

# MANAGING, COMMUNICATING AND FACILITATING RESEARCH IN A HYPERTEXT ORGANIZATION

Author: Simon Porter

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Version 4

Due to its devolved internal structure, the University has strong faculties where most of the resources and decisions are concentrated. Rather like its built environment, its structure as an organisation resembles the Arts Centre tower, more network than hierarchy.<sup>1</sup>

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For the University to 'speak with one voice' or to act in concert, the discipline required in a network configuration is for more of the players to be able to work across boundaries, tolerate differences of priority, and bridge competing discourses of value and purpose. Some organisational theorists refer to this as a 'hypertext' mode of organisation, where all the players must be able to jump between contexts and translate problems and initiatives from one work culture to another, in order to tap each other's expertise and resources readily.<sup>2</sup>

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In a highly networked community of contributors, what formal mechanisms and informal norms should the University adopt to help people to collaborate across these complex structures more effectively?<sup>3</sup>

## INTRODUCTION: A MANAGERIAL DILEMMA

In 2003, 21% of Level A academics left the University before their contracts finished<sup>4</sup>. This fact presented in the *Growing Esteem* discussion paper, was no doubt the product of a single report from the University's HR system.

Could we dig any further into this analysis? How did our research profile change during this flux of staff? How many areas of research followed those academics out the University gates? Are there any areas of research that have been stunted due to a perpetual turnover in staff? Is the University able to hold onto its staff in some areas of research better than others?

At present, the only way that we have to answer these questions is to investigate on a case-by-case basis, researcher by researcher, and manually reconstruct the picture. In comparison to a days work for a single knowledge worker in HR to report on staff turn over, providing a

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<sup>1</sup> Growing Esteem p25

<sup>2</sup> Growing Esteem p26

<sup>3</sup> Growing Esteem p31

<sup>4</sup> Growing Esteem p17

report on the impact of this staff turn over on our research profile would take an army of knowledge workers across the University several months of hard work.

In an environment where researchers are constantly being asked to report on their research, how is it that we know so little about what is actually going on? In a University environment where strategic decisions should be based on data driven analysis, where is the data that allows us to determine our strategic research direction?

This paper argues that this dilemma is not just about our ability to report on research, but is indicative of a broader problem in our university research community - that when it comes to making decisions about, communicating or facilitating our research, we do not operate in a mode that enables a 'hypertext organization.' Data about our research is compartmentalized across different University communities trapped in its use for specific purposes. The consequence of the compartmentalization of research data is that attempts to cross-internal organizational boundaries and tap into each other's expertise and knowledge are difficult and time consuming. Whether the boundary to be crossed is researcher to researcher in another department, researcher to department administrator, department to faculty, department to central administration, or central administration to researcher, each time these boundaries are crossed fundamental information about research must be recomunicated. What is required if we are to operate effectively as a hypertext organization is an enterprise record of research activity that transcends these boundaries, and facilitates communications about research activity across the University.

Section 1 of this paper looks at some of the problems this University faces precisely because we are unable to operate as a hypertext organization in the area of Research.

Section 2 describes what an enterprise record of research activity should be like, and articulates some of the concrete advantages of having such a record. These advantages include:

- The ability for the University to clearly and systematically articulate its research profile to the public, and to Industry
- The ability for the University, where appropriate to proactively define strategies about how research should be managed at the University
- The ability for Researchers to more effectively collaborate across highly networked research communities working with each other to achieve University goals
- A systematic methodology and system infrastructure to effectively respond to the demands of a Research Quality Framework

## SECTION 1: A SELECTION OF PROBLEMS

### Problem 1: Analysing our Research Profile:

In what areas of research should the University concentrate its efforts – and invest resources – to make a significant international contribution? What are the difficult trade offs that the University should contemplate? What kinds of trade-offs must it take care to avoid? Who should decide, and how should they decide?<sup>5</sup>

In a University that preserves its decentralized structure, questions about the University's overall strategic research direction require a response from a University that is operating as a hypertext organization. Each participating voice in the presumably continuous discourse about the University's strategic research direction must understand the research priorities, strengths and positions of every other voice. Such a discourse implies a transparency to the research that is being carried out in our departments and research centres. As the opening example suggests however, this transparency cannot be achieved by referring to data stored in our current enterprise systems.

A straightforward answer to why our research administrative systems are not strong providers of management data is that this was never their brief. For the most part, research administration systems in Australia have not been designed to manage research, but instead research processes. The central entities of Australian research systems today are not research projects, but ethics compliance entities, grants and contracts, IP, and Publications (for the explicit process of government reporting and funding)

ResearchMaster, Australia's dominant commercial research management system, also describes their product in terms of this process view:

The functionality of the system is encompassed in 5 Management Processes: Grants Management, Ethics Management, Postgraduate and Scholarship Management, Research Outcome Management [Publications Reporting], and Commercial Activity and Consultancy Management.<sup>6</sup>

This idea of a research processing system seems based on a style of researcher and administrator interaction that draws a clear line between the two groups. In this 'need to know' style of administration, it is considered appropriate for the researcher to be the sole source of information about their research. The underlying assumption is that the effort required to respecify research for each separate interaction with administration is viewed as

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<sup>5</sup> Growing esteem pg 27

<sup>6</sup> ResearchMaster Enterprise <http://www.researchmaster.com.au/rm4.asp>

preferable to academics declaring details of research projects that administration would not otherwise need to know about.

Although it is now generally accepted that University administration 'needs to know' a lot about the research, the consequence of a research process design is that our central systems have no record of what researchers are actually doing outside of any given process. Academics are required to respond to a series of one off requests for static snapshots of their research to satisfy external reporting, audit and compliance, and process demands. As a result of these snapshots, we can say with some accuracy what publications we have produced, and how much research money we have received against which grants for a given period. These snapshots however, are essentially external views of the University, useful for reporting to Government, and making comparisons with other Universities, but not particularly useful for describing who we are.

A closer look at the data that we record in these snapshots highlights the problems we face when we try to use this information to make decisions about our research direction. Our publications are the result of concluded, or at least highly progressed research. It may be years before research is visible in journals and our statistics, making publications data historical rather than actual for the purposes of describing our current research profile. Information on our current grants gives us some indication of our research profile, yet as Growing Esteem highlights<sup>7</sup>, this is simply a reflection of what the market allows us to be. Should we be concerned that internally sponsored research remains largely invisible? For the purposes of answering the question of what our research direction should be, this internally sponsored research is as important as externally funded research as it reveals what we aspire to become independently of what the market is currently willing to pay for.

## **Problem 2: Research Administration Overheads and Limitations**

The lack of an enterprise record of research identity also has flow on effects for research management and communication activities handled at the faculty and department level. As each faculty/department cannot draw on an already established record of research that staff are undertaking, each local system for managing research must ask academics to respecify research information. Increasingly, these systems are not optional extras for researchers. In a hyper accessible world, a world where community engagement is an expected activity for researchers<sup>8</sup>, a website that clearly allows areas of research to be identified is critical in facilitating new collaborations with Industry, attracting potential research students, and making research transparent to the public. Often however, in spite of the strategic importance of making university research accessible to industry, the public, and other researchers the

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<sup>7</sup> Growing Esteem p16

<sup>8</sup> Growing Esteem p25

effort involved in keeping records of research up to date means that these initiatives are only half done, or at best snap shots of the University that date very quickly. As an example, the Faculty of Science recently removed its listing of departmental research groups from its faculty website on the basis the information was too out of date and too hard to maintain.

The newest local "system" that faculties and departments will have to manage will be in response to Academic Board policy on the management of research data and records. Whether this system is a paper record, or a more fully developed database, each record will require a reasonably full description of the research that created it.

Other research systems that Departments and Faculties choose to run include systems that facilitate the collection of PDF information for assessment, and the production of CVs for academics.

The proliferation of subsystems that faculties and departments require to support research should be considered a significant overhead, both in terms of the work required to maintain these systems, and the fragmentation of research data that results

### **Problem 3: Lack of Administrative Method**

A further challenge with a research process focused design is also worth considering. With no enterprise record of research programs and projects, there are limited options for verifying the completeness of any given research administration task. How does a department check if the research information on its website is up to date? How will the University know what percentage of its research is keeping appropriate records in accordance with academic policy? The only way to find out is to survey all academics again, or to rely on the knowledge of highly networked individuals.

The irony is that in a managerial university, a collegial administrative system based on limited contact between academics and administration now results in an increasing amount of requests to researchers to communicate over the divide.

### **Problem 4: How to Facilitate Research Collaboration Across Internal University Boundaries**

In an era where cross discipline research is highly valued, how do different research communities find out about each other's research? One proposed solution to this problem is to create a University wide research expertise database. What will motivate researchers to keep their research expertise information up to date? How will researchers react to yet another request for research information?

## **SECTION 2**

### **An Enterprise Record of Research Activity & Identity**

This paper argues that a central flaw in current research administration practices is that they are not driven by a central enterprise record of research activity. Is the assumption in this criticism that research can be recorded correct? Is research perhaps too fluid, too ill defined, to be recorded in a system?

If an idealised research management system were thought of as a dragnet for research ideas as they happen, then research would certainly be too fluid and complex to manage. A more reasonable goal for a research management system would be to capture our descriptions of research to the extent that they can be specified. Using the descriptions of research found on our University websites as a guide, Research descriptions begin broadly at the faculty, department and research centre levels, becoming more specific with the descriptions of research associated with research groups and established researchers, right down to the specific research projects that PHD students are engaged in. An attempt to formalise the structure of the research descriptions associated with these various levels might look something like the following:

#### **Institutional Programs of Research**

Any departmental website should be able to articulate the research areas that that define what it does and why it exists. Over time the research staff may change, but broadly, the areas of research that define a department remain relatively constant. In the same way institutional programs of research define other institutional research communities such as research centres.

#### **Broad Programs of Research**

Academics also have research identities that define who they are over the course of their career. This identity consists of the set of broad themes that individual academics aim to address. These themes are either pursued individually, or as part of a more networked research structure around research labs/groups.

#### **Specific Programs of Research**

At any given time, there are specific research questions that an academic is involved in. These questions might be defined by a research grant, or simply a specific question that is current to debate within the broader research community. Again, as is the nature of research, specific programs of research might be pursued either collaboratively or individually.

## Research Projects

The three levels of research identity above are described as research programs rather than research projects because they share the characteristic that they need not be bound by specific deadlines. A final level of research description concerns research projects that are bound by dates, such as a PHD, a research consultancy, a project to write a Book, or targeted post doc position.

## Recording Descriptions of our Research Identity

By adopting a four-tiered structure for describing research as it relates to the research identities that conduct research, a methodology for recording research identity becomes clear. Institutional Programs of Research are determined by a combination of faculties, departments, and centres. Broad and Specific Programs of Research, and Research Projects are entered by academics as they occur. As part of these research descriptions form part of a departments identity as well as their own, perhaps these entries are reviewed for consistency (but not approval) by departmental administration. The distributed way that descriptions about research are collected and related to each other would itself be the act of a hypertext organization willing to seek out and understand the connections between different research communities.

## Facilitating a Collaborative Approach to Research Management

"the profile of non-academic work has risen as institutions grow more complex, technologies more pervasive, funding sources more diverse, planning and managing more demanding, and external reporting more onerous... ..perhaps our traditional image of a 'community of scholars' is giving way to a more complex image of diverse networks of communities of contributors' or 'knowledge professionals.'"<sup>9</sup>

A second criticism that this paper makes about the current system of research administration is that it places an information boundary between academic and non-academic staff. The result of this boundary is that researchers become the only source of information about research that can be consulted for any given research problem. This lack of institutional memory of research information results in a heavy communication burden on researchers that is difficult for non-research staff to reduce.

A central aim of a research management system designed around an enterprise record of research activity must be that researchers need only communicate information about their research once. It is then up to knowledge workers to ensure that this one, authoritative source of information is used to drive all other reports and process about research<sup>10</sup>.

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<sup>9</sup> Growing Esteem pg 7-8

<sup>10</sup> In line with principles of information management presented at Lindenderry 2005

## **Road Map to Functionality**

Based on this emphasis on communicating research identity, a road map for the functionality an enterprise research management system should deliver, would include the following goals:

- The ability for departments, faculties, and research centres to use research descriptions recorded in the enterprise research system to structure and provide content for their websites. Starting from Institutional Programs of Research, moving down through the Broad & Specific Programs of Research through to Research Projects, these websites would transparently describe the actual research that is being done by these communities
- Like departmental websites, a University research expertise database becomes a way to search for academics by the research activity that they are currently, or have been previously engaged in.<sup>11</sup> This database becomes the portal for researchers and industry to seek out new research collaborations.
- Research data and records information recorded in the central system, organised by the research project or program that they belong to
- PDF reports draw information from HR Students and Research Systems to create an academic profile for each academic
- Grants and Contracts, Ethics Applications, and Publications, if declared in the context of the research that they relate to, inherit data directly from the research record. This data could include research participants, descriptions, and classifications such as RFCD codes.

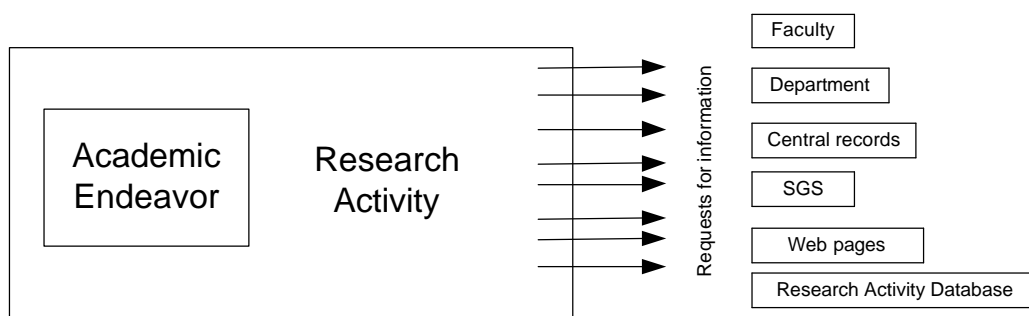
As the scope of these goals implies, shifting to a research activity focused research management system also broadens the scope of functionality that can and should be delivered centrally. Just as student centred functionality is delivered via a partnership between Student Systems and the Information Division, this new vision for research management requires joint ownership between the Melbourne Research and Innovation Office and the Information Division.

The difference between the way functionality could be delivered, and the approach we have today might be illustrated as follows:

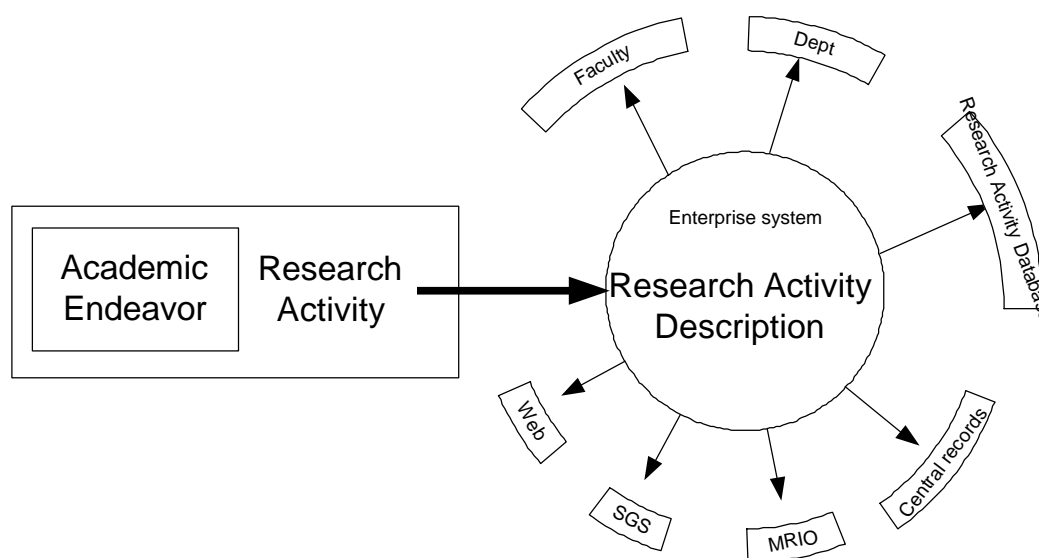
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<sup>11</sup> A research expertise database would also be supplemented by data from the HR system





Current research administration model with no centrally recorded description of Research Activity



Research administration model with a centrally recorded description of Research Activity

### Platform for Growth

This paper began with an example of the problems that the University faces when it needs to make whole of university decisions based on an understanding of information aggregated from the activities of local research communities. Equally, boundaries between central and local modes of operation need to be crossed in the other direction. How does an individual researcher or research group make the best use of centrally provided services?

Currently interfaces between central IT services and Researchers must be generic. If there were an enterprise record of the research that was being undertaken at the university, this wouldn't have to be the case. As an example, consider the provision of server storage space to faculties and departments. Were the University to have an enterprise record of research identity, it would be possible to add shape to this storage solution by providing separate workspaces for each research project and project with security defined by the staff associated with the projects and programs.

This example, though slightly contrived, highlights one possibility that arises when a central system knows about the research that is being undertaken. This sort of information makes it possible to target services directly at the lifecycle of research rather than just the generic activities of researchers.

### **New Business Rules Based Around A Common Language To Describe Research**

The third and final criticism of the current mode of research administration is that a lack of centrally recorded research activity results in an inability to verify the completeness of any given administrative task that applies to a set of research activities (such as all research in a department).

The ability to start from an informed position of the ongoing research in an organisational area such as a department, gives rise to a new administrative method that is research, rather than researcher based. For example, an independent record of research programs and projects makes it possible to assess the adherence to the University records keeping policy by reporting on the number of projects and programs that do not have any data, or records recorded against them.

Based on this administrative method, the University will be empowered to make decisions about how research is conducted and organised at the University, and see that these decisions take effect. For example, the University may decide that every broad program of research must have a nominated media contact, or that each Institutional program of research must list the teaching subjects that relate to it in order to facilitate informed student choices.

This ability to proactively manage research facilitated by a shared descriptive language must be considered as strategically important in an environment where quick responses to a changing environment are required.

### **Research Quality Framework**

Finally, questions of Research Identity are not only the concern of institutions. The Research Quality Framework to be implemented in 2008(?) aims to 'establish greater transparency of the quality of research arising from public investment for Government, taxpayers, researchers and other end-users, in addition to providing evidence of the merits of investment in research.'<sup>12</sup> This activity is seen as an extension to the University's own efforts in assessing its internal research performance:

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<sup>12</sup> Research Quality Framework Issues Paper March 2005 p1

Institutions carry out consistent internal reviews, for multiple purposes, and often identify performance weaknesses and strengths. An RQF can be viewed as an overarching national mechanism to achieve a similar goal. In this sense, an RQF might involve assessment of performance against an institution's self-review.<sup>13</sup>

Although the format of this assessment exercise has not yet been determined, the operation model for the RQF recommended by the Group of 8, is that the appropriate aggregate level of assessment for research performance should be at the Subject/Discipline level as defined by the existing 24 discipline-level RFCD codes. Significantly, the objects of assessment within these discipline areas are recommended to be the performance of Research Groups/Research Teams as well as the performance of individual researchers.<sup>14</sup>

## Research Quality Framework

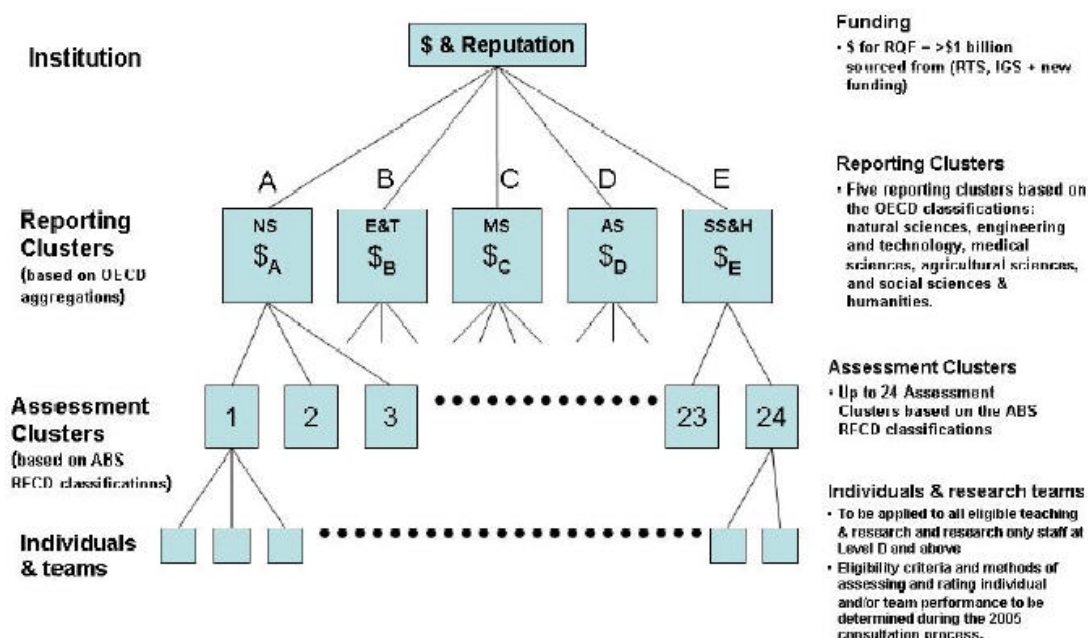


Diagram from Group of Eight Response to Issues Paper on a Research Quality Framework.

Having a central record of what our research groups are will greatly contribute to preparing the University to respond to the demands of a research quality assessment. If Institutional or Broad Programs of Research were to be classified according to RFCD codes, then the set of research groups that belong to each Assessment Cluster could be easily identified. As indicated in the section above, knowing what research is being undertaken is of significant advantage when conducting administrative exercises. Additionally the system record of these

<sup>13</sup> Research Quality Framework Issues Paper March 2005 p33

<sup>14</sup> Group of 8 response to Issues Paper on a Research Quality Framework p7

research groups allows the University to systematically collect RQF data as it relates to these groups.

As part of its strategic direction, the University might even choose to manage to RQF outcomes. If the University could identify ahead of time that a significant number of senior academics in a particular discipline area are due to retire before the next assessment process, it might choose to proactively target its recruitment strategies to maintain pre-eminence in this field. Data driven decisions such as these are significantly harder to determine without a central source of information to report from.

Having a central record of research activity is not a prerequisite for an RQF assessment process. The University could ask academics to nominate themselves into discipline groups that they wished to be assessed in. On this basis, an RQF assessment could be performed as 'Yet another request for information.' If the arguments presented in this paper are valid, then this approach would be of limited strategic value to the University.

## **CONCLUSION**

In a University that operates as a hypertext organization, additional work is required and expected to communicate across organizational boundaries. In the area of research, we make this work harder for ourselves by fragmenting our research data across university communities. Creating an enterprise record of research activity, and coordinating our research processes around this record, is a serious response to the question of how we can help administrators and academics alike collaborate across complex research structures more effectively.



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**Author/s:**

Porter, Mr Simon

**Title:**

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