

Aberystwyth Web Evaluation Surveys Of Module Experiences (*AWESOME*)

Report Name	Outline Project Specification
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1 Project description

The Aberystwyth Web Evaluation Surveys Of Module Experiences (AWESOME), is a prototype that enables departments to gather feedback by students about modules, lecturers, and other departmental issues. It is intended to replace and improve upon the current method of collecting feedback via Google Forms. This can be achieved by providing a personalised survey for each student to make questions personalised whilst also keeping results anonymous and confidential, and being able to chase up students for not completing their questionnaire.

AWESOME is a PHP web application developed by Keiron O'Shea during the summer of 2014 under the supervision of Dr. Hannah Dee. This project's goal is to bring the current prototype up to a well written, functioning, implementable, and extensible standard. Security of the system is critical, and so implementing a continuous integration system with unit tests and vulnerability scanning is vital to get up and running early on in the project. The system must be multilingual and accessible to adhere to the university's policies.

Advanced analytics and reports is also a feature which is highly requested by university management. For example, the system needs to be able to extract textual comments from the worst performing modules containing the word 'Feedback'. This can help upper management identify problematic areas in the university and look into the issue further.

The prototype has been demoed at a Learning and Teaching Enhancement Committee meeting to gather feedback about the current status of the project. The consensus from the committee is that the prototype is very impressive and would solve a need that is longed for by the university management. This confirmation by the committee further proves a need for this software to follow best software development practices to ensure that it can be used and extended in the future.

2 Proposed tasks

The prototype is currently written in procedural PHP, using the Twig [2] framework as a templating engine. In order to make the program more extensible and easier to maintain, it would make sense to refactor the current codebase to follow an object oriented (OOP) model-view-controller (MVC) [4] [5] architectural pattern.

The first task that needs to happen is a full security audit of the current version of the prototype. From there, the project can be refactored using best software practices, such as OOP, unit testing and MVC to separate the view and logic.

After the refactoring is done and the software is up to the same functional specification, additional functionality can then be introduced. The following task lists are what can be expected of each aspect of the project.

2.1 Refactoring tasks

Change procedural design – Design a new software architecture using MVC with OOP.

Unit Testing – Use Travis CI [1] to do automated unit testing and vulnerability scanning.

Secure admin dashboard – Use LDAP HTTP authentication via *.htaccess*.

PHP Data Objects (PDO) – Change the current *mysqli* and *tidy_sql* implementation to use PDO for greater security, flexibility and features when interacting with databases.

Accessibility (a11y) audit – Ensure all student-facing pages are accessible for disabled users.

2.2 Additional Functionality

Internationalisation (i18n) – Implement extensible i18n system to fully support Welsh, and additional languages.

Relational Database – Modify the database schema to be object oriented and relational.

Advanced Analytics – Create a system which can narrow down responses to criteria (e.g. Find modules with a low satisfaction score which mention ‘feedback’ in comments)

Traffic Light Dashboard – Have a dashboard showing traffic lights for all modules and departments to detect current issues.

3 Project deliverables

As this project has a fairly tight and fixed deadline on the temperature questionnaire testing, a lot of the refactoring work will be done as soon and as quickly as possible in order to get the project to a state that could be used.

After this initial sprint, the project can then be extended with the additional features described above. A rough outline of timeframes for deliverables is below.

Outline Project Specification – 2015-02-06 – This document.

OOP MVC Class Diagram – 2015-02-09 – UML Class diagram to describe MVC design.

OOP MVC Release – 2015-02-20 – Functional OOP MVC version of the prototype.

i18n and a11y – 2015-02-24 – Add internationalisation support and audit accessibility.

Temperature Test – Week 4-5 – Internal/closed functional testing.

Temperature Questionnaire – Week 6 – Questionnaire sent out to two departments.

Mid-Project Demonstration – 2015-03-09 – Start date of Mid-Project Demonstrations.

Analytics/Reports feature – 2015-04-17 – Have the analytics feature finished.

Final Report – 2015-05-07 – Final report hand-in.

Final Demonstrations – 2015-05-11 – Final project demonstrations.

Annotated Bibliography

- [1] "Travis CI: Building a PHP project," <http://docs.travis-ci.com/user/languages/php/>, Feb. 2015, accessed Feb 2015.

Travis CI is a hosted continuous integration system that connects to GitHub to help with automated unit testing and vulnerability scanning. I will be using this to provide automated unit testing and vulnerability scanning.

- [2] "Twig - The flexible, fast, and secure template engine for PHP," <http://twig.sensiolabs.org/>, Feb. 2015, accessed Feb 2015.

Twig is the templating engine used in the prototype by the previous author.

- [3] K. T. Brinko, "The Practice of Giving Feedback to Improve Teaching: What Is Effective?" *The Journal of Higher Education*, vol. 64, no. 5, 1993. [Online]. Available: <http://www.jstor.org/stable/2959994>

An article describing effective practices in gathering feedback in an academic environment. This is general background reading to get a greater understanding of the project's aims and goals.

- [4] C. Hopkins, "PHP Master — The MVC Pattern and PHP," <http://www.sitepoint.com/the-mvc-pattern-and-php-1>, Feb. 2015.

Another set of articles on OOP MVC in PHP which have been read in preparation for the refactor.

- [5] J. Stump, "Understanding MVC in PHP," <http://archive.oreilly.com/pub/a/php/archive/mvc-intro.html>, Feb. 2015.

A series of articles on how to write MVC architecture in PHP which have been used as background reading ready for the OOP MVC design.

- [6] H. K. Wachtel, "Student Evaluation of College Teaching Effectiveness: a brief review," *Assessment & Evaluation in Higher Education*, vol. 23, no. 2, pp. 191–212, Jan. 1998. [Online]. Available: <http://dx.doi.org/10.1080/0260293980230207>

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