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Agile Project Management for e-Learning Developments

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Abstract

We outline the project management tactics that we developed in praxis in order to manage elearning projects and show how our tactics were enhanced through implementing project management techniques from a formal project management methodology. Two key factors have contributed to our project management success. The first is maintaining a clear educational focus in our elearning projects whilst defining project success in terms of facilitating and/or enhancing student learning. The second is ensuring that our processes mesh with the collegial nature of a university culture. Our paper concludes by discussing the need to engage with institutional strategic and organizational concerns in order to increase institutional capacity for elearning.

Résumé

Nous dressons le portrait des stratégies de gestion de projet que nous avons développé in praxis afin de gérer les projets d'apprentissage en ligne et vous montrons comment nos stratégies ont été améliorées par l'implantation de techniques de gestion de projet provenant d'une méthodologie formelle de gestion de projet. Deux facteurs ont contribué à la réussite de notre gestion de projet. Le premier est le maintien d'un focus éducationnel clair dans nos projets d'apprentissage en ligne tout en définissant la réussite du projet en termes de facilitation et/ou amélioration de l'apprentissage de l'étudiant. Le second est de s'assurer que nos processus sont compatibles avec la nature collégiale de la culture universitaire. Notre article conclut en discutant du besoin de s'engager dans les préoccupations stratégiques et organisationnelles institutionnelles afin d'accroître la capacité institutionnelle d'apprentissage en ligne.

Introduction

The purpose of this article is to provide an account of elearning project management processes that were developed in praxis and then enhanced through employing a formal project management methodology. We suggest that whilst successful project management processes can be developed in praxis, formal project management processes provide for a more sophisticated approach to managing projects, particularly in terms

of quality assurance, project closeout processes and elearning maintenance strategies.

Project management processes need to be implemented with an understanding of the unique challenges of working in an academic culture. This entails an awareness of the collegial nature of university environments in order to avoid potential conflict with academics who do not have a managerial view of the world. Project managing elearning developments also involves being aware of the concerns of all stakeholders. This broad awareness ensures that projects receive a level of School and Faculty support and helps to realise School and Faculty strategic aims. If projects are run in this way then the foundations are laid for wider Faculty engagement with technologies for teaching and learning.

Learning Technology Unit

The Learning Technology Unit (LTU):

http://www.fmhs.auckland.ac.nz/faculty/ltu/

at the Faculty of Medical and Health Sciences, University of Auckland was established in 2004 as a direct result of a report by an external elearning specialist on an existing Flexible Learning Unit within the Faculty. Whilst the report recognised areas of strength in the Flexible Learning Unit, the report was critical concerning the lack of management and lack of project management processes. Therefore, establishing the LTU included appointing a Director with responsibility for management of the Learning Technology Unit. The Director immediately focussed on putting in place appropriate project management processes as the basis for establishing and running a successful unit. The project management processes that we describe should be understood in this context and the conclusion to our paper will make clear the key role that our project management processes have had in developing the reputation of our unit within the Faculty.

The purpose of the LTU is to support the Faculty of Medical and Health Sciences in its flexible and distance teaching needs. The LTU has 3.4 staff comprising of:

- a full time Director (academic);
- a full time Senior Tutor (academic);
- a part time Senior Tutor (academic); and
- a full time Learning Technologist (non-academic).

One of the senior tutor appointments was made relatively recently—2008—and the LTU Director deliberately created this position in order to

increase the number of academic positions within the unit. The logic behind this decision was that our university is research intensive and grounding teaching innovations in academic research was a strategic move to mesh our activities with the university research culture (Asmar, 2002). Thus, whilst elearning developments occur in a management environment, the majority of LTU staff are academics who are actively engaged in research. As we will see below, this helps to bridge the gap between a management culture and the academic culture and so helps to mitigate potential conflicts in the development of elearning solutions (Bullen, 2006).

Supply and Demand

In project management parlance (Office of Government Commerce, 2006, p. 10) the LTU can be understood as having the status of a supplier since our Unit provides specialist resources and skills to create elearning "products" for academic staff. The LTU also employs sub-contractors to carry out elearning development work—filming, video editing and Macromedia Flash programming—when the creation of the elearning product requires skills that we do not possess. The Director of the LTU acts as the project manager with the key responsibility of "overseeing" all project work within the unit. In this role the LTU Director is ultimately responsible for the successful delivery of the final product. However, the LTU takes a devolved approach to the day-to-day management of elearning projects with each LTU staff member being responsible for running their particular projects.

The LTU customers—academics who require assistance with their flexible and distance teaching needs—come from the Faculty. As customers, the academics commission the elearning products that the LTU produces. Academics are the subject matter experts and they play a central role in the creation and verification of the products (Office of Government Commerce, 2006, p. 10). Ultimately, however, it is the students who will make use of the products that we create. We, therefore, judge the success or otherwise of an elearning project in terms of whether or not the product facilitates and/or enhances student learning. This means that we focus on pedagogy in our elearning projects whilst recognising that different stakeholders—academics, Heads of Schools, Heads of Departments—will have different perspectives on the design process and differing criteria for the success of the project.

The Importance of Pedagogy

Our understanding of the term elearning is derived from the activities that the LTU undertakes. Elearning is, "a broad term that encompasses a

variety of educational contexts in which technology is used to enhance or facilitate learning" (Bullen, 2006, p. 169). Elearning covers a wide spectrum of teaching activities ranging from using technologies to enhance face-to-face learning through to distance teaching in which particular technologies are used as the delivery medium for content and as the medium for interaction between staff and students and between students and students.

The literature has identified many causes for elearning project failure (Alexander, 2001; Dokeos E-learning Architects, 2008; Ismail, 2002; Romiszowski, 2004; Russell, 2006) and the LTU has experienced project difficulties in each of these areas. For example, the academic acting as subject matter expert may unexpectedly leave the institution and if a suitable replacement cannot be found the project will be decommissioned. Copyright issues concerning resources—images, sound files, video clips, and animations—can become problematic as a project progresses and if these copyright issues cannot be satisfactorily resolved the project may be brought to an end. Failure to understand the characteristics of the potential audience can cause a project to fail. For example, whilst the elearning product may meet the agreed acceptance criteria and be completed on time and to budget, technologies can act as a barrier to learning if the students do not have the requisite information and communication technology skills to use the product. When this happens a project has failed. Poor infrastructure—for example, a Learning Management System that is unreliable, slow and not supported outside of "business hours"—can cause frustration on the part of students to the point where learning becomes an arduous task. This problem is particularly acute for postgraduate medical and health science students who are in full time employment and studying at a distance in the evenings and at weekends.

Whilst factors such as those identified above must be taken into account in planning and managing elearning developments, inadequate learning analysis and design has been identified as one of the key factors in the failure of elearning projects (Alexander, 2001; Dokeos E-learning Architects, 2008; Frydenberg, 2002; Ismail, 2002; Segrave & Holt, 2003). Technologies per se do not improve learning. This point has been recognised by a number of academics in the field of elearning (Greenagel, 2002; Laurillard, 2008; Reeves, Herrington, & Oliver, 2005; Salmon, 2005). Rather, it is good learning design that improves student learning (Ismail, 2002) with technologies being employed in a meaningful and purposeful way to facilitate and enhance student learning (Jones, 2007). Project success is not therefore defined solely in terms of completing the project in accordance with the acceptance criteria, the original timeline and within budget. A project can succeed in those terms and yet still result in

elearning developments that fail in terms of enhancing and/or facilitating student learning.

When engaging in an elearning project there is a clear requirement to focus on an initial educational challenge, where changes to particular teaching methods and/or changes to the mode of delivery are based on research and pedagogically driven, with the ultimate aim of facilitating and/or enhancing student learning (Alexander, 2001; Gunn, Woodgate, & O'Grady, 2005; Hughes & Hay, 2002; Laurillard, 2008; McLoughlin & Luca, 2001; Reeves, 2000; Reeves et al., 2005; Segrave & Holt, 2003). At a project level this means that the focus must be on research informed learning design. Technologies have to take second place to pedagogy with any particular technology being employed only if it facilitates/enhances learning. If this occurs then good management can lead to good learning (Pasian & Woodill, 2006).

Project Management

It would be disingenuous to suggest that we employ the project management processes detailed below in a rigid fashion across all of our projects. Rather, the processes function as a conceptual model for practice with the LTU Director and LTU staff employing the project management processes in whole or in part on a per project basis. This "agile" approach (Russell, 2006) to project management is necessary because the nature of a university culture militates against being able to strictly employ the required processes on all projects. We understand a culture to consist of a set of shared beliefs and values that define the norms for behaviour (Mingail, 2005). The culture of a university is essentially collegial, with academics valuing their autonomy and academic freedom (Bullen, 2006; Morgan & Roberts, 2002). Project management is a controlled and directed process with the potential to cause conflict and resistance in a collegial environment. This means that there will be cases in which, no matter how hard we try, it is simply not possible to effectively implement each project management process. However, teaching is one of the core functions of a university and employing project management processes in a way that emphasises research-informed pedagogical improvement, goes some way towards alleviating the potential conflict between managerial control and a collegial culture. We will discuss this issue further in describing our project management processes.

Getting It Right

The development of our project management processes has gone through two distinct phases. The initial processes—developed by the LTU Director in conjunction with LTU staff—were developed and refined over a period

of two years on the basis of "hands on" project experience. These processes still form the core of the project management processes at the LTU. It has been claimed that successful project management is 80% tactics—what one learns on the job—and just 20% technique—what one learns from books or courses (Romiszowski, 2004). Our own experience accords with this judgement since our initial processes were enhanced with reference to the PRINCE2 project management methodology (Office of Government Commerce, 2006, 2009b) recommended by the Joint Information Systems Committee (JISC) in the United Kingdom (JISC, 2009).

If we modify the PRINCE2 definition of a business project (Office of Government Commerce, 2006, p. 7) then an elearning project can be understood as a management environment that is created for the purposes of delivering one or more educational products according to an educational case. PRINCE2 is a process-based approach to project management with the processes defining the management activities to be carried out during the project lifecycle. Each process has a number of sub-processes that are again used, more or less extensively, contingent on the size of the project. In this article we will be making reference only to those processes that we use to manage projects at the LTU. Access to the PRINCE2 project management documentation requires purchasing a handbook and/or taking the foundation and practitioner examinations (Office of Government Commerce, 2009c). However, readers who are interested in the project management methodology can access the Office of Government Commerce online "delivery toolkit", which includes a section on Project Management that draws on the PRINCE2 methodology (Office of Government Commerce, 2009a) with the documentation and templates section providing some key PRINCE2 project documents (Office of Government Commerce, 2009a).

Tactics and Technique

Project Start Up

The LTU runs an elearning project round once a year. The project round consists of academics submitting an Expression of Interest for an elearning project. The Expression of Interest Document—created in praxis and not revised in terms of formal project management methodology—is the LTU equivalent of a Project Mandate document which "defines in high-level terms the reason for the project and what product is required" (Office of Government Commerce, 2006, p. 13). The Expression of Interest is a core requirement of the project start up process, the function of which

is to determine whether the project is "worthwhile" (Office of Government Commerce, 2006, pp. 25-45).

In order to ensure that submitted projects are potentially "worthwhile" academics are required to complete the Expression of Interest Document in terms of the following form fields:

- project goal;
- project rationale;
- staff who will contribute to course development;
- whether the course is university approved;
- completion date for development work;
- current course format and mode(s) of delivery;
- new provisions required;
- available budget;
- frequency of updates for the completed development;
- staff available to carry out the updates; and
- Head of School approval.

The requirement to detail the project goal and project rationale are particularly important as we require a clear reason for starting the project and a clear statement concerning what the final product will look like. The Expression of Interest document is on the LTU website—http://www.fmhs.auckland.ac.nz/faculty/ltu/submitproj.aspx—and can be downloaded.

Expressions of interest are assessed against the criteria implicit in the form fields. We also consider projects in terms the university's strategic direction, Faculty strategic direction and School strategic direction to ensure that the project fits within broader School and Faculty teaching and learning strategies. We know that academics are busy and for that reason we do not require them to detail their projects with reference to strategic "fit". However, the email announcing the project round makes academics aware that strategic "fit" will be taken into account in judging their project proposals. Projects are prioritised by the LTU Director and discussed with the Associate Dean Education. Successful applicants are then informed that the LTU has accepted their initial elearning project proposal. This occurs within one month of receiving the Expressions of Interest, so that we lead by example in responding promptly to academic submissions. Prioritisation of the Expressions of Interest marks the end of our project start up process.

Project Initiation

Stage two in the project management process is the project initiation stage (Office of Government Commerce, 2006, pp. 47-68). The purpose of this

stage is to define in more detail what the project is intended to achieve, why it is needed, how the outcome will be achieved and the levels of responsibility within the project for the various stakeholders. We achieve these aims through completing our Needs Analysis Document which, like the Expression of Interest Document, was developed in praxis and not altered in terms of PRINCE2 project management methodology. The Needs Analysis Document is the functional equivalent of a Project Initiation Document which is, "a logical document that brings together the key information needed to start the project on a sound basis" (Office of Government Commerce, 2006, p. 336). The Needs Analysis Document provides the key information for the project including the what, why, who, when and how of the project; this document is a key output of the project initiation process (Office of Government Commerce, 2006, p. 14). The Needs Analysis document is available on the LTU website—http://www.fmhs.auckland.ac.nz/faculty/ltu/submitproj.aspx—and can be downloaded.

The Needs Analysis Document functions to ensure that a course developed for flexible or distance delivery meets a number of key educational principles. For each module or topic in the course the lecturer is asked to provide the following details:

- learning objectives;
- learning task;
- student role and activities;
- the mode of delivery;
- the resources available;
- the tutor support role; and
- the method of assessment and feedback.

In asking for these details we are seeking to ensure that students will be: cognitively engaged in terms of course content; supported and motivated by the presence of a teacher; and socially engaged with one another so that students can inform and be informed by the perspectives of other students (Chickering & Gamson, 1987; Hutchins, 2003).

The main challenge that we face when working with academics on the Needs Analysis Document is that academic customers have often not had any formal training in education (Doherty, 2009; Nunes & McPherson, 2003) with the result that they are not familiar with pedagogical theory or with instructional design principles. This situation is often exacerbated when the academic in question is primarily a clinician with a part-time teaching responsibility within the Faculty. Lack of formal training in education can lead to a situation in which the project is "derailed" because the academic proves to be unable or unwilling to reflect on their

own teaching practice and/or because the academic is unable or unwilling to engage with new pedagogies and the professional development required to teach effectively using technologies (Segrave & Holt, 2003).

According to Morgan and Roberts, "Convincing some academics that they should reconsider their philosophical stance as to what constitutes the most valuable learning they can provide for their students can be both threatening and difficult to achieve" (Morgan & Roberts, 2002, p. 5). Our experience has been that relationship building is essential in order to overcome the potential for "friction" and "resistance" (Romiszowski, 2004). There is also a need to understand the factors that militate against academics learning new theories and new skills. There can, for example, be a degree of fear on the part of academics with respect to entering uncharted territory. However, lack of time and lack of incentives also play a part in the degree of commitment shown by the academics. There is, therefore, a need to be "creative" and "subtle" in managing elearning developments (Bullen, 2006, p. 172).

The Needs Analysis Document is particularly effective in helping us to deal with the issues of academics learning new skills and the fact that academics are time poor. The document provides a way to engage academics with theories for good teaching practice, without explicitly stating that this is what we are doing. Additionally the document has been designed so that it can be completed relatively quickly, thereby addressing the issue of a lack of academic time for engaging with new technologies for teaching. This is a key issue. As Goodyear notes, academics are time poor and, "There is no visible demand for complex methodologies, approaches which require substantial revision of existing work practices, or methods which require mastery of complex skills or specialised language" (Goodyear, 2005, p. 82).

Whilst this is a critical project stage in many ways, one of the crucial aspects of a project start up concerns defining the project acceptance criteria. In PRINCE2 terminology the acceptance criteria are constituted by "A definition in measurable terms of the characteristics required of the final product(s) for it/them to be acceptable to the customers and staff who will be affected" (Office of Government Commerce, 2006, p. 269). The Needs Analysis Document serves to define the characteristics or features of the elearning product. However, in terms of assuring the quality of flexible and distance courses, student learning outcomes and student evaluations of the courses that we develop (Kennedy, 2003, p.194) provide the ultimate criteria for judging the success or otherwise of the project. The reason for this is, as we noted above, that a successful project must facilitate and/or enhance student learning.

Directing A Project

It is not until there is agreement that the Needs Analysis Document has been completed satisfactorily that the decision is made to go ahead with the project. In PRINCE2 terminology this decision falls under the process of directing a project, a process that runs continually from start up to project closure. The decision to commit to the project is taken by the LTU Director in conjunction with the LTU staff member primarily responsible for managing the project; the academic staff member acting as subject matter expert would also be involved in the final decision to go ahead with a project. There have been cases where consultation with other stakeholders - the Head of a School for example - has been necessary before making the final decision to go ahead. This might occur if, for example, the project required funding that was not identified in the Expression of Interest Document. However, these instances are rare and when they have occurred the LTU has generally used contract budget to cover the additional budgetary requirements.

Managing Product Delivery

The actual development of the elearning product falls under the process of Managing Product Delivery. In PRINCE2 the objectives of this process are relatively straightforward and include agreeing on the work to be carried out and getting the work done. The work to be carried out has already been broadly agreed to in the Needs Analysis Document. Getting the work done is a matter of the LTU staff members(s) agreeing to a timeline with milestones, project deliverables and a completion date for the project, so that all stakeholders are aware of their project responsibilities.

Although the next point may seem relatively trivial, the academic year revolves around semesters. Being sensitive to the perspective of academics requires an awareness of this fact as projects are generally required for the beginning of a particular semester. Rather than talking in terms of project completion - terminology that is alien to most academics - we focus on the academic year and drive projects in these terms. This is part of a more generalised strategy to avoid project management terminology in favour of an educational discourse that academics understand. We are also sensitive to the fact that the weeks leading up to the beginning of a semester are a busy time for academics, so we try to ensure that projects are managed in order to minimize demands on academics at this time.

Whilst the "requirements" for the product have been defined in the Needs Analysis Document, the actual process of creating the project invariably leads to revisions in the initial learning design. These changes

are inevitable (Woodill & Pasian, 2006) as academics develop a deeper understanding of the pedagogical goals of the project and the developers come to better understand the perspective of the academics (Campbell, Schwier, & Kenny, 2005). Thus, whilst we carry out each of the instructional design phases of Analysis, Design, Development, Implementation and Evaluation - the ADDIE model (Kruse, 2008) - each of these phases has a place in a layers of negotiation instructional design model (Cennamo, Abell, & Chung, 1996). The key feature of the layers of negotiation model is its acknowledgement that at any point in the design process one of the phases may be revisited leading to changes in the other phases.

Since each of our projects involves only one team reporting directly to the Learning Technology Unit Director, managing product delivery is a relatively informal process within the LTU and this process has not been altered in terms of the PRINCE2 processes. The developer(s) provides the LTU Director with ad hoc updates together with formal updates at bi-weekly staff meetings. The ad hoc updates are important in terms of identifying project issues that need to be dealt with at a managerial level. However, as the LTU director is also experienced with development software and instructional design principles, the ad hoc updating functions to provide another perspective on the practicalities of project development.

Formal project updates are given at staff meetings and these provide the opportunity for all staff to contribute to the project development by offering advice and through agreeing to contribute to the project if a particular issue has arisen. Rather than keeping a formal issues log (Office of Government Commerce, 2006), project issues are noted in the minutes of the meeting and these provide a record of changes to the initial project plan and a record of project issues. We do not keep a formal issue log as our projects are not of a sufficient size to warrant the use of this document.

Managing Stage Boundaries

Use of the PRINCE2 processes has clarified the fact that each of our projects consists of stages that must be controlled. One of the purposes of controlling a stage is to ensure that "the quality is appropriate for the project's needs" (Office of Government Commerce, 2006, p. 98). We are now much clearer about our project stages and the importance of managing each stage to successful completion in order to ensure that we deliver a product of appropriate quality. For example, completion of the Needs Analysis Document constitutes a distinct stage in the project. Creation of the actual product includes a series of stages and appropriate quality assurance must be carried out during these stages.

As already stated, quality has to do with ensuring that the development meets the acceptance criteria defined in the Needs Analysis Document. At the project stage this assurance comes from following formative evaluation processes. Formative evaluation considers: instructional and conceptual design; technical requirements; and interface and graphic design. (Kennedy, 2003, pp.190-191). Since the end of a stage - or the stage boundary - must be managed effectively to ensure that the product is being developed as defined (Office of Government Commerce, 2006, pp. 14-15) formative evaluation processes provide the means for assuring quality within a stage before moving to the next stage. Ultimately the evaluation of the project occurs as a result of student feedback in post-course questionnaires and this requirement is detailed in the project closeout process.

Project Close Out

Another significant benefit of employing the PRINCE2 methodology has been that we have become much more aware of the need to close the project management loop in terms of whether the initial objectives have been met (Pasian & Woodill, 2006, p. 1). Closing out a project is a distinct process that occurs once the development is finished and handed over to the academic. During the project close out process (Office of Government Commerce, 2006, pp. 153-168) lecturers are asked to complete a project close out document. The purpose of this document is to:

- identify whether a Needs Analysis Document was completed and followed;
- evaluate whether the project progressed in terms of the stated timeline;
- determine whether the project met the acceptance criteria established at the beginning of the project ;
- identify any follow on actions required such as the LTU continuing to provide support for lecturers;
- create a maintenance strategy based on a simple diagnostic including frequency and number of updates, identification of individuals who will carry out the updates and amount of time lecturers have to carry out the updates;
- create a log of lessons learned during the project; and
- complete a review by the lecturer concerning what worked well and what did not work well on the project.

The Project Close Out document is extremely important. However, it is not always easy to get the academics to complete the document. In order to overcome this problem, we point out that the document will

constitute evidence of an initiative to improve teaching. In this way the document can constitute a part of the academic's evidence portfolio for the Annual Performance Review (a review process for academics that occurs once a year) and for the purposes of promotion (all academics are required to achieve a satisfactory level in teaching and this requires evidence of reflective teaching practice that leads to improvement in teaching). Thus, whilst "The notion of measurable outcomes and accountability are resisted and academic freedom is the guiding principle" (Bullen, 2006, p. 171), emphasising the value of the project closeout document from an academic perspective serves to mitigate resistance.

The post project review plan falls under the project closeout process. Use of the PRINCE2 methodology has made us aware that we have not always been sufficiently rigorous with the Post Project Review Plan (Office of Government Commerce, 2006, p. 161). This is an omission that we need to address because the Post Project Review Plan identifies:

- the benefit achievements to be measured;
- how the achievements will be measured;
- the pre-delivery situation against which benefits will be measured; and
- who is needed to carry out the measurement.

In educational terms this is the plan that provides for student evaluation of the courses that we have developed where evaluation is concerned with student learning and student satisfaction (Kennedy, 2003, p.196). We are now much more rigorous in this area with a formal plan to evaluate a representative range of courses developed during any project year.

The Bigger Picture

We have emphasised the need to focus on educational goals at a project management level. However, we are cognisant of the fact that successful elearning projects do not in and of themselves transform the "educational enterprise" (Segrave & Holt, 2003). Transforming the enterprise is ultimately a question of engaging the majority of academics in teaching with technologies in a meaningful and purposeful manner. This raises the question of how educational design professionals might be proactive in their particular field in order to embed technologies for teaching and learning at an institutional level.

Engaging the majority of academics with technologies for teaching requires organizational change (Kotter, 1995; Morgan & Roberts, 2002) that is related to but distinct from the process of managing projects

(Pasian & Woodill, 2006). The relation is given in the need to manage projects successfully so that the unit responsible for elearning projects establishes a strong reputation for excellence within the Faculty. The distinction is given in the fact that successful completion of individual projects does not in and of itself result in a change in the teaching culture at a Faculty level. This is true even when individual projects evidence a fit with University, Faculty and School strategic aims.

It is not the purpose of this article to discuss organisation change in any detail. However, our current perspective is that there are at least four necessary steps to engaging Faculty as a whole with technologies for teaching. First, an institutional vision for teaching with technologies must be developed. Secondly, a strong guiding coalition is needed to support the vision. Third, the developed vision has to be communicated to the Faculty as a whole. Finally, Faculty have to be empowered to act on the vision (Kotter, 1995). Achieving these goals requires strategic and operational planning that involves stakeholders from all levels of management and teaching within the Faculty. The Director of the LTU is currently carrying out the requisite planning through chairing a Faculty Reference Group charged with determining how to increase staff capacity for teaching with technologies.

Conclusions

At the LTU we try to act on the maxim that we are only as good as our last project. This means that we strive always and at all times to provide the best service possible. It would be fair to say that current LTU activity - particularly involvement with the Faculty elearning Reference Group - is characterised by significant engagement with senior members of Faculty, academics from across from the Faculty and external stakeholders. Whilst there are a number of reasons why the LTU can engage with the Faculty at this level, our track record of providing an exemplary service has established a reputation for our unit that makes this level of engagement possible. Our project management processes have played a key role in establishing this solid track record.

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