

# Improved PhD Performance Through Improved Organizational Structure and Processes

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*Abstract: Australian government performance indicators for research funding are continually changing. The Australian University Quality Assessment is an exercise by the Australian Federal Government to examine quality of processes in Australian universities and other education providers. One of the performance indicators that can measure the improvement in processes is a survey that measures the satisfaction of PhD students with their experience as a student. This improved outcome, among others, is shown as a result of grouping researchers into areas of research strengths based on common attributes. Improved processes which bring economies of scale for administrative activities, including assessment, are also briefly discussed.*

**Keywords:** *strategic planning, research, AUQA, research administrative processes*

## 1 Introduction

Numerous research projects have sought to understand the various factors impacting on government funded research. The objective of this paper, however, is to describe a mechanism that positions researchers to respond optimally to external expectations including government assessment of process improvement. "...higher education need[s] to recognize the legitimacy of external expectations and respond to them through the use of the internal strengths of institutions [1]." The Australian Federal Government has long had an expectation of change resulting in improvement in the quality of university processes [2]. One recent example of this has been the Research Quality Framework (RQF) discussed in [3]. Another expectation is exemplified in the Australian University Quality Audit exercise for 1999 and subsequent years. This has been conducted by the Australian Universities Quality Agency (AUQA). "AUQA is an independent, not-for-profit national agency that will promote, audit, and report on quality assurance in Australian higher education." [4] The government rewards for quality processes have broad implications which can be deduced from outcomes of similar exercises both in Australia and in other countries. Impacts range from changes in journal standards to the demise of university departments [5, 6]. Responding effectively to the AUQA audit is complimentary to responding to the RQF. Both challenges necessitate appropriately functioning research teams [7] with a *No Frills* Research approach. The *No Frills* term is meant simply to imply significant satisfaction of clients' and researchers' expectations and at the same time producing both quality PhD completions and highly respected publications. This paper presents a reflection on the catalytic formation of *Research Areas of Strength* which will be referred to as AoS which are a type of research team. This approach was used by the Faculty of Information Technology at the University of Technology, Sydney (UTS) [8] in preparation for the AUQA assessment and the RQF. We look at the AUQA assessment preparation by examining the Postgraduate Research Experience Questionnaire. In particular we look at the relationship between the PREQ [17] questions and the process of

- a) forming AoS as a quality process in and of itself, and

b) how AoS can address quality as part of their operations.

In the next section we discuss the need for providing structure for the 110 researchers and 120 PhD students within the Faculty of Information Technology at UTS. We then discuss how this structure operates from an administrative perspective. Finally we discuss the improved outcomes as perceived by the PhD students.

## **2 Necessity for Areas of Strength**

An Area of Strength (AoS) [3] in the context discussed here is a community of interest of two to six senior researchers and a number with other researchers. The community of interest is based on aggregates of researchers with common methodologies, shared problem space, similar tools, and/ or pooled equipment.

In addition to associating individuals into AoS for addressing the RQF and AUQA assessments mentioned in the introduction, there was a need to better target industry support for collaborative research [9]. Aggregations of researchers in fewer AoS were thought to be easier to market than a larger number of smaller more specialized research groups or individuals.

The benefit of this appropriate size grouping is that the AoS responds more effectively to administrative matters. Sharing common aspects of ethics applications gives significant savings with opportunities for economies of scale. Even if Areas used a diverse set of methodologies such as described in [10], they understand that within research groups, the experiments may often have similar proposals for ethics requirements, allowing for a streamlined efficient ethics development process

The Faculty needed to present itself as a small number of stable functioning Areas of Strength while at the same time responding with organizational or team structures which could address specific problems. These AoS clusters can form smaller clusters which are more responsive and can address identified gaps in capability. Emerging groups outside AoS can be more easily identified and are referred to as labs. For example, the teams in Networking, Computer Vision and Visualization and Distributed Systems have been teamed with researchers in the Department of Nursing, Midwifery and Health to tackle research problems in the Health Sciences domain. Thus AoS allow for easier identification and implementation of cross faculty/institution research.

### **2.1 Strategic Planning**

Strategic planning at the university level is now an accepted process [1]. The need for universities in Australia to change strategically overall and, of particular interest in this paper, in the research area is being driven by the government's final round of the AUQA exercise[11]. Traditionally, the university mission statement and strategic plan reflected this through Key Performance Indicators (KPIs). Improvements in processes are reflected in measured improvements in their associated KPIs. The identification of AoS is a strategic change at the faculty level to meet specific university level KPIs which are indicative of federal government measures. Traditional or conventional planning (operations-driven planning) is part of regular or normal planning but strategic planning (opportunity-seeking planning) reflects reorientation of the research elements of the faculty within its environment[1]. New clusters could have been threatening but given that no resources were initially at risk everyone bought into the identification of the AoS process.

Eventually, the opportunities resulting from strategic moves made people willing to **risk** resources such as allocation of scholarships for new PhD students. These AoS have to behave like growing businesses as they “continue to develop their uniqueness while maintaining or expanding their [research] market niche [1].”

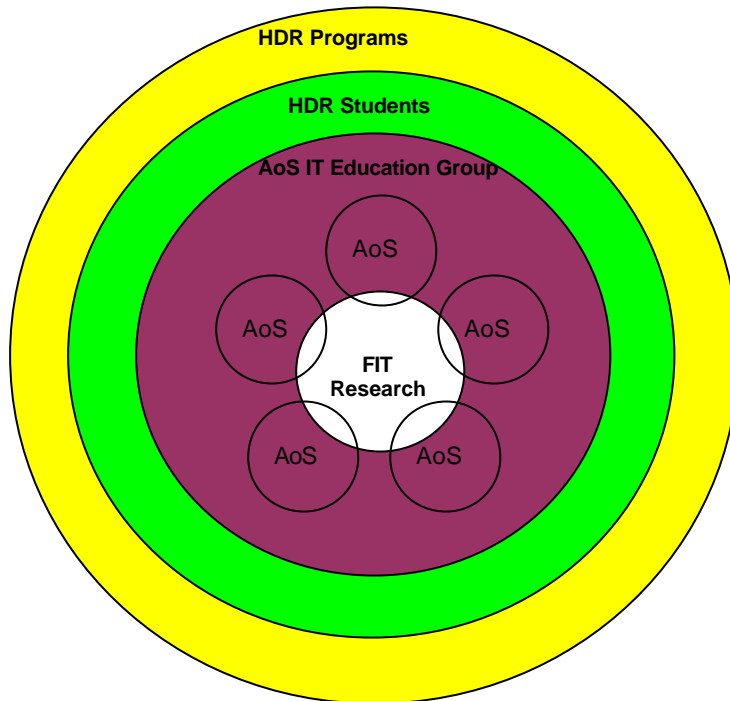
“Having choices and being innovative allow the successful [AoS] ‘business’ to move from product line to product line, service to service, or even domain to domain as changes in critical environments change [1].” This means that several of the AoS such as Networking and mobility, Distributed Systems and Human-Computer Systems can focus on a new cross AoS area specialized in *Health Care Delivery Systems*. Mission statements for Universities are difficult to make distinctive because of the “high locus of control” [limited autonomy] taken from internal managers by the funding bodies. However, traditionally the research area, unlike the teaching area, has been controlled at the faculty level. This is changing as centralized funding for strategic purposes makes administrators more aware of their possibility of control[1].

## **2.2 Formation Process**

The Faculty of Information Technology at UTS decided to use a participative model[1] to identify the Areas of Strength. This interaction was determined by the researchers’ historic interaction. Thus, each AoS is a group of individuals (academics, Post Docs, Research Fellows, external collaborators and PhD students) who identify with a research area. This may be through their own research, via established networks for activities such as grant collaboration or in the supervisor-PhD student relationship. “There is, unfortunately, no major literature base backing this approach . . .” [1].

## **2.3 Change management**

The Faculty Research Management Committee (RMC) coordinates at the strategic and the Graduate Students Committee (GSC) functions at the operational level. Both committees worked in tandem although strategic planning followed by change management is the formal way of imposing structure. Figure 1 illustrates an outcome to the change management process.



**Figure 1. A snapshot which captures the interaction of Higher Degree Research students.**

### **3 Mapping and Formalizing the AoS Groupings**

[3] presents a detailed description of the approval processes required to establish the AoS outlined above. This involved separate approval by the Dean, the External Advisory Committee, Faculty Board and the Faculty Research Management Committee. Some of these changes were to regulations but more difficult were changes to the underlying cultures. Researchers in the new structures functioned with more vigor. A key concept developed in the model from [12, 13] was modified according to [1] to provide an administrative template in each AoS. Subsequently, they were able to evolve their own detailed infrastructure to address administrative and reporting needs. Economies of scale, increased awareness of the broader research in the faculty and hence a better environment for interaction resulted. Administrative staff workload was reduced by increased efficiency and by delegation.

#### **3.1 Exploring How the AoS Function**

The AoS function as other research groups might function but because their origins are from the researchers themselves there is a sense of being part of the cluster. The new structure provides a platform for the PhD student to become a researcher by participating in an AoS instead of a 'silo' environment with their supervisor. This allows the AoS to evolve and administer themselves as research and potentially commercial entities. Many other benefits, such as increased PhD student publications, are detailed in[3].

#### **3.2 Student Attitudes**

There are less tangible issues than publications. For instance, the University Graduate School at UTS concluded that students do not feel part of the research culture/community and that

research is under resourced[14]. Mullins and Frost[15] found similar problems in the broader Australian wide environment in that students state they miss out on the research environment.

Within the AoS students are able to associate with established researchers who are not their supervisors. This implements the identified need of belonging to a group and gives additional mentoring opportunities outside that of the immediate supervisor.

Teaching and interacting with students and colleagues is somehow understood as an obligation within the university while research is not. The authors believed that both the academic as researcher and the PhD student behaves and functions as if in a voluntary organization. This is evident when considering the researchers' aspirations and attitudes in the light of organizations described in [16]. Researchers in universities see themselves as associating in groups of volunteers and thus they require the organization structures and systems described by Handy to support their administrative requirements of the AoS. AoS responds to the students' needs as displayed in the Postgraduate Research Experience Questionnaire[17]

Typical statements requiring an indication of level of agreement in the PREQ survey include:

- *Supervision was available when I needed it*
- *I learned to develop my ideas and present them in my written work*
- *I was able to organize good access to necessary equipment*
- *I was satisfied with the thesis examination process, and*
- *Overall, I was satisfied with the quality of my higher degree research experience.*

This survey was given after students graduate, but we plan to survey students ourselves and ask similar questions after one year, two years and at time of submission of thesis. In the mean time we rely on some previous PREQ data for the Faculty of Information Technology and a survey of students from the Research Student Retreat.

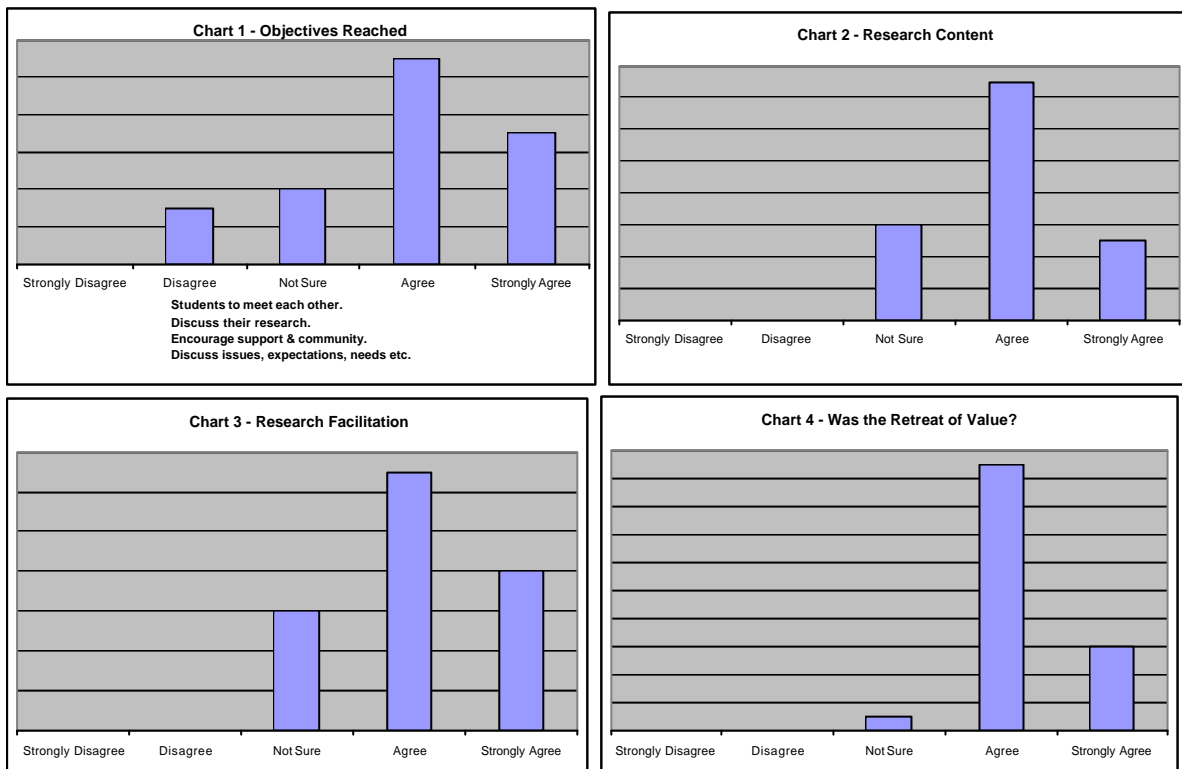
One objective of the Retreat was to encourage a sense of support and community. This retreat was a way for the faculty to address these issues and discuss with the cohort ways to deal with these matters. There were 109 students invited and 26 filled out the Workshop Evaluation at the end of the day. It is argued that responses were indicative of general broader experience found in the PREQ.

The data displays the students' desire for immersion in a research culture and community. Chart 2 displays the student responses to tailor made activities and presentations, such as Thesis Writing and What Examiners Think. The authors believed it to be a typical and general response of which can be continually refined and targeted through similar workshops and seminars.

Chart 3 demonstrates the cohorts response to the way the Retreat was facilitated, that is, it's relevance presentation of information, knowledge exchange and pace. One response by the authors regarding this data was a proposal for students to form an Organisation committee and facilitate the day themselves, using the Faculty's research administration as advisors and resource. The result would be a workshop for the students, developed by the students and facilitated by the students. This would increase involvement within the research community of the Faculty (AoS), especially for those involved in the facilitation.

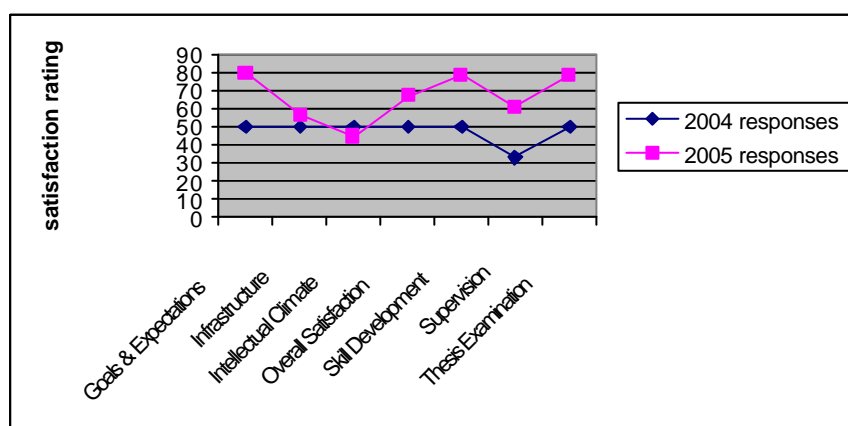
Chart 1 and 4 are reflective of the research culture/community issue, it is evident that the students enjoy a dedicated workshop and a platform for them to be heard. The Faculty provided a candid questions and answers for students with a panel of researchers. Students handed in questions in the morning which were addressed in the afternoon. They were told that what was discussed was not minuted and would be left within the confines of the

workshop. The discussion was at times heated, but however proved to be quite successful. It is important for students to have trust in those who manage and monitor their candidature and are part of research within the University environment. This question and answer session was a way of furthering that trust.



These results were more specifically confirmed by The Post Graduate Research Student Experience Questionnaire [17] which surveys the experience of recently completed research students in the Faculty .

**Chart 5. Improvements in PhD Student Experience in Faculty of IT at UTS.**



The question about an intellectual climate is only response which did not show improvement. Future research may discover ways to improve this response.

#### 4 Conclusion

The organizational structure described in this paper is not unique. However, the flexibility of AoS groups functioning together but remaining part of the formalized organization strategy

meant that formulating communities of interest, teams, and change management could be developed in the most appropriate manner. The results show the improvement in most of the areas of interest to the Postgraduate Research Experience Questionnaire.

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