A Simulation-Based Framework for Training Global Software Development

Miguel J. Monasor[1], Aurora Vizcaíno[2], Mario Piattini[2], John Noll[1], Sarah Beecham[1]
[1]*Lero, the Irish Software Engineering Research Centre, University of Limerick*
[2]*Alarcos Research Group, University of Castilla-La Mancha*
MiguelJ.Monasor@gmail.com, {Aurora.Vizcaíno, Mario.Piattini}@uclm.es,
{John.Noll, Sarah.Beecham}@lero.ie

Abstract

A simulation based framework for training skills required in Global Software Development has been developed in order to mirror real settings, providing instant feedback and automatic assessment.

1. Introduction

Global Software Development (GSD) entails confronting communication problems, since multicultural and multidisciplinary team members must interact, frequently in a second language [1]. These factors influence how students and software engineers should be trained to confront these new challenges [2]. Recent graduates lack the skills needed to interact in these cross cultural teams; however, preparing students in this field is not easy, as it requires training in soft skills and as a consequence, new training schemas, theoretical contents and tools [2].

2. Research focus

Hypothesis: It is feasible to minimize the impact of GSD problems by applying appropriate training methods and tools.

Goal: development a framework based on simulation to support automatic GSD training and education. The objective is to provide training in cultural and language differences and GSD specific skills required during the interaction of international teams. The following **Research Questions** are addressed: How could a GSD education environment be modeled by avoiding the problems of traditional training methods?, What would its limitations be?

3. Framework

A GSD training framework supported by a simulation-based training environment has been developed [3], and its architecture is shown in Figure 1.

This virtual environment places students in simulated scenarios in which they solve GSD problems by textually interacting with Virtual Agents (VAs) using synchronous and asynchronous communication. VAs will play a specific role in the project and will be characterized by a specific culture. The advantage of using VAs is that it is possible to reproduce accurate scenarios to provide training in specific skills difficult to reproduce in traditional educational environments.

Instructors can design training scenarios by using a designer with which they can define the flow of the simulation.
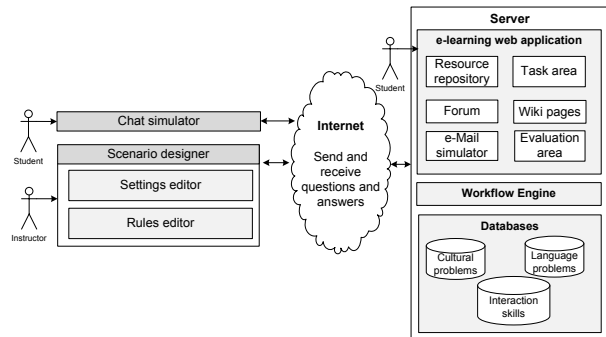

Fig. 1. Training environment architecture

4. Results achieved

A systematic literature review on GSD training and education was conducted [2]. As a result, a training platform for training GSD was developed [3]. A feasibility study of the tool has also been conducted and an automatic assessment method has been designed.

5. Future work

Conduct evaluations with university students and inexpert practitioners in order to measure the actual learning achieved having completed a simulated training module.

6. Acknowledgements

7. References

[1] M. J. Monasor, M. Piattini, and A. Vizcaíno, "Challenges and Improvements in Distributed Software Development: A Systematic Review," *Advances in Software Engineering,* vol. 2009, pp. 1-16, 2009.

[2] M. J. Monasor, A. Vizcaíno, M. Piattini, and I. Caballero, "Preparing students and engineers for Global Software Development: A Systematic Review," in *International Conference on Global Software Development* Princeton, NJ, USA: IEEE Computer Society, 2010, pp. 177-186.

[3] M. J. Monasor, A. Vizcaíno, and M. Piattini, "Cultural and linguistic problems in GSD: a simulator to train engineers in these issues," *Journal of Software Maintenance and Evolution: Research and Practice (Special Issue on Global Software Engineering),* vol. 24, pp. 707-717, 18 Aug 2011.