

ADOPTING A FLEXIBLE APPROACH TO PROJECT MANAGEMENT METHODOLOGY TO REDUCE RISK OF FAILURE

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ABSTRACT

This paper reports and analyses multimedia project methodology observed within the Multimedia Education Unit (MEU) at the University of Melbourne. The conclusion drawn from this study is that the benefits expected to flow from standardisation of project management methods are secondary to the interests of reducing the risk of failure. Any greater benefit in risk reduction gained from flexibility in project management methods to accommodate specific circumstances of a particular project should take precedence over efforts to standardise project management on one particular model. Standardisation is beneficial when projects are similar but flexibility is required when there are great differences among projects. The challenge for project managers is to devise systematic forms of project management that are efficient, reduce project risk, are flexible and accommodating of the individual circumstances of educational multimedia projects.

KEYWORDS

Project management, flexibility, standardisation, project standards, efficiency, effectiveness, project methodology.

1. BACKGROUND

The MEU is a central educational & multimedia services provider to all Faculties and Departments of the University, a centre for research and development and an important part of the means by which the University aims to achieve its strategic objectives in relation to quality of teaching and learning.

A recurring issue for a unit such as MEU is the question of standardisation – identifying which processes would benefit from standardisation, the degree of standardisation that is appropriate and devising the standards to be put in place. Standardised processes lead to more efficient outcomes but if the required outcomes are variable, standardisation may lead to reduced effectiveness. This contrasts with conventional ways of working in educational multimedia in Universities which tend to regard the issues of standardisation and efficiency as secondary to flexibility and effectiveness. Each project may be regarded as a hand-crafted work to meet the requirements of a specific educational context and/or educator. Flexibility is highly regarded in this context, and it could be argued, delivers effectiveness, often at the expense of efficiency.

The motivation for this study is the need to better understand the trade-offs among project risk, flexibility, standardisation, effectiveness and efficiency so as to devise better project management methods and tools. The MEU takes in projects of great variety and three projects that are representative of the range have been chosen for analysis. For the purposes of this paper, they are identified simply as project A, B and C.

The table below provides a summary comparison of the projects based on criteria of particular interest to project management and risk assessment.

Table 1

A comparison of projects A, B and C

	Project A	Project B	Project C
Disciplinary area	Law	LOTE	Human Anatomy
Available budget	<\$30K	>\$200K	<\$20K
Total budget	<\$50K	\$500K	\$50K
Number of key academics	1	5 (in 3 Universities)	4
Time frame	9 months	20 months	1 year
Course equivalents	Substantially replaces a 2 semester subject	3 rd and 4 th year Chinese (4 semesters)	Over 100 hrs of tutorials (eventually)
Pedagogy	Role play	Mixed; instruction, reflection & construction	Mixed; instruction, reflection & construction
Technology	Web	Web + CD-ROM	Web + CD-ROM
Clarity of requirements	Clear	Not clear, formal concept development phase funded in the project plan.	Not clear in terms of required software function and user interface design.
Miscellaneous notable factors	Known existence of similar 3 rd party product	Web technologies for double-byte characters are immature. In house technological development required.	High profile. Good prospects for further funding if early success is achieved. Severely under-resourced.

Project A is the only one of the three that has been completed at the time of writing. Each of the projects was handled in a different way and the purpose of this paper is to analyse the factors that guided the choice of project management.

2. THE THREE PROJECTS

The three projects are discussed with respect to factors affecting project management.

2.1 PROJECT 'A'

This project proposal had the benefit of a clearly defined pedagogical design, clearly defined outcomes and appropriateness of Web technology for the task. In general, the requirement was for students to role play partners in paired adversarial law firms of 4 or 5 members each, entirely delivered over the Web.

An unfortunate aspect of this project was its late presentation to the Unit, in the second half of 1997 while requiring a first Semester start in 1998. With other projects at hand, the timeline was uncomfortably tight. A Web-based course with some similarities to Project 'A' was known by a team member to have been produced by a local software company. After some evaluation and initial meetings it was established that Project 'A' could be treated as a customisation of the existing third party course. The company agreed to complete the work in time for first

semester 1998 and work within the budgetary constraints of the project. MEU's role was to appoint a project coordinator to represent the University's interests and liaise with the other parties. MEU also provided user interface and graphical design services, as well as subcontracting a graphic designer.

In the long term interests of the Unit and the University, it may have been preferable to do the development in-house, using the COOL framework (Ji et al. 1998) in order to freely re-use the software in other projects. In the short term, this approach would have introduced an unacceptable risk of failure in meeting the delivery deadline.

Project management was based on traditional documentation of specifications ahead of production. A formal contractual relationship was entered into which bound all parties to a project plan and a timeline. The project was concluded successfully on time and within budget. Further funding has already been secured by the same project team for a new course and enhancements to the existing course.

2.2 PROJECT 'B'

This project has the benefits of an appropriate budget (\$500,000), a project plan spanning 20 months including a funded concept development phase in the project and last, but not least, a well-focused team of educators. In general, the task is to deliver nationally, a web based Chinese language course with graduate certificate accreditation. Specific technical challenges associated with this project are:

- The need for Chinese, English and Pinyin fonts to coexist on Web pages;
- The need for interactive language exercises on Web pages;
- Opportunity to re-use interactive exercises with different content from lesson to lesson;
- Significant change in Web technologies over the life of the project; and
- Geographical separation of the academics contributing to the project.

The project is technically innovative, adopting the COOL framework (Ji et al. 1998), a component software design, also using a database with web server to dynamically generate the course pages. Interactive components are based on JavaScript with DHTML and Macromedia Shockwave. The greatest sources of risk in this project are:

- Technological complexity; and
- The scale of the project.

Prototyping was excluded because of continued rapid technological change during the life of the project and because of the scale of the project. Paper based specifications were considered unwieldy, again partly because of the scale but more because of the geographical separation in three States of the content experts. Furthermore, the team was already well-focused on agreed educational objectives.

This project therefore provided an opportunity to develop a formal yet flexible project management methodology based on the idea of a 'project Web site'. Distinct from the course Web site which would be the outcome of the completed project, the project Web site serves as a project management tool and central repository of all information that is relevant to the project's development phase. A project web site was constructed to act as a central place to gather and organise content, course structure, designs, technical support, project reports and steering committee reports. There are no paper-based specifications, all specifications effectively being uploaded on the project web site.

Establishment of the project Web site required significant technical assistance for the non-technical members of the project team, particularly with respect to uploading of files and their preparation in HTML using Symantec's Visual Page, a WYSIWYG HTML editor that was able to work with Chinese on both the MacOS and Windows(NT & 95). The project Web site is under continuous improvement.

The benefits of using the project Web site compared with paper based specifications have been:

- Centrality of the reference point.
- Accessibility to geographically dispersed team members.
- Immediacy of propagation of change.
- Ability to cope at a relatively large scale.
- Skilling of educators in the technologies their course is to be delivered with.
- Removes the need for specifications writing by the technical team to take the lead.
- Content and pedagogical design specifications lead the technical specifications.
- Creates a need for designing course structure prior to orderly upload of content.
- Coupling of content and pedagogical design at Web page level.

This project is scheduled for completion for delivery in first semester 1999.

2.3 PROJECT 'C'

This project had the benefit of a dedicated team and hosting department that was willing to provide significant 'in-kind' resources to the project beyond that which the budget would provide. The subject of learning is highly visual and well-suited to multimedia technology. There were three significant sources of risk in this project:

- Doubt about the available technology to deliver the required pedagogical design;
- Changing interface and pedagogical preferences of the content experts; and
- Time-consuming nature of the content preparation.

A formal process was put in place to produce a Software Requirements Specification (SRS). The main purposes of the SRS are to come to an agreed, shared vision of the project and to stabilise the technical requirements. The SRS remains 'open' in the sense that it has not been 'signed off' as a final specification. It is an internal document and not legally binding but carries some weight of persuasion as a record of past agreement. Although the SRS is available from the web, there is no project Web site such as that found in Project 'B'.

Because of the ambitious nature of the project, it has broken into 2 major phases, with current funding to address the first phase only. Further funding will be sought upon successful completion of the first phase. The first phase is similar to an advanced prototype. From a project management perspective, the first phase acts as a mechanism to reduce the technical complexity and scale of the project to manageable levels, matching available budget and time. Relatively more effort can therefore be expended on dealing with pedagogy, interface design and media production, stabilising those issues, the benefits of which will carry through to the next phase.

Project management plans for phase 2 of this project are for a project Web site to be created, similar to that described for Project 'B'. The prerequisites for this are expected to eventuate from having completed phase 1, viz:

- phase 2 of the project is to be delivered on the Web.
- the pedagogical design(s) and structure of the content have stabilised.

At the time of writing, phase 1 is nearing completion.

3. FLEXIBILITY WITH STANDARDISATION

The three cases presented illustrate how widely different educational multimedia projects are and go some way to support the argument that project management needs to be flexible to cater for the differences. Flexibility of project management methodology is in the interests of risk reduction and maximising effectiveness. Nonetheless, significant gains in efficiency can be realised through standardisation and a growing interest in efficiency may be reasonably anticipated in the form of more educational multimedia projects completed at a reducing unit cost. The challenge facing project managers is to determine where standardisation can be introduced without greatly increasing risk of failure or reducing the effectiveness of the final outcome.

A pragmatic view of the interplay between standardisation and flexibility is that each project can be represented as a standard set of problems to be solved. The most appropriate (efficient and effective) means by which each problem should be addressed is a matter of judgment and requires flexibility in approach, design and technology.

Table 2

Some typical project management problems and options for solving them

Standard Problem	Standard options	Examples
Estimate required budget	Design and build to a known limit. Perform detailed concept development for costing purposes. Create project phases that match available budget (& get more funding for the next phase). Make a guess.	Project C was broken into 2 major phases so that phase 1 could be achieved within budget.
Time to completion	Design and build to a known time frame. Perform detailed development of a module and estimate for all modules. Outsource professional services as required to match time frame. Hire more or less casual or short term staff to match time frame. Re-order priorities for existing resources.	Project A was outsourced despite the perceived advantages of keeping the software development in-house. The over-riding factor was the need to deliver within a short time frame.
Choice of implementation	addresses the needs of all similar future projects or a specific design that meets only the current project needs. Either adhere to open standards, adopt proprietary solutions or develop an in-house standard.	Project B, being relatively large and modular in design, was best served by a generic, component-based design that could be replicated across modules.
Shared vision of the outcome	Project team meetings, documentation, project web site, workshops, proof of concept, prototype.	Project C relied heavily on team meetings and written specifications but project B relied mostly on the project web site and proofs of concept.

4. CONCLUSION

The experiences gained from the three cases presented here, and others, suggest that 'Project Web sites' will develop into reasonably standardised yet flexible, project management tools. A growing number of projects at the MEU will adopt the project Web site approach. Nonetheless, there will always be projects that require a non-standard approach due to their specific circumstances. Ideally, these projects may be led into a standard or preferred process in stages, as sources of unacceptable risk are removed or dealt with effectively. Flexibility in choice of project management practices will result in more successful outcomes.

5. REFERENCES

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