



Technology Evaluation and Review: An individual assignment for software engineering project courses with team projects

Abstract

In software engineering project courses, different teams may work on different projects and often need to use different software tools, languages, and platforms to complete the projects. It is neither practical nor interesting to all students to teach all necessary technologies in classroom. The technology evaluation and review assignment is an attempt to help students learn new technologies independently and work in teams to adopt new technologies in their projects. This individual assignment consists of three to five stages and runs in parallel with term-long team projects.

Background

In software engineering project courses, different teams may work on different projects. It is sometimes difficult or impossible to implement all projects with a common set of software tools, languages, and platforms, especially when the projects are real-world projects for real clients. For example, because of the constraints of existing computing environments, one client may require a project be implemented in a web-based LAMP environment (Linux, Apache, MySQL, and PHP/Perl/Python), while another client may request a traditional standalone application implemented in Java and SWT.

Undergraduate students taking a software engineering project course have not necessarily learned these technologies in previous courses. In order to complete the projects, they will have to learn new technologies necessary for their projects. Many of them expect the instructor to teach them everything needed in the projects, as what happened in most other courses. This, however, is often neither practical nor interesting to all students. First, when combined, the projects in a software engineering course may require over ten new technologies. It is not practical to cover them all in classroom in addition to regular contents of the course, such as software engineering processes and techniques. Second, not all teams will use all new technologies. If a significant amount of class time is spent on a topic that is only relevant to some students, other students will be bored.

To solve this problem, a technology evaluation and review assignment is designed to help students learn new technologies independently. Students in a project team sign up to evaluate and review different technologies needed in their project. They then share the results with the team and help other team members get up to speed.

The goal of this individual assignment is to

- 1) help students learn new technologies to complete their projects,



- 2) teach students how to learn new technologies, which is an important skill for software engineers, and
- 3) avoid spending too much class time on diverse technologies for different projects.

Timeline

The technology evaluation and review assignment consists of three to five stages. The detailed description of the assignment is included in a separate document. If implemented in a 11-week course (10-week lectures plus one exam week), the stages can take place as shown in Table 1.

Note that in the assignment description, all stages of the assignments are turned in to a common CVS repository shared by all students. It is encouraged that students read other tech reviews to learn new technologies. It is required that teammates read each other's tech review to get up to speed on technologies use in their project.

The instructor can either encourage or required students to update the quick reference card (2.tech3) every week, although it will be graded only at the end of stage 3.

Table 1. Timeline of the technology evaluation and review assignment.

Week	Project Progress	Technology Evaluation and Review Assignment
1		
2		2.tech0
3	Teams formed; projects assigned to teams.	2.tech1
4		
5	Requirement due	2.tech2
6	Analysis and design	2.tech3 update
7	Design due	2.tech3 update
8	Implementation	2.tech3 update
9	Implementation	2.tech3 update
10	Implementation and test	2.tech3 final and 2.tech4
11	Final project demonstration and presentation	

Discussions

Stages 2.tech[1-3] are the core of this assignment and should always be included. Stages 0 and 4 are designed to help student plan and reflect on how to learn new technologies. While these activities are beneficial to students, they are not necessary for their team projects.



To help motivate students, the instructor can announce at the beginning of the quarter that there will be a Best Technology Review Award that will come with bonus points. The award can be determined by the instructor or by student votes.

One potentially helpful activity for this assignment is to spend 15 to 20 minutes in class on a discussion on technology reviews. The instructor can divide the class into several groups, each consisting of all students reviewing the same technology. Then, each group can talk about challenges and solutions related to that technology. A good time to do this is around week 5, when students start to generate more in-depth questions after having completed the initial trial with the technology. A side benefit of such in-class meeting is that students reviewing the same technology will get to know each other, which may facilitate the exchange of information among them later on.