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## Managing Large E-learning Development Initiatives: Lessons learnt from the Australian Flexible Learning Toolbox Project

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This paper reports on a research consultancy undertaken for the Flexible Learning Framework in reviewing management processes undertaken as part of Series 13 of Flexible Learning Toolboxes. Toolboxes are e-learning products that cover multiple Units of Competency in National Training Packages. In the 13<sup>th</sup> iteration of the project a number of initiatives were implemented designed to support the development of 7 Toolboxes. The research explores the role of documentation and communication processes and their impact on the development experiences of key stakeholders such as the designers, developers and managers of the products. Findings identified a number of important factors with regard to the use of design documentation and project management processes that are important to successful development as well as some recommendations for future iterations.

Keywords: Toolboxes, Project Management, Instructional Design, Flexible Learning

### Project Management for E-Learning

Project Management is key to a range of human activities that do not involve repetitive tasks. In a sense we are all project managers (Patel, 2008). At a systematic level, however, Project Management seeks to manage the essentially linear time-based phases that begin with the project specifications and end with completion and handover (Lock, 2007). Within these phases, a range of issues needs to be managed such as:

- Project Complexity
- Client's requirements and scope changes
- Organizational restructuring
- Project risks
- Changes in technology
- Forward planning and costing (Kerzner, 2009)

Assessing the success of a project is more than simply evaluating the final product. It is tempting to set the criteria for success based on whether it performs as desired, comes in on time and comes in on budget. Pinkerton (2003) warns against such a narrow approach to Project Management however, emphasising the need to close the project loop so that good things are repeated and bad things are avoided is a key aspect of future project success.

In managing stakeholders, Perrin (2008) contends that the process is not one of managing the stakeholders themselves but the flow of information between them. Effective communication, therefore, is the basis of both

effective process and final quality. This occurs through interaction between stakeholders and documentation of a range of processes such as project specifications, design, evaluation and so on. This is particularly true in IT environments where complex contractual relationships can compound the communication between managers, designers and developers (Burnett, 2007).

Documentation functions to preserve knowledge, communicate expectations and requirements and as an empowerment tool. These provide key outcomes in terms of conservation, consistency, enhanced self-regulation of teams, as well as the reduction of error (Robinson, 2009). The extent and nature of documentation required within projects can vary, however. There is a current move towards more flexible approaches to design and development such as agile approaches (Selic, 2009) and a commensurate focus on ensuring documentation is lightweight (Zhang et al., 2010).

Similarly, the interaction between stakeholders varies depending on the nature of the project. Different contexts often have different requirements. Development may be conducted within small or large teams, managed internally or remotely or even consist of geographically dispersed members. In such cases, Social Media is now seen as integral to collaborative project management. Beyond the practical aspects managing remote development, it is able to capture unstructured tacit knowledge (Ollus, 2011).

The purpose of this research was to explore how communication and documentation processes can best be implemented within e-learning development. The Flexible Learning Toolbox Project was used as the basis for the study. As a large initiative consisting of 7 individual projects, managed from a single organization, but consisting of teams that demonstrate a broad range of experience, size, and organizational contexts, this environment provided a level of diversity from which to draw findings.

## About Toolboxes

The Flexible Learning Toolbox Project has been leading the development of quality e-learning for the Vocational Education and Training sector of Australia since its inception in 1997. The initiative has been jointly funded by the Australian Government and all States and Territories through the Flexible Learning Framework since 2000 with the goal of providing high quality cost effective interactive e-learning and assessment resources featuring scenarios, rich media and activities.

In that time over 110 Toolboxes have been developed to deliver approximately 190 Training Package qualifications and supporting over 1,000 units of competency. The full list to Toolboxes can be found on the Flexible Learning Framework site (<http://toolboxes.flexible-learning.net.au/>).

As the Toolbox project has evolved, so have the development approach and management practices. These have included the ongoing development specifications as technologies have matured, the integration of Recognition of Prior Learning as a formal component of the submissions and the modularisation of content to support disaggregation of Toolboxes into Learning Objects. Development processes have also been impacted by the introduction of accessibility guidelines in accordance with WCAG 2.0 principles. Key milestones consisted of an induction process, Proof of Concept Submission reviewed by the National Reference Group, and Mid-term and Alpha submissions that demonstrated the product at various levels of development. The project also provided for a team of mentors – e-learning experts with experience across a range of vocational and tertiary educational settings. Series 13 saw further innovations, specifically:

- The replacement of the initial two-day Toolbox induction workshop in Melbourne with individual team meetings between the project managers and the teams at their location;
- The implementation of a Functional Specifications document as the basis for development and quality assurance; and
- Aligned with the use of Functional Specifications, the removal of a technical build requirement at Proof of Concept and Mid-term stages and the pushing of technical testing to later in the product development cycle.

Development was undertaken by Australian Registered Training Organisations and monitored by a team of National Project Managers, though development teams varied in terms of their constitution, with some being undertaken by specialist e-learning instrumentalities, others within TAFEs and some involving a mix of RTO and external developers.

The purpose of this research was to explore how Communication and Documentation processes impacted on the experiences of development teams in the above context. In particular, the research sought to identify those

aspects of the process that could inform best practice design and development of e-learning across a range of settings.

## Methodology

To address the above research aims, data was collected from key stakeholders in Toolbox Series 13 that could be analyzed to identify common findings as well as specific noteworthy issues. The Toolbox Project was overseen by a National Reference Group and implemented through three parties:

- The Development Teams (7 teams total);
- National Project Management team (3); and
- Mentors (2).

Data was to be collected through semi-structured interviews via teleconference in order to identify specific issues and affordances of the approach based on the participants' experiences. This approach benefitted from the potential to provide opportunities for emergent information that may in particular be used to inform analysis of the final question. This was triangulated through analysis of those forms of documentation that was identified as good practice. The research was conducted in accordance with the initiating organisation's ethics procedures, leading to a report to the National Project Management team.

## Findings

The first series of findings relate to the communication approach undertaken in Series 13. This approach was characterised by the provision of an induction session for development teams and the use of the Project Management software Basecamp to manage communication during the development cycle. Formal communication was undertaken through reporting documentation for specific stages of the project such as Proof of Concept, Mid-term, Alpha, Beta, and Final submissions and the feedback provided as a part of this.

Data gathered from participants tended to focus on issues that evolved from changes in personnel at the initiating organisation and the nature of initial induction process. While teams reported positive experiences at the initial induction, the focus on the relationship between teams and the National Project Managers meant that when there was a significant change of staff, there was a tendency for the key messages that evolved from the process to become lost. This was exacerbated by the lack of a group process, so individual teams were not always working on the same interpretation of the processes. A renewed impetus on ensuring quality at Alpha and Beta submission stages and the use of communication tools like Basecamp managed to ameliorate some of the potential issues that could have befallen the project. However in some instances, changes within development teams themselves exacerbated this situation. The strongest level of clarity occurred where any decisions that arised from discussion were recorded online and where negotiations on aspects such as timelines and recommended improvements were recorded online as part of a formal decision process.

Participants also identified the need for consistency in terms of feedback. One of the defining characteristics of Toolbox development is the integration of technical and design quality checks (National Project Managers), design support (Mentors), and strategic direction (National Reference Group). It was important that teams received feedback that was consistent between all three. In those cases where feedback was provided from several, there was the potential for a lack of consistency. Teams demonstrated a preference for a single 'voice' in terms of feedback, with all forms of formal feedback documentation being checked for duplication or contradictory advice. Similarly, participants noted the potential for confusion where feedback varied between phases of the project such as the advice given between mid-term and Alpha. Ultimately the best forms of communication occurred where a knowledge was maintained throughout the project and filtered through a single communication channel.

The second findings focused on the role of the Functional Specifications documentation in terms of its value for both design and quality management. Functional Specifications embodied the design and content of the Toolbox in a paper-based form. One of the advantages of this was that it alleviated some of the pressure on teams in terms of their ability to source and write content in a timely manner and have that instantiated in a working prototype. The potential of the documentation was that it could provide evidence for design without the need of a refined product.

This proved to be something of a double edged sword. The fact that this project involved a range of developers from state-based e-learning specialist VET organizations to small RTOs working within specific industries and

with limited e-learning development experience meant that a single approach to design documentation was unsuitable.

The National Project Managers accommodated this by providing flexibility in the format of this documentation. Nevertheless, participants reported enhanced workload as a result that tended to offset the benefits. One of the main issues was that teams already had established practices for documenting design. In some cases, the structure of the organizations themselves required specific approaches, while in others the Functional Specifications document limited the capacity of teams to redesign rapidly in the light of evaluation or user testing. In fact there were several approaches undertaken to encapsulate design, such as:

- the use of a publishing system, where documentation styled by Instructional Designers was automatically output to XHTML;
- rougher levels of documentation used to workshop design such as Powerpoint and Word Processing templates that evolved as ideas developed; and
- custom Functional Specifications that were tied into individual organizations' own management and quality assurance processes.

While the last of these could generally be managed within the project scope, the first two resulted in duplicated effort and in one case at least, a tendency for the Functional Specifications to be reverse-engineered. While most participants acknowledged the value of Functional Specifications, it was considered by many that the content-oriented nature of Toolboxes tended to create lengthy documentation that was difficult to read. Several teams identified its value primarily where interactions needed to be defined or for media which is not so easily documented through traditional forms of scripts and templates.

Issues were also raised in terms of the value of Functional Specifications as a tool for communicating design. All teams had input from an Industry Reference Group and required conversations between subject matter experts, designers and developers and not all of these were versed in interpreting such documentation. A simple matter of how much text would appear on screen, for example, is difficult to gauge without seeing the page instantiated in the product. The fact that at Proof of Concept all but one team provided an online prototype in addition to Functional Specifications indicates that this augmented rather than replaced the value of an interactive proof of concept.

## Conclusions

As is frequently the case in qualitative research, findings proved to go beyond the initial questions and identified a range of emergent strengths and issues of the processes undertaken in Series 13 of the Flexible Learning Toolbox Project that are beyond the scope of this paper. Nevertheless, there were clear generalisable trends from the research that can be used to inform future large scale development projects in terms of communication and documentation processes. In particular, it is recommended that:

1. Whole group induction processes have value in terms of developing communities of practitioners with enhanced collaboration and feedback between teams. While not as efficient for individual teams in terms of having their own needs met, they can ensure consistency in terms of expectations.
2. Online Project Management tools have become essential to large distributed development projects, particularly in their capacity to set milestones, monitor progress and record decisions and exceptions to the process. They also play a large role in promoting the communities mentioned above.
3. Formative feedback should be sourced from a wide variety of stakeholders, however such feedback needs to be channeled through a single communication point.
4. Flexibility is required in documentation processes to ensure that they meet the needs and the capacities of the contexts in which they are to be used. Some settings require a more agile approach than others and this should be acknowledged.
5. Flexibility is also required in deciding where the focus on documentation should be, with value particularly evident in defining interactive elements rather than purely instantiating content.
6. Online prototypes of e-learning provide the best mechanism for formative iteration of design, particularly for those with content rather than design expertise and e-learning novices.

After 13 successful iterations, the Flexible Learning Toolbox project has been both witness to, and instrumental in the maturing of e-learning design and development, particularly in the Vocational Education and Training sector. As the tools and processes mature along with the products themselves and the designs evident within them, it is anticipated that findings such as these can further contribute to our understandings of best practice in providing online learning across a range of post-secondary learning contexts.

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