

Research and Innovation Strategy, 2002-2007/8: The Strategy and its Implementation

1. The Research and Innovation Vision

Research and innovation at the Institute is intended to cover the whole continuum of academic enquiry from scholarly activity, which maintains academic staff at the forefront of general and specialised understanding in their fields, to the creation of new knowledge and understanding that leads to outcomes that receive peer review within the wider academic community. The Institute is also committed to innovation in all its academic activities and especially those relating to the use of new knowledge generated through the scholarship and research of its staff for the benefit of and successful exploitation by both the academic and research funding communities in the first instance and more generally, industry, commerce, the public sector and society. Not least and of great importance for the Institute, which is driven by the quality of its curriculum, is the need for research and innovation to underpin its pedagogy. In realising its Research and Innovation Vision, the Institute expects to increase its income and ability to develop as a higher educational business. With this in mind and from the viewpoint of the Institute's Strategic Plan, 1999/00-2005, which identifies the importance of research in terms of "the creation, application, dissemination and transfer of New Knowledge", we may identify the core element of the Institute's Research and Innovation Vision as:

"Excellence in the creation, application, dissemination and transfer of new knowledge to enhance the intellectual quality of its teaching and learning and the contribution to wealth-creation and well-being of society"

With this vision in mind, the Research and Innovation Mission is:

" To support and promote all research activities of its staff that lead to the enrichment of its academic work with a particular focus on those which translate into useful and profitable outcomes".

Key targets for the planning period are:

- ***To raise the proportion of scholarly activities that give rise to research outcomes to 50% in terms of resource input;***
- ***To raise the proportion of staff producing high quality Research and Enterprise outcomes from 25 to 40%***
- ***To raise total external research income from £1000k to £1800k***
- ***To increase the research student population from 100 to 150 students***
- ***To increase the percentage of staff with higher degrees from 40 to 50%***
- ***To increase the annual numbers of higher research degree awards from 14 to 25***

We accept that academic research will include that which extends intellectual depth, understanding and enquiry for the benefit of the individual and discipline alone, but the core activity will be to focus research that has more direct benefit to the Institute's customer community in general. In this latter respect, the enterprise of its staff and their ability to innovate will be crucial in achieving the mission. The support of pure research and that which is more focussed towards innovative outcomes are not mutually exclusive, but balanced and managed will afford a strategy that befits the vision above.

2. The Research Strategy: Themes and Teams and Research Beneficiaries

The reasons for undertaking research are several including engaging with peer academic communities via links and partnerships, creating new knowledge and understanding for identifiable beneficiaries, developing the academic stature of staff and the Institute, interfacing with and informing teaching and the curriculum and linking directly with innovation and enterprise and the generation of external income.

Research and Innovation must move to being a central plank of the Institute's strategic development and be considered to be essential features of its future as a higher educational institution, an effective academic community and a successful business. This strategy articulates the way forward for the next 5 years to enable this transformation to occur.

Within the Institute's Vision of "*Reaching Out*" and giving "*Service and Leadership*" and its valuing of "*Academic Quality and Service Excellence*" it is essential that its supporting strategy for "*New Knowledge and Research*" addresses the needs of identified **beneficiaries or client communities**. These latter include:

- The Institute itself in terms of the quality of its academic programmes, its students and its academic staff;
- External research funders of all types;
- The external academic discipline peer communities;
- Industry, commerce and the professions;
- The public and voluntary sectors; and
- Social and cultural groups and agencies.

This strategy recognises that all research undertaken by staff and research students at the Institute is for a purpose and may be recognised as such by identifiable peer and client communities.

To enable this to happen and for the strategy to be implemented, the following are key factors:

- Selectivity and support for excellence
- Developing the research and enterprise culture
- Developing staff and subject group research teams
- Sustaining research student populations
- Research and innovation resourcing
- Defining research and innovation performance indicators and targets
- Supporting strategies

The core element of this strategy **is to develop and maximise the capabilities of staff** via the formation of cognate research teams giving support and leadership, which although working within and across subject groups and faculties, form part of overarching research themes. A key driver for successful implementation will be the parallel success in realising objectives defined within the **Institute's Staffing Strategy**.

The following themes have been identified as a consequence of vision and goals of the Institute's Strategy, historical research strengths and the forward projection of these upon the planned curricular developments:

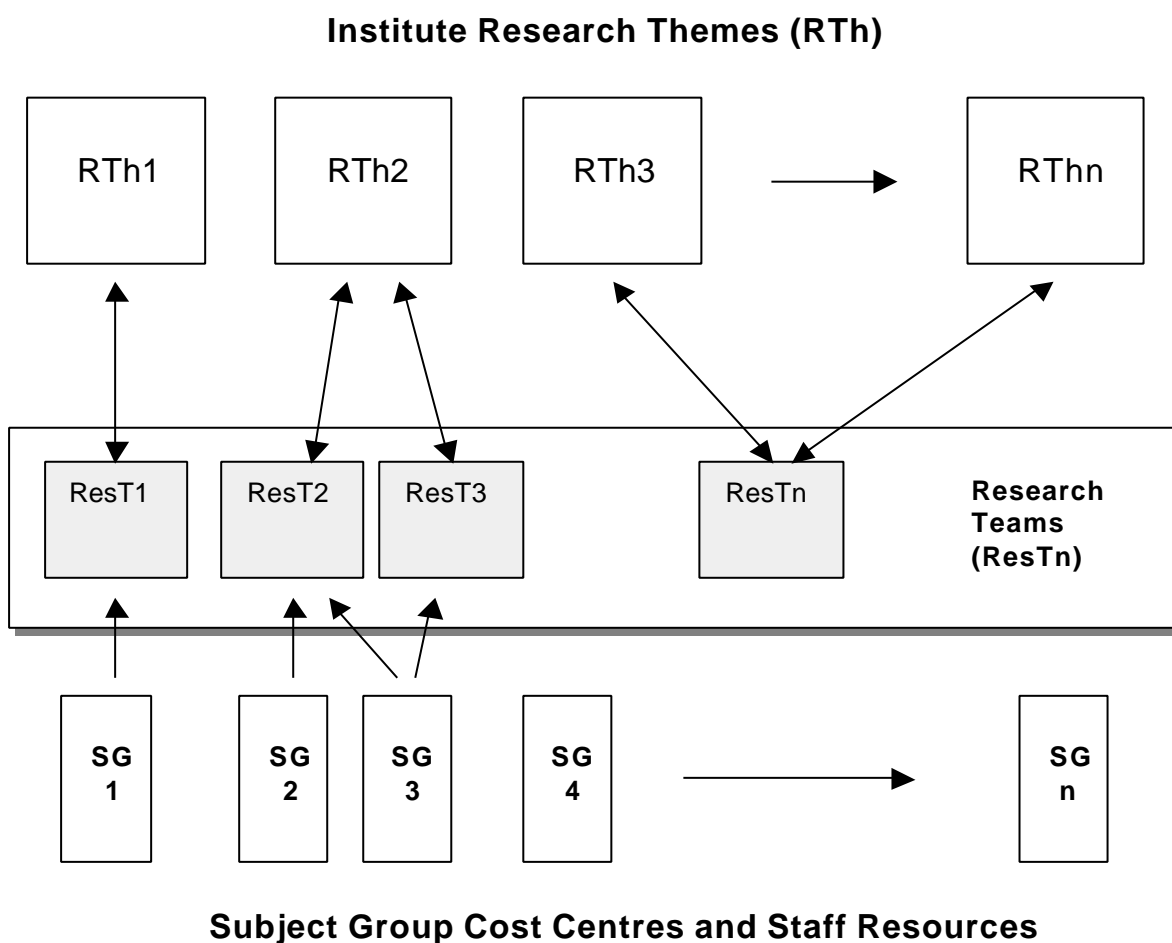
- ***Engineering Structures and Systems***
- ***The Built Environment***
- ***The Business Community***

- **The Information Society**
- **Civic Society, Culture and the Individual**
- **Creative Industries**

Themes will be linked via cognate research teams to the main Institute’s resource providers, the Subject Groups.

Thus the key drivers will be Institute recognition and resourcing for **key themes and prioritised activities** that are addressed by **research teams comprising subject group staff** and led by designated Research Team Leaders (RTLs). RTLs will be members of the Professoriat or Readers where appropriate. Thus all subject groups will have at least some members who belong to one or more research teams and Subject Group Leaders will accommodate their respective activities within a negotiated and agreed team resourcing environment. Effective implementation will follow from a **successful creative tension** developed between the resource-providing SG cost centres and the synergy and drive of embedded and overlapping research teams. The SGL-RTL partnership will be a key driver in delivering local plans.

The relative positioning and relationships of the Institute strategic thematic drivers with respect to the Subject Group cost centres and the related research teams are shown below:



Research teams will not, however, work in isolation of each other but be aware of:

- The need to nurture existing and encourage developing interdisciplinary relationships
- The potential for exploitations of activities and outcomes feeding back into pedagogic developments and plans.

3. Selectivity and Focus: Indicative Research Themes and Teams

The presently identified Research Themes and Teams are outlined in Table 1. These will be refined continually, not only during initial implementation of the Strategy, but also during its life. The table also indicates the present SG active research staff complement (from RAE 2001 submission) and an estimate of team sizes in 2008.

The estimated growth figures or otherwise proposed in Table 1 are based on whether the team is assessed as being self-sustaining, developing from an established base or has potential and is expected to grow rapidly. In the last case, teams are expected to grow a typical “critical mass” of about 5 FTE staff. These estimates would take the percentage of the active research and innovation community to about 40% of the present academic staff complement.

Table 1: Research Themes and Teams

Themes	Notional teams	Development stage	Subject Groups	SG Teams at 2000/01*, FTE	Team by 2007/08, FTE	Inter-multi-disc'y Res.
Engineering Structures & Materials	Materials	Established with growth potential	Research (TECH)	7	10	v
	Engineering structures		Product Design	4.5	6	
	Microelectronic systems		Auto Eng	2	4	
			Computing			
Built Environment	Built environment	Developing	Built environment	3	4	v
	Transport	Potential		?	2	
The Business Community	Small business	Developing	Management Business BLISS	2 3 1	10	v
The Information Society	Applied computing	Potential	Computing	1	5	v
Civic Society, Culture and the Individual	Community studies	Developing	Health, social & community studies Education	2	5	v
	Social policy		Health, social & community studies	See Community & Health		
	Sport & Crime		Sports and Leisure	1	2	
	Cognitive psychology	Established with growth potential	Psychology	16	18	
	Vocational education	Developing	Education	3	5	
	History	Established, self-sustaining	Health, social & community studies	3	3	
	Philosophy		Health, social & community studies	4	4	
Creative Industries	Creative studies	Established with growth potential	Creative studies	9	12	v
	Product design	Developing	Product design	See Materials above		
	Art & Design		Art & Design	6	8	
Totals (FTE)				67.7**	98***	

Notes: * These figures represent 2001/02 SG members only, including SGLs, who featured in the RAE selection process; not all were submitted. Deans, Associate Deans and non-SG members are not included.

** Since RAE, a number of researchers have left (~5FTE)

***About 8 FTE are not included (eg Deans, Ass. Deans and other non-SG members)

4. Research Planning and Review: Roles of Academic Board, The Research & Innovation Committee and The Executive Team

Research planning will include reviewing the previous year's plans and preparing future versions. It will take place at the various levels each year in parallel with the Institute's planning cycle and at Institute level will be monitored by the Research and Innovation Committee and submitted to both Academic Board and the Executive Team for approval in June of each year. These roles may be more firmly articulated below:

- **Academic Board** assumes the ultimate responsibility for the academic standing, quality and rigour of the Institute's research activities. In so doing it is directly supported by the **Research & Innovation Committee** and the **Board of Studies for Research Degrees**. It is also informed by the views of the **Professoriat**.
- **The Research & Innovation Committee** is responsible for overseeing the implementation of all aspects of the Research & Innovation Strategy and a principal task is to receive, criticise and refer back if necessary, Faculty Annual Research & Innovation Plans and Reviews.
- **The Board of Studies for Research Degrees** is responsible for all aspects of the registration, progress monitoring and award of research degrees according to the Institute's established higher degree regulations and quality assurance and enhancement procedures.
- **The Executive Team** is responsible for agreeing and allocating resources at Faculty and Institute levels respectively in order to achieve agreed research objectives and targets. The **Directors of Research and Enterprise** have responsibilities for monitoring designated resource allocation and reporting upon achievement of outcomes and targets.
- **The Professoriat** has an advisory role in informing both Academic Board and The Executive Team with regard to research policy, research strategy and its implementation including the suitability or otherwise of resource allocation.

4.1 Planning at Subject Group and Cost-centre Levels

This strategy links directly to the **Staffing Strategy** via individual staff Personal Development Plans (PDPs) negotiated and agreed at local level during the planning cycle.

During the annual planning cycle, each local and faculty plan will identify respective cost-centre investments in research in terms of staff input, related resource if appropriate and overhead costs. Cost centre managers will work with respect their Deans/Associate Deans and the Director of Research to ensure that planned inputs and anticipated outputs will achieve local, faculty and Institute targets.

Because research must be undertaken by academic staff all SGs and other selected cost centres, and resourced by local and/or faculty budgets, then **the Strategy enables all academic staff to negotiate time and resource** within their respective PDPs, either as part of scholarly activity or other academic duties. Academic staff who have attracted external income to undertake research will be able to use this as additional evidence during their PDP negotiations.

Within a given cost centre, the negotiated time and resource for all staff will match the expenditure in the SG/Faculty/Cost Centre research ledger(s). In this way, the full cost of any cost centre's research activity will be fully identifiable.

At Faculty and SG levels, research planning processes are summarised in Table 2 with key research staff roles defined in Section 5.2 below.

Table 2: Research Planning

Planning Level	Leader	Vehicle	Agreement	Calendar
Institute	Director of Research	Research Plan and Institute Annual Objectives	Academic Board, Research & Innovation Committee; Executive Team	30 th June
Faculty	Associate Dean (Enterprise)	Faculty Plan	Faculty Research Committee and Board	31 st May
Subject Group and Research Team	RTL (as a Professor, Reader or Research Co-ordinator)	SG Plan(s)	Faculty Research Committee and Faculty Executive	30 th April
Individual staff member	SGL	PDP	SGL & staff member	

4.2 Interdisciplinary research planning will follow the same cycle except that more than one subject group will be involved during the earlier stages of planning. For any interdisciplinary activity, resource costs will be apportioned between participating cost centres.

4.2 Planning research that feeds pedagogy will also be included within the normal local planning process. Staff active in this area may belong to an identified research team hosted by their respective SG if their activity relates primarily to the generation of new knowledge. It is possible, however, that their research develops the pedagogy of their respective discipline and so they may not belong to an SG-hosted research team. Either way, the related resource requirements will be negotiated during the PDP process and appear in local plans and budgets.

5. Implementation of the Strategy

5.1 Developing the Research and Enterprise Culture

The research and innovation culture and its development must be seen as a key feature of the Strategy that must be driven from all levels with its importance being clearly signalled by the Executive Team and Academic Board. The Institute's Staffing Strategy is a key instrument towards effective implementation. Given our present starting position, the investment already being made in research and the potential for proactive management of staff to develop and become a part of this culture, the following three key features will be addressed:

- **Research and Enterprise Management - Confidence and Success:** Research and enterprise success comes from enabling staff to build up confidence and experience success. These will be key features of staff development at SG levels and research team creation and development. Success will be celebrated through effective communication at SG, Faculty and Institute levels.
- **Professional Requirements of Staff - Appraisal and PDPs :** Creating the time and resource to undertake research and enterprise will be negotiated with staff during appraisal and written into PDPs each year.

- **Outcome driven:** All negotiated research and innovation activities will be linked to tangible time-constrained outcomes that will be assessed at SG and research team levels and monitored at individual (via appraisal and PDPs), Faculty and Institute levels.

5.2 Staff and Research Teams

Staff at various levels within Faculties and Subject Groups will play key roles in implementing the Strategy and these and their development will dovetail with aims, objectives and targets defined within the Institute's Staffing Strategy and plans. This strategy enables staff to negotiate directly with their relevant line manager what their respective research entitlement might be in terms of agreed resource allocation and outcome deliverables. Furthermore, the rewards and incentives for undertaking research will reflect those being articulated for successful achievement by staff of all the Institute's various academic and enterprise activities.

- **Role of the SG and SGL:** Each subject group will support or contribute to one or more research teams by allocating staff resource. The role of the SGL is crucial in that he/she will designate key experienced research staff in his/her SG and, if appropriate, nominate the Research Team Leader (RTL) who will normally be a Professor, Reader or other experienced member.
- **Roles of Key Research Staff: Professors, Readers, RTLs and Research Co-ordinators:** The *Professors'* and *Readers'* roles are defined generally at Institute and Faculty levels. A *Professor or Reader* may by negotiation with his or her Dean be a TRL and/or a Research Co-ordinator. His/her role as a *RTL* defines a specific leadership role to a defined research team. It would be unusual for an established research team to have a *Research Team Leader* who was not a *Professor, a Reader of a Research Co-ordinator*. The RTL is not seen as a single "stand-alone role. *Research Co-ordinators* are designated researchers having a Faculty-wide role in organising research activities across SGs. A Faculty may choose not to have a Research Co-ordinator (eg Technology), have one designated post (Business) or a number of such designated researchers (FASE).
- **Staff - SG - Institute Partnerships: RTL roles in Team Research Planning and Implementation:** The designated RTL has a major role in negotiating between individual staff and their respective SGL and the SG and Faculty and Institute in order to secure additional resource in line with the Institute's identified research themes and priorities. This will include negotiating research supervisory time allocations for supervisory teams of research students belonging to teams and falling within agreed research student population targets. Each research team through its RTL will draft the Annual Research Plan and monitor its implementation (see Table 1). The RTL will also assume a mentoring role for less experienced researchers.
- **Research Teams:** Each team will have an RTL who will lead the generation of the Research Annual Team Plan. This plan will:
 - i. Review the previous year's performance.
 - ii. Define the team's priorities for the coming year.
 - iii. Identify team and individual targets.
 - iv. Identify resources and the budget.
- **Inter- and multidisciplinary research:** Inter- multidisciplinary research will be encouraged across SGs and Faculties. Interdisciplinary areas will develop from the defined themes and the ability to create an appropriate research team from SG staff expertise and interest. Possible interdisciplinary areas of research include Transport & Logistics, Environmental Technology and Education Research.

- **Accountability for research:** Research teams and their research staff will be accountable for justifying resource allocation (eg time, higher degree fees, research student support, etc.,) in terms of delivery of agreed research (including relevant scholarly activity) and enterprise outcomes. These will be negotiated annually with the researcher's immediate SGL line manager and respective RTL. Outcomes will be assessed by the RTL with advice from the relevant research team and the results of this assessment returned to the SGL for appraisal purposes.
- **Incentives:** These will be based on peer-review and accolade, reduction of teaching load and/or other administrative functions based on successful achievement and/or securing of external funding sufficient to contribute to staff salary costs. All outcomes will be published in the relevant team's Annual Report and on the team's web-site.
- **Scholarly Activity:** Scholarly activity is negotiated annually to deliver research and innovation outcomes. It offers an ideal vehicle for research training for new researchers with definable outcomes appropriate to the researcher's level of experience. As with other research outcomes, they will be assessed for quality as above and discussed during the annual appraisal.
- **Targets and Milestones:** Each team will define its own targets and milestones over a five year timescale with immediate objectives, planned outcomes, staffing requirements and budgets detailed for the forthcoming academic year. Faculty targets will comprise those of its research teams including those that are interdisciplinary. Achievement or otherwise will be monitored by respective Faculty Research Committees and at Institute level by the Research and Innovation Committee.

5.3 Research Student Populations

- **Vitality:** An active, healthy and sustainable research student population is a significant measure of vitality both at research team and Institute levels. Experience has shown that except in one or two areas where teams have been successful at securing external income and support, developing and maintaining a viable and sustainable research student population requires a partnership between the team, the Faculty and the Institute.
- **Target populations:** This strategy will ensure that each team is able to work towards creating a sustainable research student population by means of internal, external and a balance of internal and external resources. The overall Institute target will be a research staff : research student FTE ratio of 1 as indicated in Table 5.
- **Staff supervision:** During the lifetime of this strategy, a rigorous programme of staff development will be undertaken to ensure that staff supervision skills are improved and the number of potential supervisors is increased. In order to enable the team and overall Institute research student targets to be achieved, RTLs will negotiate with SGLs staff time allocations equivalent to **at least 30 hours per year per supervisory team per student FTE for Band A and B students and no less than 30 hours per year per supervisory team per student FTE for Band C and D students.**

5.4 Research and Innovation Resourcing

The construction of research team annual budgets will comprise the following resources:

- Staff member scholarly activity inputs
- Staff teaching relief (as FTE)
- SG and Faculty income allocations
- Institute income allocations

- External income

Once agreed by Subject Groups and host Faculties, RTLs will present plans for review and request for Institute central support to the Directors of Enterprise and Research who will take advice from the Research and Innovation Committee. The request for Institute resources may include any special initiatives that the Institute identifies for a particular year which relate to its defined objectives for that year.

6. Research and Innovation Performance Indicators and Targets

6.1 Acceptable performance indicators will relate to the experience of each individual researcher and the maturity of each research team. Table 3 lists indicative PIs for individuals and teams.

Table 3: Individual and Team Annual Performance Indicators

Individual Researchers and Innovators		Research Teams
Inexperienced	Experienced	
Paper presentation to SG or team	Paper presentation to a national or international conference	At least one quality (peer-reviewed) outcome in the public domain per annum per member
Conference presentation at local/regional seminar	Research review or chapter	Achievement of external income targets
Unrefereed outcome in the public domain	Refereed paper or other outcome	Achievement of research studentship targets
Achievement of higher research degree	Award of significant funding from prestigious funder in the public or private sector	Achievement of higher degree award targets
Undertake minor consultancy	Securing funded research studentship(s)	RAE rating or other measure of external esteem
Curriculum innovation		

Research teams will record their achievements within their annual reviews and these will be collected and collated by the Director of Research and reported to Academic Board and the Executive Team in June of each year (see Table 2).

6.2 Demonstration of Research Excellence will take place not only via submissions to established processes such as the HEFCE Research Assessment Exercise, but also via internally-organised processes. A full internal assessment will occur halfway through the period of this strategy (ie 2004/05) with each research team having its research activities and outcomes scrutinised by appropriately convened panels with external representation. Visiting Professors will be expected to play a key role in this exercise.

6.3 Monitoring the achievement of Institute targets will be a part of the overall Institute planning and review process and reporting will take place during the May/June period of each academic year. This will occur at various levels and will be quantifiable at individual, research team and faculty levels. Processes and responsibilities are as follows in Table 4:

Table 4: Monitoring of Target Achievement

Level	Process	Responsibility
Individual	PDPs	SGL
Research Team	Team research plan	RTL

Faculty	Faculty Research Plan	Research Co-ordinator or Associate Dean where appropriate
Institute	Institute Research Plan	Directors of Research and Enterprise advised by the Research & Innovation Committee

Strategic targets for significant PIs at Institute level are given in Table 5 for the period, 2001-2006.

Table 5: Research and Innovation Targets for 2001-2006

PI	2002	2003	2004	2005	2006	2007/8
OST Income, £k	211	215	220	225	240	250
Other External Income, £k	600	800	1000	1200	1400	1550
Percentage of scholarly activity outcomes having research currency (expressed with respect to staff resource)	30	35	40	43	47	50
Percentage of research team staff with 1 quality outcome per annum, %	25	28	31	34	37	40
Staff with higher research degrees, %	40	42	44	46	48	50
Research student population	100	110	120	130	140	150
Teams achieving all targets, %	60	70	80	90	100	100
Research-related IPR exploitation events, eg patent, spin-out company, licensed know-how	2	4	6	7	7	9

7. Supporting Strategies

- **Converting scholarship into research and innovation outcomes**
- **Building research confidence and excellence**
- **Increasing the percentage of academic staff having higher degrees**
- **Increasing the research and Institute resource through innovation**
- **Sustaining research student populations**