myMART3 CASE STUDY

West Australian Catholic Schools Pilot Academic Reporting Compliant with the National Curriculum Assessment Framework

Abstract: This case study provides a summary of the techniques utilized in developing the myMART3 product. This case study also highlights how effective the overall approach was in engaging teachers, assistant principals, educational consultants and ICT personnel as key team members in ensuring successful deliveries of the product into operational use. Our thanks go to the staff who dedicated their time so willingly in providing their valuable expertise and for providing the ideas and feedback throughout the development process.

To ensure the right features and efficient user interactions were implemented, group scoping and feedback sessions were organised with a total of nine schools represented – referred to as User Group sessions. These sessions were lead by an experienced facilitator from the myMART3 development team, Mr Dwayne Read. Dwayne is an experienced Agile consultant and his previous experience on a range of software development projects throughout Australia would prove beneficial in helping the school representatives apply the techniques necessary for successful systems development.

Background

Since 2006, the Western Australian Catholic Education Office (WA CEO) has successfully used the myMART Online Reporting System to deliver a Standardized Reporting Process to most of its 120 primary schools throughout the state. In 2008 the Federal Government announced that all Australian Schools would be required to be compliant with the new National Curriculum Assessment Framework by 2012.

The new National Curriculum Assessment Format represents a significant shift away from the existing WA based 'levels reporting' format to a grades based assessment. This became the catalyst to undertake structural and usability improvements resulting in the third major release of the myMART product over 5 years.

Work began in February 2009 and a prototype was ready by late August in readiness for the Curriculum Issues Conference where nearly all the Catholic primary school principals would be in attendance. The prototype was well received at the Conference and the Reporting Committee decided that a "Pilot Program" be organized to further develop the system to meet compliance with the National Curriculum Assessment Framework. A plan of work was quickly sanctioned and in October, 2009, five schools were selected to run the myMART3 Pilot School Program.

The myMART3 user interface has been developed in Silverlight, a breakthrough in web technology from Microsoft, providing desktop user interface functionality and flexibility over the web. This new technology provides a high level of flexible processing and also enables a more optimised means for delivering information at speeds not normally seen in web applications.

The Development Program

Objective: **To customize myMART3 under the guidance of the pilot school representatives who will "brainstorm" solutions to key features of the Academic Reporting Process to deliver an Academic Report that is compliant with the National Curriculum Assessment Framework.**

Five Pilot Schools participated and went operational with the myMART3 product in Semester 1, 2010. The participating schools were chosen for a combination of one or more following reasons

1. Had greater variations in curriculum on offer
2. Had complex campus structures with teachers working on multiple sites
3. Had specialist teachers in various subject areas (e.g. LOTE, Physical Education, etc)
4. Required specific reporting structures that were not in the standard templates on offer
5. Specialized in IEP's and unique reporting requirements

A further four schools also participated in the User Group Sessions to provide input and feedback on the evolving functionality of the myMART3 product.

The User Group Sessions

The representatives from the participating schools attended the User Group sessions where the workflow, domain concepts, features, usability, prototypes and operational software were jointly scoped, prioritized and reviewed. An agenda was set and attendees were given an overview of the process involved in contributing to the User Group sessions. Mr Dwayne Read led the sessions and was accompanied by senior developers and testing staff from the myMART3 team including Mr Jeremy Martin, Mr Paul Candido and Mr Rosco Loubser. Also attending from the WA CEO were an Education Curriculum Consultant and ICT Systems Analyst who provided advice from the WA CEO perspective.

The User Group Strategy

The fundamental objective of running User Group sessions is to have joint input from real-world/operational users of the product to ensure the features developed and user interaction is what is actually required. There were a total of eight User Group Sessions over the core development period, each one conducted at either a participating Pilot School (Ursula Frayne or Mel Maria) or the WA CEO facilities. A cross section of roles from the participating schools attended, with key personnel common to most of the sessions.

These sessions typically used two whiteboards and one (sometimes two) data projectors to demonstrate what has most recently been developed, markup screen images with any deltas and scope out the next set of features to be developed.

At the beginning, the group defined a high level workflow which was drove the agenda/focus and was refined over subsequent sessions. Each User Group session would have a number of topics set which are discussed and expanded throughout the session as contributions from each member are drawn up on the whiteboard(s). Each newly identified feature has captured in a Product Backlog along with its indicative prioritization. Most of these sessions also looked at the design of the screen layout applicable to the features being developed to clarify the requirement, data required and the usability (especially the efficiency of teacher input). One particular session included a live (running on a test server) use of the

developed product at that time to observe the representative user's interactions so that usability improvements could be identified.
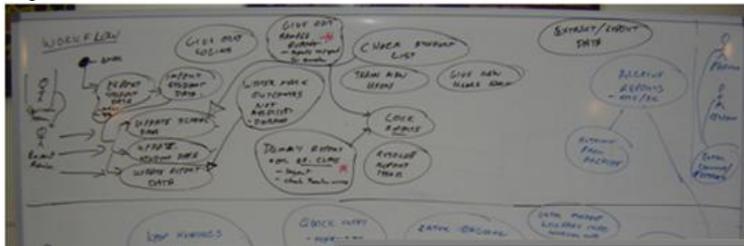
The samples below show the progress from a number of User Group sessions on the whiteboard through to the evolvement of the more formal design either as a workflow or through to a screen design.

Iterative Development

Over the initial twelve months of product development there was a total of eight User Group sessions for scoping and feedback with the nine represented schools. Parallel to this is a series of development iterations which fully implement (to a fully tested and deployable state) a subset of the features prioritized for development. These development iterations varied in duration from 2 to 10 weeks (typical ~4 weeks), some of these were also run concurrently to ensure optimized and separate focus of sub-teams.

The earlier iterations were more technically/architecturally focused (to establish the architectural framework suitable for an enterprise-wide web-based platform), with the later and majority of them being driven by the prioritized features from the User Group Sessions.

Each iteration produced a "potentially shippable" solution that was able to be demonstrated/walked through at User Group sessions. With the later iterations, access was granted to the Pilot Schools to log on to a test server to trial and provide feedback on the newly developed features prior to deployment.

Snapshot of the product development schedule showing the User Group Sessions milestones and development iteration Gantt bars
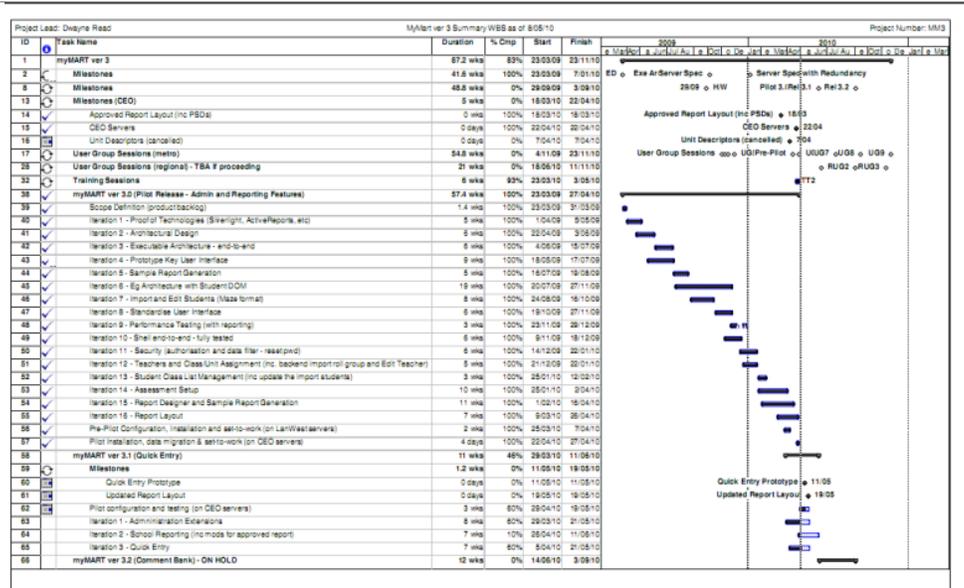
The Testing Process

A range of testing and verification techniques have been employed throughout the myMART3 product development. These include:

1. User Group Session feedback - the new features are demonstrated and a 'brainstorming' session is run to get comment/feedback.
2. Pilot Site - participants had online access to run their own personal testing regime on the sample set of data. Any issues raised from the ad hoc testing were communicated to the myMART3 development team directly and/or via User Group Sessions
3. Manual verification – each feature as it is completed is checked for functional completeness and to ensure the suitable automated acceptance tests are in place for future regression testing
4. Automated tests
   a. Unit tests – to test the code logic (run multiple times during the day)
   b. Integration tests – to test the end-to-end system integration and performance (run nightly)
   c. Acceptance tests – to test the operational and functional integrity using realistic data (run nightly and triggered manually)
5. Code inspection – peer review of code at the unit level

The myMART3 Release Schedule

The following was the critical myMART3 version release timetable that the Pilot Schools worked off to complete their Reporting Cycle in Semester 1, 2010.
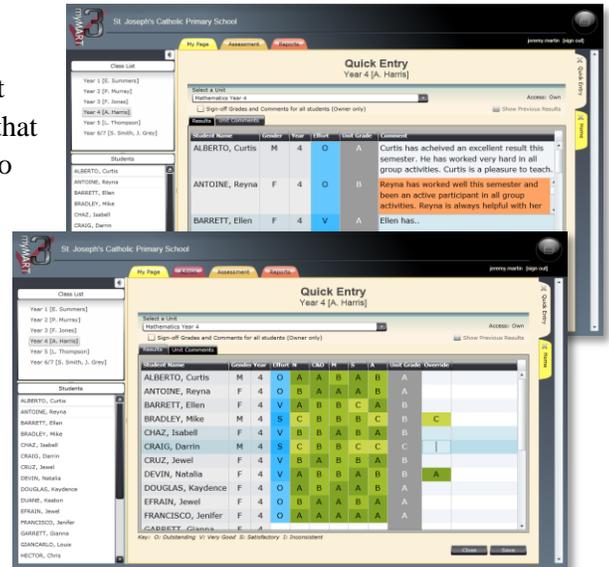
- 25th March 2010
    - Pre-Pilot Release- Configuration, Installation and Set to Work
        - Trial run on Pilot Servers
        - Schools use sample data
- 28th April 2010
    - Pilot Installation, data migration & Set to Work
        - Live data on WA CEO servers
        - Import /edit students, teachers and class lists
        - Link teachers to Course Units
        - Customize Report Templates
- 24th May 2010
    - Teacher Report Data Entry – Quick Entry
        - Learning Area Units Effort entry
        - Learning Area Units graded result enter per outcome
        - Student comment entry
        - Absentees entry
        - Principal comment Entry
        - Personal and Social Development results
- 9th June 2010
    - Report Design Module
        - School Logo Positioning
        - Mission Statement Entry
        - Front Cover font management
        - Report Legend inclusion
        - Learning Area font management
    - Report Output Management
        - Draft Report
- 12th June 2010
    - Report Output Management
        - Final Report
        - PDF file storage/archiving
- 30th June 2010
    - Comparative Report (this feature set was brought forward – was due for Sem 2)
        - Final Report Comparison of results per year group
        - Issued to parents mid July for teacher feedback on student performance

Each release was focused on a particular set of features, which then benefited from further feedback and ideas generated from the Pilot Schools operational use. This continues to be a key mechanism for continuing to improve the myMART3 product.

Pilot Program Overview

Overall, the myMART3 Pilot Program was very successful with all schools completing their reporting process before the end of Semester 1, 2010. The level of co-operation between the pilot schools, the WA CEO and the myMART3 Development team was outstanding and is the main reason why the project was completed on schedule and to budget.

From the Pilot School's point of view the User Group Sessions provided them the opportunity to explain what features they want from an academic reporting system that make's their job easier and more efficient. The ability to configure a wide range of settings (from comment size, electronic signatures, to alternate teacher names) and report layout (from logo and legend to colours and fonts) provides a reporting system that meets all their needs. The greatest success in the project was the teacher's Quick Entry module. This module was scoped, prototyped (sketch and software) and underwent pre-pilot and usability testing / observation by the Pilot Schools and the results were outstanding. Teacher satisfaction was very high and all schools reported very short data entry periods indicating that the combination of improved teacher access, faster processing speeds and efficient data entry techniques had a very positive effect.

Efficient user interaction for Quick Entry module

From the myMART3 development team's perspective, the Pilot School representatives provided great insight into the operational domain and the nature/way that certain features were to be used. This prompted some lateral thinking on the best way to satisfy these features that have resulted in a really easy to use and efficient product. The ongoing feedback on the features plus the operational testing and feedback regime contributed to a well focused and effective development.

The overall result is best summarized by the feedback received by the Pilot Schools:

"Really simple to use… sensational"

Highly configurable reports