GUEST EDITORIAL: Special Collection on Software Engineering for e-Learning – Part II

José-Luis Sierra-Rodríguez
Facultad de Informática
Universidad Complutense de Madrid
C/ Professor José García Santesmases s/n
28040 Madrid, Spain
Email: jlsierra@fdi.ucm.es

Antonio Sarasa-Cabezuelo
Facultad de Informática
Universidad Complutense de Madrid
C/ Professor José García Santesmases s/n
28040 Madrid, Spain
Email: asarasa@fdi.ucm.es

In the last decade, e-learning systems have become a standard tool for training both in academia (universities, schools, for example) and in business (employee training programs, lifelong learning, for example.) This situation has generated an increasing demand for services and functionalities, resulting in highly complex systems, both from a technological point of view and from the point of view of design and development. This makes it necessary to extend and adapt the general methods of software engineering to this particular field in order to design, implement and maintain these applications.

Thus, the aim of this special collection is to deal with the different aspects of software development, but particularized to the field of e-learning, bringing together, in a single publication, results regarding all the aspects raised by the systematic conception, design, development, deployment, maintenance and exploitation of e-learning systems.

The 13 papers included in this collection were selected, after a rigorous peer-review process, from a total of 28 submissions. The process ran as follows:

• For each submission, we invited at least two external reviewers who are recognized experts in the submission’s field.

• We asked reviewers to perform a first preliminary review in order to assess whether the submission was within the scope of the special collection. For this purpose, the paper should be primarily focused on the technical aspects of the design, development and maintenance processes of e-learning systems, instead on the pedagogical aspects of concrete e-learning solutions and/or approaches. As a result, some good papers without a primary focus on technological and software development aspects were rejected at this first stage.

• Those submissions that passed the first scope assessment stage were exposed to a more conventional in-depth technical and scientific review stage, focused on assessing their actual contents, evaluating originality, scientific merit, readability, and overall quality, according to the JRPIT review policy. For most of the papers that were ultimately accepted, this stage ran through several review rounds, in which reviewers proposed changes and suggestions to the authors, who in turn got the chance to submit revised versions. Only those papers for which all the reviewers made final recommendations of acceptance were finally accepted for the collection.
Guest Editorial

As a result of this process, it is our pleasure to present a high-quality collection of papers representative of the several tendencies followed in the systematic development and exploitation of e-learning systems. The collection itself is structured in two volumes.

The second volume contains six contributions, dealing with the application of model-driven and language-driven development of e-learning systems, the use of domain engineering techniques in e-learning, and the systematic construction of exploratory learning environments. Regarding model-driven and language-driven development approaches for e-learning:

- The paper “A Model-based Approach to Integrate e-Learning Platforms and Social Networks using a Service-Oriented Framework”, by Rožac et al, addresses the integration of social networks into e-learning platforms by using a model-driven method for representing social e-learning settings. The approach is implemented using a service-oriented framework.
- The work “Model-Driven Learning Design”, by Dodero et al, presents an instructional design approach enabled by model-driven development concepts. This approach lets authors devise courses using user-friendly concrete syntaxes, transform these courses into suitable abstract syntaxes, and export them to different formats (e.g., IMS LD).
- Finally, the work “Designing and Developing Software for Educative Virtual Laboratories with Language Processing Techniques: Lessons Learned in Practical Experiments”, by Castro-Schez et al, describes an approach to the development of problem-based e-learning applications based on computer language design and implementation techniques. This approach promotes the explicit formulation and implementation of formal languages, which are used by students in order to describe problems and their solutions.

Concerning the application of domain engineering techniques to e-learning:

- The paper “A Domain Engineering for Interactive Learning Modules”, by Dalmon et al, describes the systematic application of domain engineering to characterize a family of interactive learning applications.
- Finally, the work by Gutierrez-Santos et al, “A Separation of Concerns for Engineering Intelligent Support for Exploratory Learning Environments” presents a divide-and-conquer strategy for the development of exploratory learning environments based on the separation of the development process into three different dimensions: evidence, reasoning and feedback.

We would like to thank all the contributors to this Special Collection for their valuable work and for their remarkable efforts in preparing the final manuscripts. Also, we would like to thank all the reviewers for their effort during the review process. Finally, we would like to thank Rosemary Hay for her support during the preparation of this collection, as well as the Editor-in-Chief of JRPIT, Professor John Yearwood, for giving us the opportunity to carry out this initiative. The preparation of this Special Collection has been partially supported by project grants TIN2010-21288-C02-01 and UCM-BSCH GR 42/10 group reference 962022.
BIOPGRAPHICAL NOTES

José-Luis Sierra-Rodríguez is an associate professor at the UCM’s Computer Science School, where he leads the ILSA (Implementation of Language-Driven Software and Applications) Research Group (http://ilsa.fdi.ucm.es). His research is focused on the development and practical uses of computer language description tools and on the language-oriented development of interactive and web applications in the fields of digital humanities and e-learning. Professor Sierra has led, and participated in, several research projects in the fields of digital humanities, e-learning and software language engineering, the results of which have been published in over 100 research papers in international journals, conferences and book chapters. He serves regularly as reviewer / PC Member for several reputed international journals and conferences.

Antonio Sarasa-Cabezuelo is a full-time lecturer in the Computer Science School at the Complutense University of Madrid, Spain (UCM). His research is focused on the language-oriented development of XML-processing applications, and on the development of applications in the fields of digital humanities and e-learning. He was one of the developers of the Agrega project on digital repositories (a pioneer project in this field in Spain). He is a member of the research group ILSA. He has participated in several research projects in the fields of software language engineering, digital humanities and e-learning, and he has published over 50 research papers in national and international conferences and journals.