
14	1964/1951	105	7,114,165	1,886,488	20	70	10

*Figures are in US dollars¹

Figure 1. Size of Institution (staff)



¹ All currencies were converted to USD using the currency converter on www.xe.com during the afternoon of 27/08/2004. The rates used were: 1CAD = 0.762953; 1GBP = 1.79422; 1JPY = 0.00913898; 1AUD = 0.704522; 1CNY = 0.120748; 1ZAR = 0.148812; 1NZD = 0.649221

Table 2. Intellectual Property

Instit. Code	Income from Intellectual Property (USD)	Total Patent Applications	No. of Spin-Off Companies
1	494,889	56	8
2	0	8	2
3	352,261	140	15
4	1,144,430	176	34
5	0	3	0
6	3,374,907	776	258
7	0	91	0
8	1,623,053	31	3
9	2,069	37	4
10	3,050,174	71	17
11	462,909	30	34
12	162,690	38	14
13	174,039	5	2
14	449,938	8	0

Discussion and Findings

Reflecting the methodology described above, discussions were organised into seven sections. After the initial session, which looked at the development of overall strategy, the order of these was designed to reflect the chronological development of an externally funded research project, from design and funding application, through contract negotiation, project management, identification of intellectual property, commercialisation and dissemination. This division allowed us to distinguish between pre- and post-award activities, which are undertaken by different personnel at some participating institutions, and this allowed them to be appropriately represented at each session. We recognise, however, that research does not conform to a single, linear process, and would not advance this chronology as being applicable to all university research.

Prior to each session, the project team identified a number of key questions in order to focus the discussion, and participants gave written submissions regarding their current practice. These were analysed in advance by the project team, which also produced the first draft statements of good practice in each case. Both the submissions and draft statements were then subject to further modification in group and plenary discussion, before the refined statements were produced.

As indicated in the previous section, participating institutions represented a relatively diverse profile geographically and in relation to the size of institution. This diversity is regarded as a strength of the process as good practice is transferable across geo-political and institutional boundaries. Having said this, there are clearly some limitations and caveats that should be acknowledged when considering the statements of good practice which have been derived from the process.

The statements are not exhaustive. Rather, they are indicative of how universities' management processes might respond to the various elements of strategy, implementation, dissemination and evaluation of practice. The statements are a reflection of the institutions that participated – thus, some statements suggest certain assumptions about organisational structures (e.g. whether functions are centralised or de-centralised). Such statements should not be considered as placing a particular value on any one institutional model; instead, they should be seen as one possible approach to a particular practice set in a particular organisational context. The differing context may also lead to some level of inconsistency across the statements proposed.

It should be recognised that institutions will be at different stages in development and evolution of practice and therefore good practice in one institution may be less appropriate in another. The context in which these institutions are located is in a state of constant flux due to funding pressures and shifting government policy. Thus, each institutional leader will need to make a judgement as to the appropriateness and utility of the statement to their organisation.

We have divided the report that follows into seven sections, one for each of the seven areas of discussion. For each, we give the questions identified in advance, a summary of the discussion that took place, and the statements of good practice that were eventually agreed by the participants.

Section 1: Development of Internal Research Strategy

Questions asked in this section were as follows:

- (a) *To what extent is a university research strategy in place?*
- (b) *What elements are included in the strategy?*
- (c) *Who are the key players in setting the strategy? (whether individuals or committees)*
- (d) *How often is the strategy revised?*
- (e) *In setting the strategy, what information does the institution have available about its own performance?*
- (f) *To what extent does the research strategy relate to the allocation of any internal funds that are available for research?*
- (g) *To what extent is the research management office of the university involved in the determination or implementation of such strategy?*

Responses and Discussion

All participating universities claimed to have a research strategy in place, although in some cases this was a relatively recent innovation. It was striking that in several cases, the initiative had either been instigated in response to, or designed to have synergy with, the evaluation and funding systems that were in place at national level. Examples of these included the Canadian Foundation for Innovation, the UK Research Assessment Exercise and the Tertiary Education Strategy in New Zealand.

The strategies also had some core functions in common. Typically, they included some statements of areas of existing strength or priority, and a range of performance measures – most commonly items that could be quantified such as publication outputs, research grant and contract income and research student numbers. Beyond this core, however, there was considerable diversity in the range of topics covered, the extent to which strategies sought to be pro-active in changing the institution, as opposed to recording the current situation and the relationship between the strategy and other areas of institutional planning.

Content of Strategy

In addition to the core elements described above, several institutions included further information in their plans. Several mentioned *external peer review*, which could be used either as a regular ongoing programme or used in specific cases as required. Others, whilst not instigating their own peer review process, drew heavily on comparative data available through national research evaluation exercises. Others included considerable information regarding *staff demography* in the exercise, including not only measures of research productivity but age and likely retirement data. One of the most comprehensive data collection exercises was reported by an institution that had recently embarked on a substantial review of strategy following the arrival of a new Deputy Vice-Chancellor (DVC) (Research). Although not yet complete, the exercise appeared to be seeking to develop data at a greater level of detail than was currently used in a number of other institutions.

There appeared to be significant differences in the extent to which strategies sought to meet *national* as well as *institutional* priorities. Whilst most recognised that following national priorities was critical to funding, some went further than this. The submission from one institution listed the needs expressed by industry and society as one of the key areas of information required in devising strategy. Another considered information on global scientific and technical development trends as being important. Yet another mentioned a 'focus on equity and transformation' as a key element in its strategy, whilst another included the 'development of programmes to meet the needs of regional communities' in its strategy. The regional issue might also increase in importance for some UK universities following the recent Lambert Report.

These issues raise some fundamental questions. In devising their research strategies, should institutions give preference to areas of research based on existing or potential academic quality (however defined)? Or should they seek to give priority to areas of research on the basis of their

impact on wider society? If the latter, is the aim primarily to reflect the funding priorities of government, and thus maximise income, or is it to develop the institution's own perception of what is 'useful' to society? Again, if the latter, what basis does the university have to make such decisions?

There were also differences in the range of areas covered by research strategies. Most extended to the training of research staff (which is covered in later sections) and the commercialisation of intellectual property. This latter element was not universal, however. One university stated that the focus was on 'basic or fundamental research which is viewed as the central purpose of the university' whilst recognising that in some key areas the distinction between basic and applied research may be blurred. The same institution stated that 'since IP is owned by the creator, new IP development and commercialization is not viewed as a priority area'. At another university, it was expected that the bulk of research would be 'basic' or curiosity led, but it was also stated that the plan did not 'currently focus on the balance of basic and strategic research' since the nature of work undertaken and source of funding would depend on the individual researcher. Other institutions, by contrast, appeared to have made a conscious effort to ensure that commercial exploitation was included within the strategy, in some cases as a priority area.

Similar distinctions might be drawn over the extent to which research strategies overlap with international strategies (some specifically highlight the desire to develop new collaborations), and policies in the area of student enrolment (at postgraduate level), human resources policy (in the recruitment, retention and development of staff), and ethics (which were handled in a separate office in at least one institution).

These differences may reflect wider institutional structures or ethos. Perhaps the key issue for discussion is not that of the precise scope of the research plan, but the need to ensure that synergy exists between research policy and related areas, and that clear relationships are in place with other relevant offices. This is discussed further below.

A Pro-active Approach?

Several of the strategies included the identification of key research themes and research priorities. Often, these were used for both external and internal purposes. Externally, they were used both as a lever for persuading funding bodies that the institution had genuine expertise and commitment in the areas concerned, and in some cases as a direct means of attracting external grants or government funding. The phrase '*signature themes*', used by one university, provided a further indication of the use of priorities for external purposes.

Several institutions pointed out that the designation of areas of current strength is based on detailed and objective criteria. One university for example, stated that:

'Areas of current research strength have been identified on the basis of the strength of the research of the staff in these areas. This strength has been judged by their individual achievements in producing publications, winning competitive grants, engaging in significant collaborations, winning significant competitive national and international prizes for their publications, invitations to participate in national and international academic and public conferences and membership of the (national) learned academies.'

Nevertheless, strategies are often intended to represent more than the status quo. In some cases, they are intended to identify individuals and research areas with emerging potential, and to support them. In others, they are intended to pro-actively bring groups of researchers (both within and outside the institutions) together, sometimes in support of specific bids. One university was engaged in the process of designating larger groups, or institutes, which would contain 'a number of centres of research effort and provide enduring and distinctive strengths of the university as a whole'. It was intended that eventually most research-active staff would be allocated to such a centre. Another institution spoke of creating 'Thematic Research Institutes', to provide umbrellas under which research activity could be coordinated. Another has developed the notion of 'research clusters'. In each case, the intention is that the research strategy will add value to existing efforts. This potential is perhaps particularly strong in the area of inter-disciplinary research, which has

been a priority for several governments in recent years.

Whilst it was important that research strategies conveyed clear priorities, these also needed to be balanced against the need for flexibility, and the possibility of amending strategies over time. There were occasions when amendments and exceptions would need to be agreed even between formal review dates. It was pointed out that new opportunities could not always be foreseen, and could arise either as a result of internal developments, such as the emergence of new research strengths, or from external opportunities.

Given the degree of prioritisation in several strategies, it was perhaps surprising to find significant differences in the relationship between strategic priorities and the allocation of internal research funding. In the majority of cases, there appeared to be no automatic link between the two, although several universities pointed out that strategic priorities would be taken into account. One, for example, stated that 'a general knowledge of the Plan may, however, be among the factors taken into consideration in assessing specific requests for research funds'. Typically, however, the bulk of internal research funding was allocated to faculties directly, often based on wider performance measures. At least one participant in the discussion related this to power relations within the institution, stating that if research strategy was not sufficiently explicit then deans would tend to interpret it in different ways, possibly diluting institutional prioritisation.

In some universities, a link between research strategy and funding was strengthened through a two-tier strategy, with a proportion of funding being retained for central allocation. At one university for example, a proportion was allocated to a Strategic Development Fund whilst at others funding was allocated to specific initiatives, such as one institution's Emerging Research Fund. Several of these initiatives related to staff development, and will be discussed further in the next section.

Relationships within the Institution

Participants agreed that strategies should be transparent, widely 'owned' and in particular have 'buy in' from the highest levels of the institution. In virtually all cases, overall responsibility for the research plan rested with a senior figure, such as a Deputy or Pro-Vice Chancellor. Sometimes, this was related to that person's role as the Chair of an institutional Research Committee, or Head of the Research Office.

Research Committees, which played an important role both in devising plans and overseeing their implementation in several institutions, differed in membership. An interesting model came from an institution whose committee membership embraced both senior research managers and leading academics. In the former category came the Director for Research Policy and Support and Director of Commercialisation in the Research and Innovation Office and possibly uniquely the University Librarian. Academic membership included Associate Deans from faculties, the Dean of Graduate Studies and nominated members from the Academic Board. At another university, Heads of Service nominated by the Vice-Chancellor were also included in the University Research Committee. This institution was also the only one to report student membership of its committee. The extent to which universities utilized external expertise in their research planning is not clear, although one reported the use of a Scientific Advisory Committee in identifying wider trends. This may be a suitable topic for further discussion.

In several universities, the Committee was primarily composed of academic staff, either representing individual faculties or being elected by Senate and did not necessarily involve the Research Office making a contribution to the decision making process. The contribution the Research Office did make could take several forms. From the responses, it was possible to identify four possible roles. These can be defined as:

- *Leadership* – in which the central Research Office has the authority to make institutional policy.
- *Membership* – in which senior research managers make policy alongside academic colleagues in key committees.
- *Secretariat* – in which the research managers, whilst not members of key decision making

- committees, have involvement through the provision of reports and data.
- *Separate* – in which research managers are not formally involved in the making of institutional policy, but may play a role in its implementation.

No clear examples of the first approach were reported in the responses, although there were cases where the DVC, who did have a clear policy making role, was also Head of the Research Office. The more common approaches were the second and third categories.

The relationship between central research strategies and activity at faculty level also appeared to be critical in several responses. A number of institutions reported that funding mechanisms were now increasingly devolved. Some reported that faculties had their own development or research strategies. This reflected the need to distinguish between policymaking at strategic and operational level.

In these circumstances, it was clearly important that synergy exists between the two levels. This could be achieved in several ways. Faculty strategies could be a sub-set of institutional ones, requiring approval by the central Research Committee. Faculties could be represented on the committee itself, or the university research strategy might be a bottom-up exercise, reflecting the proposals of faculties, although the latter approach might conflict with the desire of the Research Committee to establish priorities *between* faculties. In those institutions where the research strategy had significant funding implications, this mechanism would also tend to ensure synergy. In each case, communication was critical. A particularly interesting case of how this might be achieved came from one university, where a new initiative has placed Research Office staff within faculties, as a means of increasing access and communication.

Reviewing Strategy

Another means of ensuring coherence between central and faculty research strategies is the existence of mechanisms to both monitor implementation and allow for regular review. In one university, for example, one of the functions of the Research Committee is to 'monitor the progress of the implementation of research policy within faculties'. At another, a specific post has been created, within the Research Office, to assist with implementation. A minority of institutions did not have a fixed timeframe for review, preferring the flexibility to make changes as required.

All institutions claimed to have mechanisms in place to review research strategy. In most cases, a specific time frame was adopted, often to coincide with national funding mechanisms. Where this was the case, periods varied from two to six years, often with provision for reviews in between that time, reflecting the need for flexibility mentioned above. In some institutions, these interim reviews were conducted at faculty level, thus helping in the creation of a two-tier approach, through which operational direction could be changed according to needs, within the confines of a longer term overall strategy.

Statements of Good Practice

Section 1 – Development of Internal Research Strategy

1. The research strategy is framed within the overall goals of the institution.
2. The research strategy links clearly with, and is complementary to, other institutional plans and strategies.
3. The research strategy explicitly states its purpose to assist the business of the institution, identifies priorities and recognises the need to make choices as well as monitor progress.
4. The institution's mechanism for determining research strategy is transparent and widely owned.
5. The institutional research strategy fully involves faculties in its design and implementation, and policies carried out by individual schools or departments are consistent with it.
6. Implementation of the research strategy is overseen by an appropriate member of senior management.
7. The research strategy has the facility to draw on external peer review, including other universities.
8. The Research Office is fully involved in the drafting of institutional research strategies in conjunction with other appropriate offices.
9. The research strategy is underpinned by the internal funding mechanisms for research.
10. The research strategy is, as far as possible, responsive to the research funding environment (at national, international and regional levels).
11. The research strategy seeks to add value to existing activity by pro-actively highlighting new opportunities for internal and external collaboration.
12. The research strategy is effectively communicated, monitored, reviewed and developed/refined.
13. The research strategy should be defined within a reasonable time frame (e.g. five years), reviewed regularly and be capable of evolving in response to events.

Section 2: Retention and Support for Research Staff

Questions asked in this section were as follows:

- (a) *To what extent, and how, is the research strategy disseminated to university staff?*
- (b) *What training exists for academic staff on research management issues?*
- (c) *Does the university offer training for staff in research methods or ethics?*
- (d) *What incentives are made available to encourage staff to develop their externally funded research capacity?*
- (e) *What activities and opportunities are available to staff (including fixed-term staff) to develop their capacity?*

Responses and Discussion

The ability to attract and retain key staff was critical to the strategy of most institutions. This was true both because of the catalytic effect that senior staff could have in attracting further research income, and because of the increasingly competitive nature of allocating core resources, such as the Research Assessment Exercise in the UK.

Institutional policy in this area was generally beyond the remit of the Research Office, with individual salary packages and other incentives often being agreed at the highest level, and wider policy resting with the human resources function. Research managers had a legitimate role in advising such policy, however. They were often custodians of important information which could be fed into decision making, such as the success rate of previous applications by a staff member, and future funding prospects.

At other levels, the central research support function had an important role – in disseminating information about institutional policies, funding opportunities and procedures, and adding value to specific initiatives. Given the size of most offices, determining where this effort was directed involved a separate set of policy judgments. For example, it might be necessary to deploy effort not on those groups and individuals likely to give the highest total return to the university, but those likely to offer the highest added value. One participant stated that his office had made a decision (unpublicised) to focus on no more than 60% of academic staff. The remainder were thought either to have little prospect of developing research activities however much support they were given (25%), or were so well established that there was little that the Research Office could add to their prospects.

The discussion regarding how institutions can best support and encourage research activity can be divided into three areas – the dissemination of policy and advice, provision of training opportunities and the putting in place of incentives.

Dissemination of Policy

All participants disseminated their research policy and strategy to staff in some way. Of these, the most common was through the relevant section of the website and in official documents.

Particular efforts were made to publicize policies to new staff. In a number of universities, Research Office staff were invited to speak during formal induction programmes. Several recognized however that reaching mid-career staff could be more problematic. Another point of consideration recognizes that although there are benefits in instilling basic principles in new staff on their arrival, there is perhaps a danger of information overload. It is also the case that few young staff will be mounting research applications in their own names during their first few months. One institution also pointed out that younger staff were increasingly aware of basic research management, through training provided as part of their postgraduate study. Taking these issues together, there was some recognition therefore that induction programmes could not be relied on as the sole vehicle for dissemination.

Several mechanisms to address this issue were mentioned. One institution maintained a loose-leaf handbook, which staff could update to reflect policy changes. Another had recently introduced a 'Research Facilitator Scheme', through which staff of the central Research Office routinely spent time in faculties. In one case, faculty based appointments were made jointly between the central office and faculty representatives, and were based on academic pay scales. This was considered important in generating a feeling of ownership. Another respondent reported that his institution could rely on 'two or three special staff' in each department to communicate change, although these were not formally appointed for the purpose. Two universities stated that meetings could also be used where required. There was some feeling that existing structures, such as heads of departments and line managers, could be used to transmit information on an on-going basis. It was notable, however, that much of the communication with mid-career staff relied on relatively informal channels.

Provision of Training

Institutions provided a wide range of training, available to staff at all levels. Amongst the most commonly quoted topics were the techniques of writing grant applications, identifying funding opportunities, costing and pricing projects, and the management of intellectual property. Whilst many of the sessions were provided directly by the central Research Office, the point was made that effective research management also relied on a number of more general management skills, such as time management and supervisory techniques. These were often provided as part of more widespread programmes, staged by the human resources or staff development departments. It was important that these were seen as part of the overall provision. In some cases, particularly involving young staff, there was also the possibility of attending the increasing number of courses provided to postgraduate students at the university in the field.

Most of the available training was neither accredited nor compulsory, but there were some notable exceptions to this. One institution reported that training for young staff contributed towards their obtaining a Postgraduate Certificate in Academic Practice, and sessions for young staff were sometimes contained in compulsory courses as part of their probationary period. The other area where a degree of compulsion was reported was for those staff working in specific areas. An example was the need for staff working on projects involving live animals to attend courses relating to ethics.

As with the dissemination of information generally, some institutions felt that the provision of courses for staff at mid and senior career levels required further attention. Two institutions recognised this explicitly; one institution was in the process of introducing special programmes aimed at heads of departments and school administrative staff.

It was recognised that formal course provision would represent only a small part of the total training effort. Some participants stressed that the time spent on a one-to-one basis with staff, identifying funding sources and preparing proposals also represented a significant part of the overall training provision. One has also introduced a mentoring scheme, whereby senior staff in departments help junior colleagues. Another was introducing 'communities of practice', bringing together staff with similar research interests throughout the university. It may be that these could provide a further structure for informal support. Another university used recently retired staff for this purpose.

Finally, one participant raised the issue of training for staff in research support offices themselves. Information on this area was not explicitly sought in the survey, but it is an issue worthy of further consideration by policy makers. Given the relatively rapid growth of research management functions, staff have entered their roles from a variety of backgrounds, and until recently little attention has been paid to classifying the skills required. In recent years, however there have been some attempts to address this, largely through professional organisations. In the United States, for example an assessed course for those entering the field of research administration is offered by SRA International (formerly the Society of Research Administrators). In the United Kingdom, the Office of Science and Technology supported a programme of training for knowledge transfer practitioners, following a review of current provision by independent consultants. There have also been attempts to stage Masters level courses offering training at more senior levels. Generally,

however, research management training is an area in which demand has exceeded supply in recent years.

Incentives for External Research Activity

All institutions reported that their staff had some incentive to actively pursue external funds, or other collaborative research activity. The range of incentives available can be divided into three categories – *departmental incentives*, *career incentives* and *personal incentives*.

Departmental incentives involved both status and financial reward. As we have seen in the section above, performance indicators used to judge performance at both institutional and national level often involve quantifiable measures. Successful departments were often rewarded with a larger core annual allocation if successful in these areas. In some cases an even more direct benefit accrued. Two universities mentioned that a share of income from external contracts (presumably from the indirect costs recovered) was allocated directly to departments. This practice was particularly attractive in institutions that had moved to more decentralized budgeting generally in recent years. It could also be used to provide an incentive to obtain departmental support for policies aimed at increasing indirect cost recovery rates from external sponsors, providing that the mechanism for allocation is clear and transparent. In these circumstances, department heads often needed little incentive from the centre to make motivation of staff a priority. In many cases, they supplemented central funding with additional incentives of their own.

Career incentives are the oldest established of the three types, and least likely to involve the central research management function. It has long been the case that staff with a higher research profile were most likely to secure promotion. In recent years, this has come into sharper focus for a number of reasons – the more widespread use of appraisal schemes, a larger proportion of research activity being supported by external grants and contracts, more competitive internal funding mechanisms and the linking of benefits such as sabbatical leave to performance. In these circumstances, it was pointed out that staff should have a high degree of incentive to engage in research activity, regardless of more direct measures.

Personal incentives represented perhaps the most interesting topic of discussion within this section of the programme. A wide variety of these were reported, including conference grants, willingness to match funding, personal research allowances and rewards for producing conference papers or high quality research proposals. As with training, several schemes were aimed at new or emerging researchers, where the need to establish reputation was thought to be greatest, but this was not always the case.

In some cases, provision for such benefits formed part of the staff contract. One example of this is the 'personal research fund' available to staff at some institutions. At one institution, the staff contract provided for staff at particular grades to undertake a period of funded career development in lieu of their normal duties. In other institutions these benefits were either performance related or allocated competitively. One institution for example, reported that it intended to introduce a special allowance for 'notable achievements or acquiring external funding' whilst others had specific funding allocated to support the production of applications, key publications and conference papers. Remission from teaching and administrative duties was also used in this context. Specific types of applications were also targeted. In at least two institutions, funds were set aside that could be used as matched or joint funding where external support could be leveraged. Another had a novel 'bridging scheme', providing support for applications that had been highly rated but unfunded to be further developed and re-submitted.

In the majority of cases, the incentives and rewards to individuals were in the form of funds that could be used to further enhance their research groups or facilities, provide additional research assistance, studentships or travel. Staff appeared to value the flexibility and freedom that these provided, although ownership of the funds remained with the institution, rather than the individual. In some cases, however, it appeared that the incentives could take the form of a personal payment, thus providing a direct financial benefit.

Statements of Good Practice

Section 2 – Retention and Support for Research Staff

1. The research strategy is effectively communicated and made available to all staff. It is also publicly available through key institutional documents, the web and appropriate print media.
2. The research management structure and policies form a core element of induction programmes for new academic and technical staff as well as new postgraduate students.
3. Research strategy, policy and management issues form a core element of ongoing professional development programmes for mid-career and senior academic staff.
4. Staff in leadership roles (e.g. Deans) are offered appropriate instruction in research strategy, policy and management, as well as being involved in discussion of good practice within the institution.
5. The Research Office maintains effective ongoing relationships with internal clients at all levels (faculty, department, individuals) with a view to supporting research staff and understanding their needs.
6. Performance measures for research management are established and are widely available/disseminated.
7. The institution makes appropriate on-going training and career development available for all staff in research support roles.
8. The institution makes provision for appropriate incentives to enhance the research activity of new and emerging researchers. Such incentives might include conference grants and other start-up funding.
9. Contact is maintained with other areas of the institution, which might provide more general management training, and with external suppliers, who might provide more specialist training, both of which might be relevant to research in specific circumstances.
10. Policies for providing incentives for staff research activity are transparent, easy to understand and consistent across the institution.

Section 3: External Promotion of University Research Capacity

Questions asked in this section were as follows:

- (a) *To what extent, and in what way, are academic staff supported in identifying, and approaching, potential sponsors of research and consultancy work?*
- (b) *To what extent does the university pro-actively identify funding opportunities, as opposed to responding to opportunities identified by academic staff?*
- (c) *What central mechanisms exist within the university to respond to external enquiries regarding research capability?*
- (d) *To what extent, and in what manner, does the university maintain a relationship with potential funders or clients outside specific projects?*
- (e) *To what extent does the university maintain information regarding clients, their potential interests and any past relationship with the university?*
- (f) *In what ways does the university disseminate information regarding funding opportunities to staff?*

Responses and Discussion

The key issue running through responses in this section was the extent to which central university offices could *add value* to the efforts of academics themselves. In most institutions, there was recognition of the very strong links that exist between academics and potential sponsors of work in their disciplines. Together with the technical knowledge that inevitably underpinned proposals, it was clear that many projects would develop without significant central involvement. In view of this, central offices, despite having undergone significant expansion in recent years, were still relatively streamlined.

The responses nevertheless revealed a wide range of areas through which universities were able to enhance the efforts of their academic staff. These can be divided into six key areas as follows:

Improving the Flow of Funding Information

Most institutions had regular mechanisms to ensure that staff were kept up to date with funding opportunities in their areas. Most commonly, these included publicity via the website, or regular electronic newsletters. Many also subscribed to external funding alert services - most notably *Community of Science*, *SPIN* or *ResearchResearch*². These could also target the interests of individual staff, through key word systems, and issue alerts to them directly. It was notable, however, that a number of institutions retained the idea of hard copy newsletters.

Institutional knowledge could add value to these services in several ways. Sometimes, it would be possible to add further contacts to those identified through key word databases. This was particularly the case with projects requiring interdisciplinary research, where the university could play a pro-active role in bringing teams together. Often knowledge of the past project history of teams or individuals would also prove useful. For these and other reasons, even those offices that subscribed to external databases found themselves distributing information to additional contacts, and maintaining their own expertise lists.

There was also recognition that external databases did not cover all funding sources. Some institutions, for example, engaged staff to monitor other forms of media on a regular basis, to search, for example, for tender information. There was also a need to ensure that the university was represented on the direct mailing lists of major funding bodies. This was important since it was necessary not only to have prompt information about funding opportunities, but the policies

² A number of commercially operated support services are now available to university researchers and research managers. These offer a combination of hard copy and electronic news and briefings, funding information and other research information and project management facilities. Further information on the products described here can be obtained at, respectively, www.cos.com; www.infoed.org/new_spin/spin.asp; www.researchresearch.com.

underlying them. This could enable planning to take place in advance of formal calls. One participant in our discussion used the phrase 'research intelligence' rather than 'research funding' to emphasise the need to move outside formal channels of information gathering. All of this information needed to be distilled into a form that academic staff would find possible to digest.

Finally, it was stressed that information could be distributed through informal, as well as formal channels. Three institutions referred to networks of contacts within academic departments, although these had a range of roles. In one case, they were referred to as 'financial administrators', in another two as 'business development officers'. There were also examples of academic staff – such as departmental research coordinators - having responsibility for raising awareness. In each of these cases, the intention was to make information and advice more accessible.

Facilitating Communication

Although much communication takes place directly between individual academics and sponsors, universities could do much to enhance this contact. Several examples were highlighted, including arranging two-way visits between sponsor and university as well as workshops on specific programmes. It was also important that key contacts were included in mailing lists for material from the university as a whole, thus increasing their general awareness of the institution, and possibly of research areas they had not previously considered.

In addition to formal presentations, several institutions sought to engage with sponsors in a relatively 'neutral' or 'semi-social' environment. They might be invited to key university events, or to join special 'research networks' or 'breakfast clubs' at the institution, where the intention was to enable them to meet a wider range of university staff. Some institutions also mentioned participation in wider regional networks as a means of facilitating greater contact with potential clients. These networks appeared to be increasing in importance. In other cases, universities were becoming involved in industry sectoral organisations.

Three other issues were mentioned. The first was that significant sponsors could be invited to join advisory committees or even formal policy making bodies of the university, thereby further strengthening links with the institution. In one case also, the research management function was involved with the creation of visiting professorships and fellowships, which could similarly strengthen links. A second issue was the possibility of creating or utilizing special relations with companies based on the university science (or research) park. This was only mentioned by one or two institutions, which is perhaps surprising given that many such parks list access to university research facilities and expertise as one of their main benefits. The third issue of note was the development, by one institution, of a strategic partnership with another local university that held similar research interests to collaborate and disseminate information jointly. This had several advantages in that in addition to increasing impact and providing economies of scale, it also had the potential to make university activities more readily accessible to external customers.

Making Life Easier for Sponsors

A variety of activities could be included under this heading. Amongst the most widespread was that of providing a one-stop shop to ensure that enquiries were properly directed. Most universities had central offices that offered this service. Some mentioned that enquiries were sometimes sent to other offices – such as that of the Vice-Chancellor – in the first instance. A need might therefore exist to ensure that, where appropriate, these should be referred to the central Research Office as quickly as possible. Interestingly, although several offices felt well qualified to direct enquires to the appropriate academic 'home', only one mentioned a system for 'progress chasing' to ensure that contact had, in fact, been made and to check whether any collaboration had resulted. It may be, of course, that others regarded this as implicit.

Some institutions also mentioned a quality control function. This could operate on either a technical or administrative level. The technical content of bids could be improved by internal review before submission, and by ensuring that the most suitable staff available were involved – particularly where the content was interdisciplinary in nature, and staff concerned might not be

familiar with each other. One institution had experience of organising an internal competition to determine who should respond to a particular bid. On an administrative level, institutions could take the administrative burden away from sponsors by offering a streamlined application procedure, and by ensuring that all administrative and financial requirements were met in the application.

Sometimes, the university could point out financial opportunities to a sponsor, to mutual benefit. For one university, presentations to industry were often designed to find additional partners for applications to third parties. In some cases industry was not aware of such opportunities, although they represented a key element in the strategy of government and some international funding bodies. An example of this could be found in the United Kingdom, where two institutions mentioned the specific role of the Research Office in managing and promoting Knowledge Transfer Partnerships – a government funded programme for collaborative work between universities and industry.

Maintaining a High Public Profile

Contacts gained through specific projects could be enhanced by maintaining the high profile and reputation of the university generally. Central university Research Offices were involved in this through the production of materials describing both the research capacity of the institution as a whole, and of specific groups. This was particularly the case for groups and themes that did not fit within a single department. Some universities had tailored these to specific events or target groups. One, for example, had produced materials to coincide with a major international event for the defence and aerospace industry.

It was recognised, however, that other units of the university would have a greater role in this area, in particular the public relations, marketing or media relations offices. These were often responsible for producing more regular or general guides, and in two cases, expertise guides for industry or the media. Close relations with such offices were essential to a coherent strategy. The Research Office might, for example, help identify success stories that would be of interest to the media. Conversely, the public relations office would ensure that key research clients received regular materials about the university's progress generally, and invitations to key events.

Maintaining a Sponsors' Database

Most institutions maintained information on sponsors, which could be of use to academics in framing individual applications. At a basic level, this would usually include hard copy files on key sponsors, including details of their current funding policy, promotional materials and procedures. This might also include details of their past policies, and examples of previous grants. Several institutions routinely analysed sponsors' annual reports for information in this area.

One institution was seeking to move beyond this, by maintaining a more comprehensive database of companies (including those with no previous contact with the university) from which future prospects could be identified. Opinions differed regarding the usefulness and practicality of this approach. The institution concerned regarded it as critical, whilst recognising that it would be expensive to maintain. Another institution regarded the development of such an all embracing facility as a 'holy grail', which was unlikely to be achieved in practice, whilst failure to do so could lead to embarrassing mistakes. An alternative approach, adopted by at least three institutions, was to maintain a comprehensive database of past contacts with the university. This could be extended to include not only research projects, but those of other departments (such as student work placements) and attendance at conferences and events. As well as helping to target publicity materials and invitations, this could play an important role in facilitating introductions. Once again, however, significant collaboration across departments would be required.

Policy Promotion and Lobbying

One means of promoting the interests of the institution was to lobby for policy changes in national or regional government. An example might be to promote areas of existing research strength as part of government 'foresight' exercises and to funding bodies for inclusion in their future strategy, in the expectation that this would ultimately make the university better placed to attract external

grants.

This activity was not a major function for most research managers, perhaps being better suited to senior officers of the university or academics, working within their own peer groups. One DVC (who also had supervisory responsibility for the Research Office) told our seminar that he spent between one and three days in most weeks on this type of activity, often based in the capital city. Research officers had, however, a role in providing information and examples that could be used to underpin such lobbying. Several also had a more direct role, sometimes through their professional organisations, in policy discussions over issues more closely related to their day-to-day work, such as the extent of government support for university technology transfer or the terms of government research projects.

Statements of Good Practice

Section 3 – External promotion of University Research Capacity

1. Institutions have regular, effective and pro-active means of informing academic staff of funding opportunities and the strategic directions of funding agencies.
2. Central Research Offices have developed and strategically use key contacts in faculties, schools, institutes and departments to facilitate two-way flows of information on funding opportunities and research interests.
3. The institution maintains a searchable database on institutional research performance, capabilities and contacts, including all past projects and proposals.
4. Information and current policy from all funders is maintained and communicated as appropriate.
5. The Research Office holds regular information sessions and targeted workshops for faculty members and graduate students with the purpose of providing information on funding opportunities, proposal development and the development of collaborative research teams to respond to one-off as well as on-going research opportunities.
6. The institution seeks to establish an effective two-way communication strategy between themselves and major sponsors and pro-actively seeks to develop that relationship.
7. The institution has clear mechanisms in place to handle internal and external enquiries regarding possible research and consultancy opportunities and to monitor the outcomes of these on a regular basis.
8. The Research Office actively encourages collaboration between different departments within the institution including senior academic offices, public relations, marketing and registry.
9. The institution seeks to develop mechanisms to effectively track and involve alumni working in key positions with current, past and potential sponsors and in government.

Section 4: Submission and Authorisation of Externally Funded Work

The questions asked in this section were as follows:

- (a) *Are all proposals for externally funded work instigated at departmental level, or does the central university seek to instigate work in particular areas?*
- (b) *At what stage does the university require sight of any proposals for funding being submitted by academic staff?*
- (c) *What role (if any) does the university have in improving the academic content or presentation of funding proposals?*
- (d) *What is the university policy regarding the costing and pricing of external applications?*
- (e) *Who is responsible for approving applications made on behalf of the university, and signing any contracts that result?*
- (f) *At what stage in the process would the university consider the possible risks in any external work? Which staff would be involved in this process?*
- (g) *Does the university have clear negotiating guidelines on what types of work it is willing to accept?*
- (h) *Does the university use external professional advice at any stage in the process?*
- (i) *How is the effectiveness of the university in winning external funding assessed in relation to its strategy and competitors?*

Responses and Discussion

All responses began from the assumption that the vast majority of externally funded work was instigated at departmental level. This was not only considered inevitable, given the technical knowledge required, but desirable. As one university pointed out, it was 'crucial that any bid is championed and developed by the academic community at the earliest possible stage'.

The main exceptions to this rule were major initiatives at national level, involving bids for large amounts of funding spread over a number of subject areas, and projects that required a strong interdisciplinary focus, where a team might be required to be assembled centrally. One university pointed out that there were also occasions when the institution was approached with proposals from outside organisations.

It was also evident that the process tended to differ according to discipline and the needs of specific sponsors. In the case of a medical school applying to a charitable body the process would be formal, involve a set application form and submission deadline. In the case of an engineer seeking work from the corporate sector the process might be much more interactive, with several informal meetings and exchanges before the formality of a proposal. Despite this, the analysis below is largely based on the model that proposals are instigated by academics and in some way moderated, or approved, by central authorities who, as one participant put it, act as custodians of expertise, or at least institutional policy.

The Approval Process

In several cases, central university offices had a *preference* to see applications before submission to external bodies, but were not able to enforce this as a formal requirement. One office stated that it wished to see proposals 10 days before the intended deadline but recognised that many investigators did not meet this requirement. In some cases, applicants submitted their proposals directly to external sponsors. This practice was discouraged in most institutions, although in at least one academics were 'freely allowed' to present proposals.

Rather than seek to enforce the requirement more rigorously, universities appeared to adopt three strategies to encourage early submission. The first was to try and offer some incentive. One university stressed that, with early sight of the proposal, central Research Office staff could offer a much wider range of advice on presentation and content than would otherwise be possible.

Applications sent for approval at the last minute, by contrast, could only be screened for financial and other formal requirements. Secondly, some sought to ensure that central requirements were fully incorporated into the planning process, even before the application was submitted for central approval. This could be achieved, for example, by making checklists and costing forms available which academic staff could incorporate in their own drafting. Whilst these offered no guarantee of compliance, they were seen as a means of increasing understanding and cutting down the number of 'last minute crises' which could emerge when central approval was sought at a very late stage. Finally, some universities sought to defend themselves by publicising the fact that the university would not be bound by any application submitted to an external body without prior approval.

Whilst a degree of non compliance might be tolerated at the proposal stage, requirements for approval following a successful application were much more strongly enforced. All institutions appeared to have clear procedures to establish who must formally accept work on behalf of the university. The most common model was for authority to be delegated from the Vice-Chancellor, via a DVC or Pro Vice-Chancellor, to the Research Office, according to the value of the project. Several institutions, however, stressed that departmental buy-in was also critical. In these circumstances, approval also had to be given by the Dean or other senior academic. This was particularly necessary in order to confirm that both the infrastructure and any other support required (including the time of existing staff) would be met from the departmental budget.

It was at this stage, also, that the main element of risk assessment took place. Although the use of checklists, guidelines and departmental approvals could encourage such issues to be considered at departmental level, and at least one institution had its own risk management office, in practice much of the responsibility for this fell on the Research Office. Respondents listed a wide range of possible risks – financial, health and safety, ethical, publicity, legal, insurance and intellectual property – each of which needed to be considered before any agreement was submitted for formal approval. Each of the above areas tended to have its own 'home' within the organisation, and close relations with each of these was essential if the process was to be both thorough and reasonably quick. In one case, the Research Office provided the secretariat for the risk management committee.

One institution reported a novel approach, which combined both risk assessment and approval. This required the Dean of the relevant faculty to make an initial risk assessment of the proposed project, using a centrally designed form, with clear guidance and specialist support available where required. Following this, the project would be assigned a specific level of risk. In this case, the approval procedure to be adopted would depend not (as in many universities) on the financial value of the work, but the designated risk level. Low risk projects might be signed off within the faculty, medium- or high-risk projects at a correspondingly higher level.

Added Value

University authorities generally accepted that their potential to add value to the proposal's prospects of success was limited, especially when they had limited time to evaluate it prior to submission. There were, however, some exceptions to this situation. Whilst central staff could rarely add to the technical merit of the proposal, three areas in particular were highlighted where value could be added, namely the clarity of the proposal, the extent to which it could be appreciated by lay assessors and to extent to which the justification for resources was clear and convincing.

The university could help improve academic merit by encouraging and administering quality and peer assessment of proposals. Much of this activity took place at departmental level, but was strongly encouraged, particularly in the case of large-scale applications and programmes. The use of individuals with a track record of successful applications from the same source was specifically mentioned, whilst on occasion external consultants were used, as were mock assessment panels. One university mentioned the use of dry run sessions in cases where presentations or interviews would be required.

Even within these areas, the time and resources of the Research Office meant that its capacity to

add value was often limited, and there was a need to target particular initiatives. During our discussion one institution described a policy of concentrating support on proposals which had received good ratings from an external funding body, but not received funding. In such cases investigators could be given additional resources to develop the proposal further, perhaps through additional preparatory work or the provision of matching funds, with the aim of securing external support in a future round.

Financial and Contractual Terms

It was clear that universities are seeking to balance the need for a rigorous approach to contract negotiation with a desire to accept interesting projects, and retain a degree of flexibility. Thus much of the discussion in this section centred around guidelines rather than fixed terms and conditions that should be adhered to at all times.

The clearest case of this came in the areas of finance and, in particular, indirect cost recovery. Approaches to this differed according to national funding systems. In several universities, however, the policy was to achieve full cost recovery where possible, whilst recognising that in many cases this would not be achievable. In the case of some national and international funders, the guidelines of the sponsor needed to be followed. In other cases, there would be alternative benefits. It was, however, important that any reasons for accepting work at less than full cost were made explicit and agreed. Sometimes, the university contribution could be regarded as a form of joint funding.

To those universities where indirect cost recovery was an issue, it was important to have a system for identifying such costs. One institution had adopted a rate equating to 110% of salary costs, using a formula that was common to all universities in its country, and which could be externally audited. This was incorporated in the electronic forms used by staff to prepare provisional costings for proposals. A related area, which received surprisingly little attention, was the extent to which the time of permanent existing staff was included in the direct costs charged to sponsors. One presenter, himself a senior academic, considered this issue of particular importance, recognising that academics typically did not value their own time and had neither the time nor inclination to engage in detailed calculations. Participants confirmed that their offices played a central role in moves towards the introduction of full cost funding, most notably through explaining the use of the TRAC methodology recently provided in the UK. The precise policy towards economic cost recovery predictably differed between countries.

There was relatively little mention of standard terms and conditions, although clearly negotiators had a sense of clauses that had proved acceptable in the past, and one spoke of established practices. A minority of institutions stated that they had no clear policy on the types of work that they were unwilling to accept. Where such policies did exist, the most common target was work for the tobacco industry, mentioned by four institutions. Another institution mentioned work for the weapons industry. Another said that the university was reluctant to accept routine testing work or other projects that did not genuinely utilise the academic resources of the institution. Another example given was the need to preserve rights to publish the results of work, although one institution was prepared to accept a delay of up to two years in certain circumstances.

Use of external expertise was relatively limited. The most common examples were specialist legal and patent agents. Relatively few institutions appeared to have qualified legal staff within the Research Office. The other main example was the use of qualified technical experts to assist with specific proposals, as discussed above. Some also had access to more general legal counsel within the university, although these might not have the specialisation in issues such as intellectual property.

Assessment and Benchmarking Success

Most institutions had some mechanism to evaluate the success of their activities against other institutions. Often, this involved the use of national statistics, or mechanisms of a peer group, such as the Group of Eight (Australia) or Russell Group (UK). Sometimes such exercises were linked to

internal reviews.

Two main reservations were expressed, however. The first was that success rates of applications should be treated with caution, particularly where staff or departments were building up capacity. The second, mentioned above, was that the procedures for seeking funds could vary considerably between subject areas. It was not, therefore, always appropriate to use success rates as an internal performance indicator.

One issue that was not widely mentioned in this category was the extent to which institutions were able to learn from the experience of unsuccessful applications. This is slightly surprising, given that an increasing number of funding agencies have given reasons for their decisions in recent years, for example, through extracts from assessors' reports. It may be that these could be useful both in the mentoring process for future applicants, and in assessing trends across the university as a whole.

Statements of Good Practice

Section 4 – Submission and Authorisation of Externally Funded Work

1. The Research Office actively brings key staff together in response to large scale tender and proposal requests where appropriate and where consistent with research strategy.
2. Institutions, through the Research Office, or other appropriate office, ensure that proposals are reviewed by experienced academic and research staff (externally, where appropriate), prior to submission.
3. Proposals are only submitted with clear support from head of department or other appropriate academic management authority.
4. The institution approves all proposals before submission and Research Offices maintain records on the progress of all proposals.
5. The information gained from previously submitted proposals is used to inform future proposals.
6. The institution has a clear, transparent and widely disseminated formula for determining the full economic cost of any given project, including indirect costs and staff time.
7. A full costing is calculated for each externally funded project, even if this is not reflected in the price charged.
8. All proposed research should be consistent with the institution's overall research strategy.
9. The institution provides clear guidance to staff and external sponsors as to which kind of projects and contractual terms are acceptable.
10. The institution has a clear authorisation process for accepting external projects which is widely communicated and rigidly enforced.
11. The institution has clear risk assessment procedures for proposed projects which recognise the need to involve several key offices within the institution.
12. The institution systematically reflects on its progress against its research strategy including regular comparisons with other institutions of similar nature.

Section 5: Project Management and Control

Questions asked in this section were as follows:

- (a) *How does the institution ensure that the financial and contractual terms under which projects take place are communicated to all internal stakeholders, and that the roles and responsibilities of specific individuals are defined?*
- (b) *What mechanisms does the university have in place to ensure that appropriate confidentiality is maintained?*
- (c) *How does the university identify and record any intellectual property contributing to, or emerging from, its research activity?*
- (d) *What systems are in place to monitor the progress of the research? What relationship exists between academic and administrative structures?*
- (e) *What mechanisms are in place to ensure that reporting and other obligations to sponsors are met?*
- (f) *How does the university ensure that project expenditure (and income, where appropriate) is in line with budget? How does the institution manage forecasting and commitments?*
- (g) *How does the institution monitor the satisfaction of the sponsor/client with the project on completion?*
- (h) *To what extent is this information used in evaluating the performance of individuals or departments within the institution, or in assessing the possibility of further funding from the sponsor?*
- (i) *What level of training in project management do Principal Investigators/Project Leaders receive, and is it compulsory? What level of local or central support for project management is provided?*

Responses and Discussion

Project management is defined here as those activities (other than the research itself) that help ensure that projects are concluded to the satisfaction of external sponsors, and without undue loss or risk to the academic institution. Delegates asked for particular attention to be paid to the area, suggesting that it might represent one of the weaker elements of current provision. As one put it, there was a danger of a black hole in institutional knowledge of projects existing at the very time when potential liability was at its highest. Equally, some respondents raised the question of how far project management could be undertaken centrally in practice. As one pointed out:

'There are about 3,600 full and associate professors, but only about 50 administrative staff working for research management at college and university level in total. About 10,000 research projects are going on every year. It is impossible for administrators to manage the projects directly.'

In these circumstances, there is a need for a balance between managing the processes in which central involvement was required, and ensuring that the academic and departmental staff to whom operational responsibility would fall were properly equipped for the purpose. This in turn needed to reflect a clear view of the range (and limitations) of institutional need. Some functions – the need to satisfy external audit, the need to feed information into the annual budget exercise and the need to ensure that any legal commitments were met – clearly came into this category. One institution had identified different levels of financial responsibility in order to try and get the balance right. Whilst this gave some freedom to investigators, however, this also brought responsibility. A system of fines was in place for cases of overspend.

Most institutions had procedures in place to ensure that risks were limited and key responsibilities were defined. Some answers followed on from discussion regarding pre-award administration and award acceptance procedures. These included the allocation of projects into various categories of risk, as well as procedures for the approval of new projects. The latter typically included not only

regulations regarding who can formally sign an agreement, but also which categories of individual must be consulted in advance of signature. Quite a range of categories were mentioned in this context, including property, ethics, human resource and finance offices, however the head of department and/or Dean of the faculty where the work was located was the most common inclusion. Several respondents suggested that those in these posts, together with the principal investigator concerned, also had a further responsibility to notify individuals involved with the project of their responsibilities.

In formal terms, these procedures appeared to ensure that key actors at departmental level had at least a basic knowledge of the award. However, there was also a need to consider what actually happens to this information in practice, what might reasonably be expected of both departmental heads and principal investigators and how their capability to perform their tasks in practice might be enhanced.

For example, institutions needed to consider both the form and the purpose of documentation used in the process. Responses suggest significant variation in this regard. One institution stated that copies of the contract were sent to key figures at department and faculty level. Another spoke of the key terms of the contract being sent whilst another commented that the contract terms were summarised, and key responsibilities highlighted. Yet another produced lay summaries on an occasional basis. It was clear that a balance existed between completeness (sending the full documentation) and user friendliness (identifying key issues and highlighting these in lay terms).

The relationship between the research support office and individual investigators was also an important topic for discussion. As mentioned above, several offices seemed to consider that their responsibility extended only to informing project leaders and departmental heads of key project terms. As we have already noted, some would argue that this is inevitable, given resource limitations. On the other hand, some institutions had produced generic guides to responsibility issues, which whilst not relating to specific projects, were available to all staff either in handbook form or via the internet. The usefulness and distribution of such documents, and the type of information and level of detail that should be included, might make a further topic for debate.

Institutions were also asked to comment on arrangements in two specific areas – confidentiality and the identification and recording of intellectual property. The former issue was handled on several levels. Some institutions pointed to the general contractual responsibilities of staff, or even to state legislation, as placing obligations on staff. Where additional measures were required, these were often intended to meet the needs of a specific sponsor or project. Some institutions provided support through a suite of non-disclosure and confidentiality agreements that were available to staff, and kept a register of such agreements. Others monitored individual contracts for confidentiality related issues, and brought these to the attention of departments. One provided general advice to staff to show caution with regard to meetings with external bodies that were not covered by confidentiality agreements, whilst accepting that such meetings were difficult to monitor. Generally, it appeared that most of the discussion was concerned with ensuring that the university met its obligations to third parties, rather than protecting its own intellectual property.

Whilst much of the discussion concerned the activities of academic staff, two institutions raised the issue of confidentiality within the Research Office itself. In one case, this involved staff signing individual confidentiality agreements, in another ensuring that the workspace used to communicate with staff was private. Several also raised specific issues concerning students, whose status might be influenced by the fact that they are not employees of the university. In some cases, individual students were required to sign agreements relating to any specific intellectual property to which they might have access. Two respondents mentioned the issue of student theses, with one institution requiring external examiners to sign confidentiality agreements and another having the facility for theses to be placed on restricted access in the university library.

Wider activity relating to intellectual property tended to be more reactive – relating to specific contracts – than pro-active. As one respondent put it ‘we can only deal with what we hear about’. Staff in several institutions were required to report their inventions via the central office, and some

had specific forms for this purpose. Most recognised, however, that disclosures were likely to be triggered by specific events, such as research projects or external involvement, and that academic staff did not always recognise or report developments of their own volition. Some were developing ways to counter this. One institution held a regular calendar of meetings with departments with a view to identifying emerging intellectual property, whilst another was planning to introduce such a system. Another respondent noted that their institution was developing a tracking system to monitor the progress of ideas and identify background intellectual property. One also suggested that enquiries regarding intellectual property could be a more formal part of the closure process for projects. Another pointed to their system of Research Office staff being based at faculty level, as discussed at the previous seminar, as being key to enabling emerging ideas to be identified quickly. At face value, however, there seemed to be little use of external experts in the system, even with regard to the evaluation of intellectual property reported to the office.

The apparent problems with regards to identifying intellectual property were mirrored in the wider issue of monitoring project progress. Whilst it was widely stated that responsibility must rest with the Principal Investigator, several ways were identified through which the central office could assist and monitor. Research management packages included the provision to diarise project milestones and reporting dates, and in some cases sent automatic alerts to staff. At one institution, staff at faculty level prepared a monthly 'to do' list for projects. At another, the categorisation of projects into different levels of risk at the outset allowed the central support service to pay particular attention to specific projects.

A similar situation existed with monitoring financial expenditure, where the roles of the central office could be characterised as *control*, *assisting* and *planning*. In the former case, one institution reported a system in which individual projects could not overspend without a manual override from the finance office. Most had systems for regular reporting, or making current balances available on-line, to investigators. Assistance was also provided in relation to the actual presentation of financial reports.

Several respondents recognised, however, that simply reporting past performance and submitting claims on schedule was not sufficient. It was also necessary to predict likely expenditure, both in the interests of project planning and in feeding likely research income for each year into the central university budget. Sometimes projects had natural peaks and troughs of expenditure which could be predicted at the outset, whilst in other cases amendments would be agreed by investigators without necessarily reporting these to the research or finance office. In these circumstances, several universities were concerned that they did not have a satisfactory system in place for identifying and scheduling future commitments, although at least two were in the process of developing these. The issue of relations between the research and finance offices was also raised by one institution.

Activity was less regular on the final three questions raised for discussion. One institution reported that there were several ways in which sponsors could provide feedback on performance, but most of these would have to be instigated by the sponsors themselves. A mechanism for client surveys was being considered in one institution. Other examples of feedback were sporadic. Some institutions had special arrangements for meeting some sponsors on a regular basis, but these were confined to large sponsors, or those involved in particularly complex projects. Another had introduced a system of committees, at faculty level, with sponsor representation. Others pointed out that substantial funders, particularly in the public sector, sometimes had their own grading and assessment systems. All of these examples related to a minority of projects, however. In the majority of cases the main indicators could only be defined as the willingness of the sponsor to make payment, and the extent of any 'repeat business'.

Most institutions reported no formal link between performance in project management and overall staff appraisal, although some pointed out that much of this activity took place at department and faculty level, and evaluators had discretion to include a wide range of issues in their decision making. One, however, reported that staff with a poor record of bringing projects to conclusion might be prevented from undertaking research activities for a defined period of time, whilst another

said that performance would be taken into account in the allocation of future internal resources. These appeared to be exceptions to the general trend.

Given the emphasis on activity at faculty level described above, a final issue worth raising is the amount of training available for academic staff to undertake research management functions. Although one institution had considered such activity unnecessary, most had introduced some provision in the area. Much of this, however, was targeted at new staff or postgraduates, suggesting that improvements will be long-term in nature. Provision for existing staff was typically voluntary, and almost all unaccredited, although there were signs that this might change. One university was looking at the possibility of an on-line course on project management, using a system already used in health and safety. Another managed a course of 10 seminars over an 18-month period. It may be that, given the generic nature of some of the issues involved, this could be an issue where international collaboration might be appropriate.

Statements of Good Practice

Section 5 – Project Management and Control

1. Systems (in the broadest sense) are regularly reviewed to ensure alignment with the institution's strategy, goals and reporting needs.
2. All project proposals contain explicit statements of how the project will be managed and, where possible and appropriate, provision for the appointment of specialist staff.
3. Mechanisms are in place to recognise the critical role of Principal Investigators, to ensure that they and other key actors are aware of their roles and responsibilities before commencement of the project and where required, that appropriate training is undertaken.
4. Key milestones (including reporting and financial review dates) are agreed with key actors at the outset and updated amongst all those actors throughout.
5. IT systems are designed, as far as is possible, to accommodate the business and culture of the institution.
6. Key actors, including Principal Investigators and Deans, are provided with regular and up to date project information (including financial, human resources, intellectual property, and commercialization information), through on-line access or regular statements.
7. Information provided to key actors, including Research Officers and Deans, pro-actively highlights any risks and obligations specific to both them and the institution.
8. Procedures are in place to ensure that all those with access to research are covered by appropriate confidentiality and rights assignment agreements (depending on jurisdiction), particularly those who are covered by a contract of employment with the institution.
9. Mechanisms are in place to ensure that intellectual property both brought to and emerging from research is identified, protected, tracked and signed off at all stages and that staff have access to specialist advice in this regard.
10. Procedures are in place for the appropriate monitoring of material transfer agreements.
11. Mechanisms are in place to identify possible delays and monitor expenditure to ensure it is in line with project budgets.
12. The institution has an explicit consistent framework within which academic units can predict future revenue and expenditure, especially where such income contributes to underpinning core activities.

13. Mechanisms are in place for the disclosure and management of conflicts of interest.
14. Mechanisms are in place to obtain feedback from project sponsors, which can be taken into account in future planning.
15. Formal closure and continuous monitoring processes are in place ensuring that all obligations have been and continue to be met and that opportunities arising from the project are identified.

Section 6: Commercial Exploitation of Research

Questions asked in this section were as follows:

- (a) *How far does the university have a coherent strategy on the ownership, management and exploitation of intellectual property? How does ownership differ between employees and students, and what issues does this cause? Does the policy cover intellectual property used in both research and teaching?*
- (b) *Does the university maintain a register of intellectual property rights in which it has a stake? How is this kept up to date?*
- (c) *How are decisions taken on the appropriate form of intellectual property exploitation, and protection?*
- (d) *Do clear procedures exist to facilitate decisions on investment in commercial ventures arising from its intellectual property?*
- (e) *How is revenue from the exploitation of intellectual property divided between staff, departments and the central university? Do the same policies apply to students?*
- (f) *Does the university have procedures to determine policy regarding publication of research results that might have commercial value?*
- (g) *Does the university have a budget and/or clear financial targets for intellectual property protection and exploitation?*
- (h) *Where does responsibility lie for the marketing and promotion of university-owned intellectual property?*
- (i) *In addition to Question e above, what further incentives are available for academic staff to become involved in the promotion/exploitation of intellectual property that they generate (e.g. remission from teaching, link to performance indicators)?*
- (j) *How does the institution balance research and knowledge transfer activities, given competing internal and external drivers? What spread of knowledge transfer activities are seen as being beneficial? How does it decide how much resource to devote for example, to outreach to small- and medium-sized enterprises as opposed to contract research, consultancy, continuing professional development and licensing activity?*

Responses and Discussion

Most respondents claimed to have clear written guidelines on the ownership, management and exploitation of intellectual property, although in some cases these had been subject to change in recent years, and one described the area as a 'difficult ongoing issue'. Guidelines were made available through a variety of mechanisms, but at the very least could be obtained through the university website. As another university pointed out, however, the guidelines could not be seen in isolation from other university documents. Examples quoted included the staff terms and conditions, code of ethics or other research conduct, and student regulations.

In most, but not all, cases the policy provided for ownership of intellectual property generated by employees to reside with the university. This general principle, however, was qualified in several ways. It was often restricted to developments which had arisen during working time, or as part of the normal duties of the individual concerned. In some cases, it was also limited by subject, with only material that was capable of being patented being excluded in one case, and 'scholarly activity' – for example publications – in another.

In the few cases where the assumption was that intellectual property would reside with the individual, there were also qualifications. Most notably, there was a provision for work to be assigned to the university where necessary to meet any obligations to third parties, as a result of external research contracts or confidentiality agreements, or where it was required for licensing purposes. In another case, where copyright was regarded as the province of the individual in normal circumstances, this was accompanied by a requirement to disclose the invention concerned to the university.

In one case, the regulations for faculty members differed from those for non-academic staff, with the inventor taking ownership in the latter category (with qualifications), and the university retaining it in the former. Another university made special provision for visiting and other non-salaried staff, who would not be regarded as formal employees, and thus not subject to normal employment contracts.

A variety of different approaches were also reported regarding the rights of students. A minority of institutions asserted intellectual property rights over student-generated intellectual property as a matter of course, but most recognized that a need existed to protect the university where student inventions had been developed alongside a member of staff, or as part of an externally funded research programme. Where this was the case, students would normally obtain rights to a share of any resulting revenue, on a similar basis to employees. Some institutions also stressed the positive benefits of students discussing intellectual property issues with university officials, even if they did retain ownership. One university spoke of the need to be pro-active in ensuring that students were aware of their rights. Another has a policy of encouraging students to seek external legal advice where appropriate.

Most institutions also maintained a register of their intellectual property assets, although in one case this was required to be held independently as a matter of state law. The coverage of such registers, however, varied markedly. In several cases, this was confined to intellectual property that had already been formally registered, or was subject to an agreement with an outside party.

Several institutions pointed out that incompleteness was likely to emerge, because the register was dependent on staff disclosing their inventions to the Research Office. One institution also raised the need for partner organisations, particularly in the commercial sector, to disclose the extent to which they had developed, or were utilising, intellectual property developed under research agreements with the university. In neither case were monitoring systems generally available, although one university described procedures for 'mining the faculty' on a regular basis, to seek out emerging intellectual property, and another stressed the benefits of having Research Office staff prominent at faculty level.

Whilst regular, informal contact with key researchers was generally thought to be a good way of identifying emerging intellectual property at an early stage, some formal mechanisms were also suggested. One such approach was the monitoring of live research projects, by asking staff at key milestones whether any intellectual property was emerging. It was also important that background intellectual property contributed by the university was identified at the start of projects, both as a means of preserving the rights of the university, and to assist with monitoring. On these issues, it was vital that the 'pre' and 'post' award areas of the institution (where these differed) remained in close contact. Generally speaking, however, there was recognition that formal registers were not likely to be able to capture all of the background intellectual property of the institution.

Most institutions had decision-making systems in place to determine whether the university should seek to exploit particular inventions and, if so through which route. Generally speaking, these could be divided into 'specialist' and 'committee' systems. In the former case, decision making was taken outside the university structure, often being vested in a wholly-owned commercial arm. Such structures aimed to bring in external expertise, and adopt an investment culture that was difficult within the university system. Committee structures, by contrast, were more tied to university structure and budgets, and relied to a large extent on internal advice.

In reality, the difference between these two broad categories might be less than at first imagined. Internal committee structures might still seek external advice, either on the commercial value of the project or legal issues such as patent protection. Likewise exploitation arms often involved some university staff. In both cases, respondents referred to the critical role of the inventor in helping identify the potential of the product, and in some cases (for example where a spin-off company was proposed) even free standing exploitation arms would have to consult the university authorities on the terms of the investment. Nonetheless, it was clear that the establishment of separate

exploitation units by institutions had been intended to signify a new culture in the area and attract staff with a businesslike approach.

Most institutions had clear policies for sharing revenue from exploitation with individual inventors, although the terms showed some variation. This can be summarized as follows:

Table 4. Intellectual Property revenue sharing (division in % terms)

Institution	University Or Equivalent	Department / Laboratory	Individual	Other
1	33	----- 67 -----		
2	30	25	45*	
3	33	33+	30	
4	33		33	33**
5	20-25		75-80	
6	25	25	50	
7	50	20	30	
8	33	33	33	
9		50	50	
10	33	33	33	
11	40	60		

* Of which up to two-thirds could be taken as a personal payment

** This portion is available for re-investment in the commercialisation process

The crude figures above can be qualified in several ways. In two cases (not cited above for reasons of clarity) different distributions applied depending on the level of return generated. Several institutions netted off the costs of the exploitation to the university before the model began to take effect. Full information on this is not available from the responses, but in some cases, at least, such costs appear to relate only to direct expenditure, such as patent costs. In at least one case the individual payment was divided between an amount that the inventor could take as a personal payment, and a portion which the inventor would control, but within the university system.

Although the raw data may benefit from further explanation, it is clear that academic inventors have the potential to receive a significant share of any revenue – certainly a much higher share than their counterparts in other sectors. Were the main concern of universities to ensure short-term payback from their investments in cash terms, it is likely that the divisions above would represent a significant disincentive to invest. This did not, however, appear to be the case from the discussion, perhaps suggesting that universities take a broader view of the benefits from such activity. Indeed, one university that did not routinely assert formal intellectual property ownership of staff inventions still provided a range of support for their development, including small funds for prototypes and other development.

When asked to describe their policy regarding publication, most institutions made it clear that their overriding concern was to support public disclosure. Most, however, also recognized the possibility of short-term conflict between exploitation activity and obligations to outside parties. A common compromise was the provision of a maximum delay on publication – typically six-to-twelve months – which could be utilised in specific circumstances. Examples include the need of external partners of the university to consider exploitation options, filing for patents or the wider public interest.

This system should be seen in conjunction with other activities and obligations. Often external contracts would include the right of external sponsors to see draft publications prior to submission, and be given reasonable time to consider whether a delay should be requested. Another institution highlighted the need for the investigator concerned to report the development in good time internally, whilst there was a need for the central Research Office to remind project investigators of their rights at particular times. One institution suggested that, even where

publication was curtailed, it was possible to pursue alternatives, such as the reporting of summarised abstracts of the research.

In the majority of cases, there was no fixed budget for legal protection costs. This could be a particular problem in the case of smaller institutions, where requests for protection could be spasmodic, yet urgent. In these cases, it was felt better to make decisions on a case by case basis as the need arose, rather than seek to predict likely costs. Few institutions had targets for licensing income, although one had, as part of its strategic plan, the aim of tripling commercialisation income over a 10-year period. Other institutions had more modest aims. One reported a general expectation that the costs of patenting activity would at least be covered by income. Although some offices were well connected to regional and government exploitation routes, only one explicitly mentioned accessing external funds to assist with patenting costs, although this was perhaps more prevalent in the case of spin-off companies.

Marketing of intellectual property was typically the responsibility of the university commercialization unit. Several institutions with such structures stressed that the units would contain specialist staff in this area, although it was often important that the initial inventor continued to play some role, for example in bringing out the full potential of the invention, considering possible markets and linking the potential to future research work. This leads us to the question of incentives for academic staff to spend time on commercialization activities.

In this area, it was clear that the main direct incentive was the revenue sharing arrangements described above. Although these held out the prospect of substantial income in very successful cases, however, this could be high risk and long-term in nature, whereas the problems faced by academics are much more immediate. Despite this, answers to the question concerning other incentives were generally vague in nature. Whilst remission from duties to pursue commercial exploitation was, in theory, possible at most institutions, in practice it was rare, having to be negotiated on an individual basis rather than through an established procedure. In at least one case, it was thought that any such remission would require funding to be obtained, whether internally or from an external source.

Likewise, it was in theory possible that commercialisation activity might be taken into account in performance evaluations or promotion exercises, but this was rarely prominent in the formal criteria. On a more positive note, it was quite likely that a record of success could help in the acquisition of further research grants, particularly in applied schemes and via business funding. One institution also pointed out that staff already had the capability to engage in consultancy work for one day per week, and that this time could be devoted to commercialisation work should the need arise.

Institutions were generally in agreement that the current balance of their priorities favoured the conduct of research, rather than its wider utilisation. Some thought that this was inevitable, although at least two stressed that the two aims should be seen as complementary. In this context, the survey suggested that some attempts had been made to raise the profile of exploitation work. One institution had instigated a new senior post of Vice President for Innovation and Economic Development with this in mind. Despite the increased professionalism now available, however, success still depended on the awareness and commitment of the academic investigator at various points in the process, and the provision of knowledge, training and incentives for this group was therefore critical.

Statements of Good Practice

Section 6 – Commercialisation and Exploitation of Research

1. The institution has a clear strategy in place for all forms of intellectual property management.
2. Clear mechanisms are in place for conflict resolution within commercialisation.
3. The intellectual property strategy takes account of different jurisdictions and regulatory frameworks involved in international collaboration.
4. There is a broad strategic approach in place toward the management of investment in intellectual property where the university has an interest. The appropriate level of funding is made available, or sources of funding are identified, for successful delivery of the strategy.
5. Clear regulations are in place to determine the ownership of intellectual property by and between staff, students and third parties. These regulations are effectively disseminated throughout the institution and externally.
6. Academic departments and research projects are systematically monitored to identify emerging intellectual property at an early stage.
7. The institution establishes a register of intellectual property assets and pro-actively manages and maintains it at all stages of development and exploitation.
8. The institution has, or has access to, specialist expertise in the identification, assessment, legal protection, marketing and exploitation of its intellectual property appropriate to the scale of activity.
9. Mechanisms are in place to monitor the use by external partners of intellectual property in which the university has an interest.
10. The rights and obligations of external sponsors on particular projects with regard to the commercialisation (ownership, licensing and protection) and publication of emerging intellectual property and know-how are fully defined, recorded and disseminated to individuals.
11. The institution has appropriate procedures in place for protecting and managing disclosure of intellectual property so as not to unduly delay publication.
12. Staff are given appropriate incentives to engage in knowledge transfer activities. Such work is fully taken account of in staff evaluation, assessment and promotion procedures.
13. Clear policy mechanisms are in place to govern the distribution of revenues from intellectual property between the university and other key stakeholders.

Section 7: Dissemination to Wider Society

Questions asked in this section were as follows:

- a) *How does the university announce new research projects, or areas of research specialisation, both internally and externally?*
- b) *How does the university identify research findings capable of wider dissemination and publicity?*
- c) *Does the university prioritise dissemination through particular publications? If so, how is this policy communicated and what incentives are given?*
- d) *Which other central departments (for example, public relations and continuing education) might have an interest in the dissemination of research results? How do these relate to the research management function?*
- e) *What support or training is given to staff seeking to gain wider exposure for their work?*
- f) *Is a central record kept of publication and dissemination activity? If so, how does this relate to any research expertise database?*
- g) *How is dissemination reflected in evaluation and reward systems for staff?*
- h) *How is dissemination activity measured and evaluated?*

Overview

Answers to this section suggested that, although wider dissemination is of considerable importance to wider policy debate, it was not seen as central to the specific role of the Research Office as such. Much of the activity that took place was focussed either on specific reporting targets, which usually related to academic publications rather than wider dissemination, or seeking new business in particular markets. Other offices within universities did have a wider brief, however, and good relations with these were seen as important.

In most universities, the number of new external projects was so great that individual announcements were impractical. Lists of new projects were included in bulletins, although these were often for internal consumption rather than for an external audience. Major projects would sometimes be the subject of a separate launch, particularly when several partners were involved or when they related to a strategic theme or area. The Research Office sometimes played a role in identifying such areas, and which individual projects should be promoted within them. Where projects were selected for press releases, however, this was primarily the responsibility of another office.

When institutions were asked which other offices were involved in the process, the most common answer was the marketing/communications/public relations or media office. Other examples included alumni offices, commercial spin-off companies and science parks. One university mentioned an 'Office of University Advancement' as taking a strategic role for the institution, but in general it was not clear whether the offices involved were part of the same reporting structure. One university mentioned collaboration with the fundraising department in selecting suitable projects for use as examples of the university's strength, but links of this type did not appear common. Likewise, only one institution mentioned the 'Continuing Education' department as playing a significant role in the area. This, perhaps, suggests an emphasis on written dissemination, rather than publicising results through talks and courses.

It was important that a channel of communication existed for two reasons. First, to ensure that the Research Office inform the public relations (or similar) office of new awards, and any likely implications of these. Secondly, to ensure that the public relations office (which would also be in direct communication with academic staff) check details such as the contract status of awards with the Research Office before proceeding to wider publicity. Whilst typically the respective officers would view the projects from different perspectives, one institution pointed to the Office of University Advancement, which would review the wider relevance of projects to the university as a

whole. At face value, this appears to suggest a somewhat more strategic approach.

Both the Research Office and other offices were keen to hear of research findings that might have wider publicity potential, and there was some evidence that this activity was increasing in importance. One institution recognised that the current system relied primarily on 'a process of self-identification, via a semi-formal communication loop' involving several academic figures and offices, but notes that the University Strategic Plan had set a target date of 2008 for a more formalised process to be set up. Another institution was pro-active in seeking research findings through requesting annual reports from departments and seeking to list these in user friendly web and hard copy publications which related them to the 'signature themes' of the institution. Another systematically asked departments to comment on the potential for wider dissemination as part of the project signing-off process. It was stressed that there were negative, as well as positive, reasons for needing this information, including the need to identify any potentially damaging publicity in advance.

Although publicity opportunities were related to wider aims and themes, there were few examples of clear criteria being set and publicised, or at least such criteria being known to the research support officers. One exception came from a university whose media department issued a set of questions to be considered by academics (and the Research Office) putting their work forward for wider publicity. These were as follows:

- (a) Does the story portray the university as a world leader in research?
- (b) Does the story demonstrate innovation?
- (c) Does the story show that we are a learning institution?
- (d) Does the story convey that we are an international institution?
- (e) Does the story show that we are a civilising institution?
- (f) Does the story convey a breakthrough?
- (g) Has it been done before?

Where a preference was expressed, institutions gave higher priority to dissemination through high quality academic journals than wider forms of dissemination. This became clear both from the question on whether any form of dissemination was prioritised, and whether dissemination activity was recorded.

The former question was interpreted in several ways, but most institutions considered that the question of where dissemination should take place should primarily be left to individual academics and their departments. One mentioned a preference to include results in its own publications as early as possible, in order to increase their impact. Another expressed a particular interest in dissemination that contributed to regional issues, and another encouraged participation in appropriate trade and professional journals. Another had sought to increase media publicity by giving 'exclusives', or privileged access to a newspaper in return for significant coverage. The most common priority, however, was publication in high level academic journals.

This was also clear when respondents were asked whether they recorded dissemination activity. Where such activity was undertaken, academic publications were more likely to be recorded for several reasons. In some countries, such recording was critical to the performance indicators set by government, and therefore necessary to maximise funding. Others suggested that such recording was linked to a central academic database (although in other cases the two systems were separate) or to the performance review mechanism for academics. Other forms of dissemination were less likely to be recorded, still less quantified, although public relations offices were likely to monitor media coverage, and in at least one case measured this by column inches.

The limited support and training offered by institutions for dissemination also reflected the emphasis on academic publication, although provision was more evenly spread than in other categories. Where direct financial support was given, this was still likely to concentrate on academic outputs. The two most common forms were publication grants and support to give presentations (which would in turn lead to publication) at key academic conferences. One also

provided publication subsidies in some cases, in order to make this attractive and secure copies for key recipients. In such cases, the academic concerned might be required to return the money through any royalties accrued.

There was increasing evidence of support for wider media activity, however. At least three institutions offered training in this area, and another one was about to do so. In one case, informal support was provided with the writing of press releases (where these were not issued centrally). One university had arranged for a reporter from a regional newspaper to be physically based on the campus, making them particularly accessible. There was less mention of assistance in presenting findings in other ways, although one institution suggested that staff in their science park had helped professors to present findings to a business audience. Other institutions had sought to increase media interest in their staff by producing user friendly expertise guides – perhaps based on key words that would be meaningful to the layman – and a list of speakers available to local organisations.

For some universities, the main motivation to measure, evaluate and reward dissemination activity came from the need to meet national funding requirements. This was particularly the case in countries where publications output had a direct impact on block funding allocations. This naturally led to an emphasis on high quality academic publications, and also fed into the promotion and reward criteria used to evaluate the performance of individual academics. Such activity would play an important role in determining promotion within most of the sample institutions. As one institution put it ‘the (government department concerned) recognises that their system is an imperfect measure of quality, but it informs the subsidy earned by universities’.

As one university pointed out, however, the criteria for government funding in its country was estimated to cover only 35% of the institution’s total dissemination output. Dissemination was rarely seen as part of the staff evaluation procedure, and was in any event difficult to quantify. There were, however, some interesting attempts to include it. One university, whilst recognising that criteria tended to favour academic publications, said that the tenure and promotion committee would consider a wider range of activity, including:

‘...publication in traditional venues ... trade and professional publications, and conference publications as well as non-traditional but increasingly important venues such as reports to community organisations and not for profit organisations, government commissioned reports and participation with the media and broader public (e.g. science programmes, presentations to chambers of commerce or business education council)’.

Interestingly, the same university used a self-reporting system to collect the relevant information for such evaluation. It would be interesting to consider the advantages and disadvantages of this approach in more detail. On the one hand, of course, self-reporting systems tend to suffer from inconsistent reporting, although this may be less so if linked to performance evaluation. On the other, it seems that those institutions that seek to quantify performance from the centre are typically confined to outputs that can be monitored easily, such as media coverage.

Throughout the responses, however, it was clear that the promotion and measurement of dissemination outputs was not seen as central to the work of the Research Office, except to the extent that it directly influenced the degree of government funding available. In view of this, research managers need to concentrate to some extent on relations with other offices within the institution, and examine the role which the research management function can best play in support of such activity.

Statements of Good Practice

Section 7 – Dissemination to Wider Society

1. The institution's research communication strategy is consistent with the institution's overall strategy and underpins the core missions of the institution, particularly in relation to the integration of research, education and service.
2. There is a clear understanding of the roles and responsibilities of the different offices/officers responsible for research communication and good channels of communication exist between all these actors.
3. The institution pro-actively identifies projects (at various stages) and outcomes that are aligned with the university's priorities and are particularly suitable for external dissemination.
4. The institution has a programme of events, such as launches, to profile major achievements or projects which relate to the strategic objectives and any priority research themes of the institution.
5. The institution has clear criteria for the type of work most likely to generate good publicity, and guidance on how to avoid poor publicity, and makes this information available to staff.
6. The institution has a clear strategy and procedures with regard to handling crisis communications and ensures these are disseminated to every level.
7. The institution seeks to make key research findings accessible to a wider audience, through the use of research summaries, expert guides and speakers lists, produced in suitable lay language and in publicly accessible formats so as to engage public understanding of the core mission of the institution (including inter-institutional partnerships).
8. The institution has established clear mechanisms to review and reward the performance of departments and research groups in the area of dissemination, which are integrated with an incentivisation policy providing a variety of incentives.
9. Mechanisms are in place for staff to report their dissemination activity. Such mechanisms maximise research kudos and academic excellence and are consistent with any reporting requirements to external organisations.
10. The institution provides assistance and systematic training programmes for staff in handling the media, and specific assistance in the drafting of press releases and publicity materials.
11. The institution facilitates the participation of researchers, particularly early career researchers, in international conferences and other fora to present their research findings and raise their profile.
12. Where possible, dissemination outputs of staff are captured in a centrally managed integrated digital repository, linked to any central research activity database, which is made available to all units of the institution.
13. The institution has a framework for managing the expectations and communication requirements of external sponsors in a systematic and co-ordinated way.
14. The institution has a clear branding policy which is consistent with the research communication strategy.

15. The institution's web portal reflects the institution's core mission and strategy and is strategically and systematically managed as a key tool for promoting research to the broader community.

Conclusion

At a generic level, our discussions confirmed the view that the policy trends identified at the outset are genuinely international ones, and that universities throughout the world are responding to them, to a greater or lesser extent, by developing new mechanisms for research management. It is clear that, even in those institutions whose processes are most advanced, these are still evolving. One of the refreshing elements of our discussions was the fact that, whilst many participants were able to contribute individual examples of good practice, all accepted that their overall provision was in need of further development.

It was intended that the major benefit of the project, both to participants and wider readership, would lie in the richness of individual examples reported above, and in the 87 statements of good practice that emerged from our discussions. Whilst no attempt was made to assess the performance of participants against these, several indicated that they would prove a useful tool in their in-house assessments

There were, however, a number of wider themes to emerge, from our discussions, including the following:

- The issue of *how internal research policy is driven*, and how this is reflected in committee systems. Institution 1, for example, described a novel Research Committee composition including a wide range of senior administrative, as well as academic, staff.
- The relationship between *internal research strategy and internal funding*. This appeared to be blurred in many institutions, however there were interesting examples of resources being concentrated on priority areas. In Institution 7, for example, a specific portion of internal funding was allocated for new appointments in priority areas, regardless of where the initial vacancy had arisen.
- The need to gain *academic buy-in* for institutional policies and procedures. Some institutions had developed novel ways of achieving this that went beyond the traditional methods of regulation and dissemination of information. Institution 4, for example, described a new Research Facilitation Scheme, through which central research support staff had their physical base in academic departments.
- The need to *target* institutional support on specific groups of staff or initiatives. At Institution 5, internal funds were targeted on supporting external applications that had not been funded but had been well rated to get to the next level. Institution 11 stressed how important it was to identify staff who had unfulfilled potential, but were capable of effective research.
- The need for co-ordination – one delegate used the term ‘knitting together’ of external promotional activity throughout the institution. Several good examples of effective liaison between, for example, the research and public relations offices, were highlighted but there was recognition that this was an area where much more could be achieved.
- The need to better track the progress (internally and externally) of research proposals, without imposing unduly restrictive or unenforceable regulations on academic staff. The meeting was particularly interested in the electronic systems developed for this purpose by Institution 13.
- The need to incorporate risk concerns more fully in the project approval process. Unlike most systems, where approval requirements are determined by the financial value of the project, Institution 13 has devised a system where these are determined by a wider range of risks.
- The need for *project management* systems which balance the need for Principal Investigators to direct research work without undue administration, and the need of the institution to ensure that external obligations are being met.
- The need for mechanisms to *monitor* feedback from external sponsors of research, and to ensure that academic recognition and promotion procedures reflect skills, such as project management and dissemination, that are critical to the new research environment.
- The need for *training* in research management issues which reach mid career and senior, as well as junior staff.

- The need for clear strategies for the commercialisation and dissemination of university research findings, including a clear view of the *financial objectives* of the institution in such issues.

In view of the common nature of these issues, the wider trends reported above and common recognition that systems were still in a state of evolution, several of the participants have expressed a desire to maintain contact in the future. There are a number of ways through which this could be achieved, from informal discussions with little external mediation to a detailed review, after a period of two-to-three years, of the extent to which the findings of the exercise have been implemented, and remain relevant in a changing environment.

References

Adams, Christine (2004) *Knowledge Transfer into UK Industry: International Comparison and Options for the Future*. Retrieved on 4 October 2005 from www.dti.gov.uk/ktn/chris_document.htm.

Association of Universities and Colleges of Canada (2002) *Trends in Higher Education*. Ottawa: AUCC.

Australian Vice Chancellors' Committee (2005) *Australian Vice Chancellors' Committee: Key Statistics on Higher Education*. Retrieved on 21 September 2005 from www.avcc.edu.au/documents/publications/stats/2005edition.pdf.

Australian Vice Chancellors' Committee (2005) *Media Release: University Research Income – Growing for the future*. 4 February 2005. Retrieved on 21 January 2006 from www.avcc.edu.au/content.asp?page=/news/media_releases/2005/avcc_media_03_05.htm.

CVCP (1988) *The costing of research and projects in universities: a report and guidance for universities*. London: CVCP (The Hanham Report).

Australian Department of Education, Science and Training (2004) *National survey of research commercialisation: years 2001 and 2002: selected measures of commercialisation activity in universities and publicly funded research agencies* Canberra: DEST.

Department of Finance Canada (2005) *The Economic and Fiscal Update: Background material to the presentation* Department of Finance Canada, Ottawa. Retrieved on 16 January 2006 from www.fin.gc.ca/ec2005/ec/ecce2005.pdf.

Department of Science and Technology, India (2005a) Home page. Retrieved on 4 October 2005 from <http://dst.gov.in>

Department of Science and Technology, India (2005b) *Drugs and Pharmaceutical Research* Retrieved on 4th October 2005 from <http://dst.gov.in/scientific-programme/td-drugs.htm>

Department of Trade and Industry, HM Treasury, Department for Education and Skills (2002) *Investing in Innovation: A strategy for science, engineering and technology* London: HM Treasury.

Garduño Eric (2004) *South African University Technology Transfer: A Comparative Analysis* Washington, DC: International Intellectual Property Institute.

HEFCE (2005) *Higher education-business and community interaction survey 2002-03* HEFCE. Retrieved on 4 October 2005 from www.hefce.ac.uk/pubs/hefce/2005/05_07/

Heher, A.D. (2006) Implications of International Technology Transfer Benchmarks for Developing Countries, *International Journal of Technology Management and Sustainable Development*, Vol. 4, No.3. 207-225

HESA (1996:2005 annually) *Resources of Higher Education Institutions*. Higher Education Statistics Agency Ltd. Cheltenham. UK.

House of Commons Science and Technology Committee (2005) *Strategic Science Provision in English Universities: Eighth Report of Session 2004-05, Volume 1*, HC 220-1. Retrieved on 4 October 2005 from www.publications.parliament.uk/pa/cm200405/cmselect/cmsctech/220/220i.pdf.

JCPSG (2005) *Transparent Approach to Costing (TRAC) Guidance*. Prepared for the Joint Costing and Pricing Steering Group (JCPSG) by JM Consulting Ltd. Retrieved on 21 September 2005 from www.jcpsg.ac.uk/guidance/index.htm.

Kodato S. (2003) *New Management Policy for IP and Technology Transfer*. Presented at 'Status of Japanese Technology Transfer': A workshop held at the Association of University Technology Managers (AUTM) Annual Meeting in February 2003.

Kirkland, J (1993) Financing Technology Transfer in UK Universities *Higher Education Quarterly*, Winter 1993,

Lambert. R (2003) *Lambert Review of Business-University Collaboration*. London: HM Treasury.

Ministry of Education (2004). *New Zealand's Tertiary Education Sector Profile & Trends 2003*. Wellington: Ministry of Education.

Ministry of Education (2004). *Tertiary Education Strategy 2002/07: Baseline Monitoring Report*. Wellington: Ministry of Education.

Newby, Howard (2003) *Response to Lambert Review from HEFCE (Sir Howard Newby)*. Retrieved on 25 October 2005 from www.lambertreview.org.uk/pdf/files/prof/phefcesirhowardnewby160403.pdf.

Office of Science and Technology (2004) *Letter from Daniel Storey, HM Treasury to Dr Chris Henshall, Office of Science and Technology* Retrieved on 19 January 2006 from www.ost.gov.uk/research/government_departments_and_university_research.doc.

Research Infosource Inc (2005) *Canada's Top Research Universities List 2004*. Retrieved on 21 September 2005 from www.researchinfosource.com/media/2005-top50-article.pdf

Sawa A., Terazawa T. and Inoue S (2004) *Universities that Win in Competition: Economic Policy Review Series*. Tokyo: Research Institute of Economy Trade and Industry. Retrieved on 16 December 2005 from www.rieti.go.jp/en/publications/archives/07.html

Tanaka S. (2003) *New System of IP Management and Technology Transfer of the Japanese University*. Presented at 'Status of Japanese Technology Transfer': A workshop held at the AUTM Annual Meeting in February 2003.

UNICO – The University Companies Association (2005) *Press Release: Survey of UK University Commercialisation shows a doubling of licensing activity in 2004*, 22 November 2005. Retrieved on 15 December 2005 from www.unico.org.uk/prelease.htm