

Third Year Industry Projects: Reaching For Reality

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ABSTRACT

The Bachelor of Applied Information Systems (BAppIS) programme is now running in its fourth year at Northland Polytechnic. It has outgrown the transitional issues of accommodating students from earlier programmes. Initially only small numbers needed to be accommodated in the third year units and the large Industry Project unit (3/8 of the third year credits) was managed on a somewhat ad-hoc basis. With increasing student numbers and some staff changes in the faculty a revised approach has been introduced for 2000. The general academic and project work activity content remains unchanged but new elements are being introduced to model the type of management mechanisms that define the environment for IT project activity in business. An attempt is also being made to model the kind of peer to peer interactions that often exist among IT professionals in the workplace. Through this approach it is hoped that a credible element of real world reality can be injected. This paper describes what has been done to set this approach up and reports on the early feedback results. In a further "Reach For Reality" it seeks contact with others who have experience they might wish to share.



1. INTRODUCTION

Disruptions arising from staff changes in mid 1999 exposed a number of issues for Northland's 3rd year Industry Project unit and moves have been made to address these starting from 2000. Comment elicited from project stakeholders and students raised issues of communication, risk management, tutorial guidance and peer group contact within the student group. The incoming tutors collectively have broad experience bases in both academic and industry worlds. They concluded that a campaign to strengthen the Industry Project unit should focus more on project management, risk management and relationships issues than on project content which has remained largely unchanged at this stage.

2. PROJECT SELECTION AND CONTENT

An existing approach of encouraging students to seek out their own stakeholders and project subjects has been retained. This was supplemented by substituting a class period in a second year unit at the beginning of term 4 1999 with a presentation and discussion of requirements for industry projects coupled with an admonishment to "start looking early". A public presentation evening to display the best of the faculty's 1999 projects was held in November to market the concept of industry projects to potential stakeholders. Most of the then second year students attended that session and also the presentation sessions which formed part of the assessment process for the 1999 projects. Feedback from the public session yielded a valuable list of prospects to use as backstop alternatives for those students who needed some help in arranging projects.

In the event, over half the projects this year were identified by the students themselves, some of whom have taken the opportunity to make a head start on them over the summer vacation. In doing so they have accepted some risks over acceptance of their proposals but have chosen to balance this against a useful advantage in personal time management for their year's study programme.

2.1 Content

Papers on this subject have been presented at previous NACCQ conferences (Bridgeman 1999, 1998 and others) so little additional comment is needed. This industry study unit remains focused around the classical process based SDLC structure of Planning, Analysis, Design, Construction, Implementation and Maintenance, notwithstanding the promotion by contemporary authors of two dimensional development models that map a time based dimension against the process workflows (Quatrani 2000). For single resource projects such as these it is sound for the flow of activities to be built around the process dimension. For larger multi-party projects where high levels of iteration flow from extensive inter-personnel communication, the addition of a time dimension may become an issue of greater significance. The Analysis and Design phases of the classical model map closely to the two major study streams in BAppIS, Information Systems and System Development, which together reach a plateau of core knowledge at the end of the second year. The industry project unit is therefore focused on exercising the student's skills and knowledge in these areas. For these projects feasibility study and decision tasks in an SDLC Planning phase have usually already occurred, so the student generally does not have an opportunity to work in this area. However, students are required to investigate and report on what has occurred previously in the stakeholder's domain to drive a decision to undertake the project. Not all projects include work on the Construction and/or Implementation aspects, however where full a scale implementation is not feasible a pilot implementation of some kind is usually sought. The ideal balance for any project is seen as 70% contribution from Analysis and Design and 30% from Implementation.

2.2 Proposals

An early goal in the first term is preparation by students of project proposals. The brief to students is to write a simple document in lay terms to "sell" the concept of the project both to the stakeholder and to the polytech tutors. For 2000 the proposal is not an assessment

component. Supervising tutors may take a more active role in proposal preparation than occurs later in order to strengthen risk management at the start of the project. There is little point in making weaker students struggle to even get their projects started, if in the process the entire foundation for a year's work is compromised.

Proposals are submitted, upon the recommendation of the project tutor, to a committee of the BAppIS tutors for formal acceptance.

3. RISK MANAGEMENT AND RELATIONSHIPS

Figure 1 shows a model for the relationships between the parties involved in a project; Stakeholder, Student and Tutor.

Solid arrows represent matters on which the person at the origin of the arrow is required to be pro-active while the dotted arrows cover re-active response situations. As one would expect the majority of the pro-active items are in the student's hands. The tutor however has a specific responsibility to address risk management issues throughout the project.

Polytech's risk of reliance on individual tutors is addressed by assigning two tutors to each student project. The lead tutor provides the routine contact point for the student and is responsible for the overall conduct of the project. An alternate tutor is also assigned who participates in formal reviews of project status, and is kept sufficiently in touch so as to be available to take over the lead tutor role at short notice should the need arise. In practice each tutor in the faculty is assigned the lead role in several projects while taking up the alternate role in others.

4. PROJECT MANAGEMENT

It is in the project management area that the greatest amount of change has been introduced. Polytech is fortunate in its newly tutors for 2000 to have access to a large body of industry experience. The view has formed among them that a greater opportunity for extending and challenging the third year students lies not in the subject matter of their projects, but in exposure to project management issues and working relationships that are typically encountered when working in industry. To this end several additions have been made to model typical industry situations. Taken together they embody a philosophy of reaching out beyond the conventional boundaries of an academic institution to introduce students to reality issues drawn from industry and commerce.

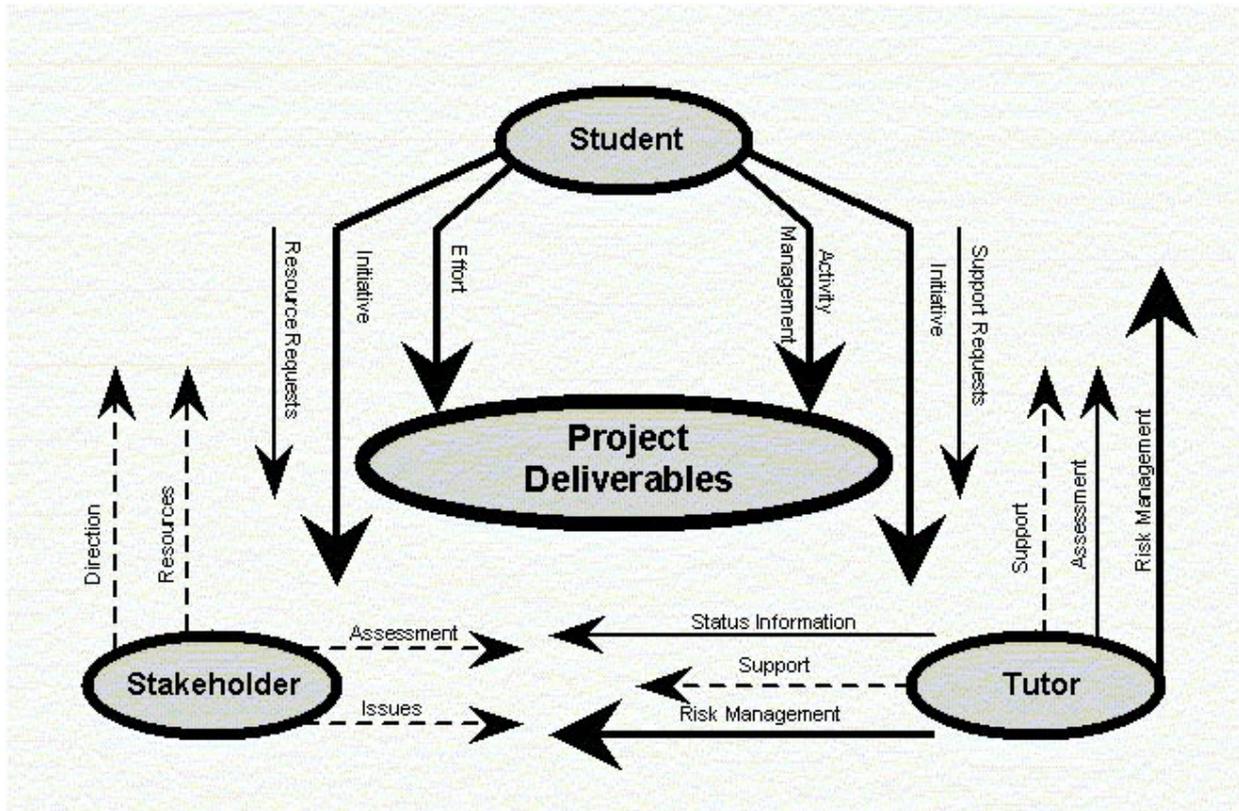


Figure 1. Relationships in an industry project

4.1 Formal Status Reviews

At four points during the year a formal review takes place. This is intended to model a Steering Committee meeting for a project in a corporate environment. The student takes the role of the project manager being required to arrange the meeting, prepare an agenda in consultation with the committee chairman, and write a one to two page project status report. The report is then presented at the meeting and the project manager is expected to speak to it.

The lead tutor takes the role of the steering committee chairman, who is often the sponsor of the project and certainly is someone who has a significant stake in its outcome. The alternate tutor takes the role of a member of corporate management who has a less direct stake in the project. A formal minute of the meeting is taken which becomes a status report to the committee of BAppIS tutors. This gives a measure of transparency to the review process and provides an opportunity for intervention in the event that a project encounters problems in its tutorial support. Project tutors have the option of styling one or more of the review meetings as a formal Quality Assurance review instead of a Steering Committee.

At review meetings the student is required to have an up to date Gantt chart and their activity log documents available for inspection and challenge.

4.2 Students Peer Review Days

In a typical working situation a system developer, who may be working on a solo project or in a project team, will from time to time find it necessary to seek interaction and counsel from his/her peers. Usually the developer gives the colleague some form of walkthrough of the state of play and problems encountered, along with an invitation for the colleague to comment and contribute. For the 2000 industry projects this type of interaction is being modelled in the form of peer review days that are held around the time of the formal project status reviews. Each student has fifteen minutes to give a brief informal project walkthrough, together with an open question, answer, and suggestions session. The concept is to provide a forum the industry project students as a group where they can experience the benefits of interaction with their peers. Tutorial input is minimal. The co-ordinating tutor for the industry projects arranges the venue and the running order. He observes but does not participate, unless invited to do so, and is

available to take up issues that may be affecting the student group as a whole.

4.3 Project Deadlines

The assessment cycle for the industry project unit starts with a formal presentations day in early November. Previously problems have arisen with students being insufficiently prepared for this cycle with consequential impacts upon tutors, whose time can be in demand for examinations and marking in other courses. A new project deadline has been introduced in late October at which time a decision is made by the BAppIS tutors committee on whether to accept a project into the normal assessment cycle. The criteria are that the project must be on schedule at that time and the student must achieve a rehearsal of his/her presentation that is judged to be of satisfactory standard for inclusion in the assessment sessions the following week. This is intended to model a typical industry deadline situation in which failure to meet the main project goal can result in significant delay in implementation and costly disruption for the parties who are responsible for achieving the project deliverables. In this case the sanction that applies is that the student's project work can be excluded from the normal assessment cycle and will not be considered further until all marking etc for other programmes has been completed. This defers assessment into December, at the earliest, which means that the student is then not eligible to participate with his/her year at the graduation ceremonies in mid December.

In general terms a project is judged as being on status if

- ◆ at the review in May the project proposal has been accepted and a detailed work plan has been prepared
- ◆ at the second review in late July Analysis has been completed with Design and Construction at an advanced stage
- ◆ at the third review in September the finalisation of stakeholder deliverables is imminent
- ◆ at the final review in late October all stakeholder deliverables have been achieved, drafting of the project report is at an advanced stage and a properly prepared presentation is ready for rehearsal day

The timing of the project reviews and milestones is illustrated in the table in the appendix

5. DELIVERING THE FRAMEWORK

The approach that has been adopted has introduced a good deal of structure to the industry project unit. To get this in place the BAppIS tutors reviewed a draft study brief document in the weeks before first term commenced and duly adopted it. The students attended five one hour class sessions in the early weeks of the term. Subjects covered included

- ◆ Conduct of the Industry Project unit – Study Guide
- ◆ Project Proposal requirements
- ◆ Project management
- ◆ Systems Development Life Cycle
- ◆ Relevant prior research
- ◆ Report approaches and requirements

In addition to working the students through the guide and introducing them to the concepts behind how the unit is to be run, some of the sessions were revisions to bring some daylight back onto knowledge and skills that had been studied in previous years and possibly in part forgotten. (eg SDLC, project management). The relevant prior research topic was included to encourage students to seek out and review the work of others as possible contributions to their projects. In essence it is intended as an applied degree equivalent of the literature review component of a classical research project.

The study brief has been implemented in the form of an MS Project Gantt chart which portrays the intended interaction of project activities and tutor reviews together with the project milestones that have been introduced into the management of the unit. The work items are grouped according to their focus.

- ◆ Stakeholder deliverables
- ◆ Academic deliverables
- ◆ Status reviews (student activities)
- ◆ Milestones
- ◆ Status reviews (tutor activities)

The ability to associate text notes with work items in MS Project was used to provide explanations of what is expected at each stage. The notes are written in an informal colloquial style to underline the notion that they are intended as guides for intelligent people to use creatively rather than being a set of formal "rules of engagement". Samples of some of these notes appear in the appendix.

Handing out a study guide and running some classes at the start of the year is of itself unlikely to ensure full adherence to this model by either students or tutors. For

the latter group monthly meetings of the BAppIS tutors may help but some other routine reinforcement is needed. To this end the co-ordinating tutor for the industry projects sends personalised reminder letters to both groups in the weeks before each round of status reviews. These include prompts relating to what material should be covered and what the student should be bringing forward for inspection.

6. CONCLUSION

The staff at Northland Polytechnic have chosen to pursue a path for developing the BAppIS Industry Project unit that focuses on modelling situations commonly encountered by IT professionals when working in industry. In doing this they are reaching out to include some real world aspects that are otherwise outside the normal experience of a student studying in an academic environment. They believe that this offers a valid and useful extension of the experience that their students can gain in completing this unit. Initial feedback has been positive however the real impacts will not be known until the end of this year. In the meantime the tutors participating in this initiative are interested in sharing experiences with others who may have interests in the supervision of industry projects.

7. REFERENCES

- Bridgeman, N.C. (1999)** "Identifying Completing, Writing Up and Assessing a Project: 10 years Of Student Computing at Taranaki Polytechnic". Proceedings of the NACCQ, Dunedin, New Zealand, 4-7 July, pp 29-35.
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- Quatrani, Terry. (2000)** "Visual Modelling with Rational Rose 2000 and UML". Addison-Wesley, Reading, MA, USA

APPENDIX

Schedule for Industry Projects

Preliminary Phase

5 Jan to 11 Feb Follow up contacts in Industry, Commerce, on campus etc
Arrange student placements on

projects as opportunities arise
Review processes for the year
Prepare a Study Guide
Assign tutorial responsibilities

First Term – Proposals and Planning

17 Feb to 16 Mar Class sessions for students on

- ◆ Conduct of I399 unit – study guide
- ◆ Project proposal requirements
- ◆ Project management
- ◆ Systems Development Life Cycle
- ◆ Relevant prior research
- ◆ Project Report approaches and requirements

17 Mar Milestone - Project proposals submitted
7 Apr Milestone - Projects proposals approved

Second Term – Analysis and Design

1 May to 19 May Milestone -Project status review

- ◆ detailed project plan
- ◆ report outline structure

Student's peer review day

Third Term – Build and Deliver

17 Jul to 4 Aug Milestone -Project status review

- ◆ progress on stakeholder deliverables
- ◆ some report drafts

Student's peer review day

11 Sep to 15 Sep Milestone -Project status review

- ◆ ready with final stakeholder deliverables

Student's peer review day

Fourth Term – Academic Deliverables

6 Oct Milestone - All stakeholder deliverables completed and delivered

9 Oct to 20 Oct Milestone -Project status review

- ◆ Stakeholder deliverables achieved
- ◆ Report drafts
- ◆ On schedule status for assessment cycle

24 Oct to 27 Oct Presentation rehearsals
Milestone - Candidature for graduation approved

1 Nov Milestone - Presentations assessed

10 Nov Milestone - Project reports submitted

13 Nov to 1 Dec Report marking

1 Dec Milestone - Assessments finalised

SAMPLES OF NOTES FOR STUDENTS

Student Activities - develop project deliverables

You are now launched on the project which will be the crowning achievement on your degree course.

Developing the project deliverables will be the long run activity that will come to dominate your life for the next six months

..... HOWEVER

- ◆ The responsibility for managing this project now lies with you and you alone. Your tutors, no matter how supportive or amiable they may appear, are always acting in a supporting role. Use your tutor's skills wisely, extract out of them all the assistance that you need/ can get but don't expect them to manage what you are doing.
- ◆ It is very tempting to jump into the fine detail and to immediately start building a solution to an apparent business problem. Please remember what you have been studying for the past two years in all those I and D stream units. Proper application of the skills you have learned requires investigation, analysis and the design of good quality solutions before you start in on all that interesting/challenging T stream techno stuff.
- ◆ While you are at it don't forget about communicating with the parties associated with your project's business area. They know a lot more about what the business is up to than you do. You need to tap that knowledge! Now! Could be that some of that O stream stuff will come in handy in working with these people!
- ◆ Finally you have another very important task to do in the first few weeks - develop a detailed project plan - it contributes to some academic deliverables for your project. If you don't do it properly you will have trouble convincing your tutors that your project is in good shape when you come up to the first progress review in a few weeks time!

Incidentally don't forget to keep a decent log of what you have been doing

Student Activities - Prepare First Status Report

Preparing status reports is a routine part of running any long project. You need to tell interested parties about

- ◆ what you have achieved in the last few weeks
- ◆ how it differs from what you projected in your previous report
- ◆ what you plan to achieve in the next reporting period

- ◆ any particular problems with the project
- ◆ what you are doing/plan to do about these problems
- ◆ any help and/or resourcing issues

You should prepare a one or two page memo for your report. Get copies to your tutors a few days before the review meeting. Be prepared to talk about the report contents at the meeting.

Don't forget

- ◆ As project manager you are responsible for arranging the meeting otherwise it won't happen (and then people will assume the project isn't happening either!)
- ◆ Be prepared to show off the academic deliverables items identified in the corresponding task discussions - near the start of term 2 that's all the project initiation and planning stuff
- ◆ Get your activity log up to date and take a copy to the meeting for your tutors' inspection (and remember that it's a bad look if what's recorded in the log fails to match up with what you have put in your report!)

Yes, review meetings are a chore, but they are an important part of the proper maintenance of expectations about your project. They are also a great opportunity to tell everyone who will listen how great you are, how great the project product is going to be, and just what a good idea it was to engage you to do this job for them. A few well orchestrated puffs on your very own trumpet can do your image a world of good! Just don't overdo it!

Student Activities - Outline Report Drafting

One of the strange things about project reports is that they come out better if you write them while the project is in progress rather than doing it afterwards. If you write draft sections while you are doing the corresponding activities you can capture the essence of your thinking while you are addressing each problem and devising its solution. On the other hand if you do it after all the action is over it's a bigger hurdle to overcome (it's boring as well) and it may lack important elements. Chances are it will end up with an over emphasis on a few problems that you really struggled with and not enough continuity in reporting the positive stuff.

If you buy into this line of argument then you'll agree it also makes sense to develop an outline structure for your report at an early stage. You may get some cred with your tutors if you do one around the time you are doing the initial project plan. You might get some agro from them if you don't.