Project Acronym: MEDIS

Project Title: A Methodology for the Formation of Highly Qualified Engineers at Masters Level in the Design and Development of Advanced Industrial Informatics Systems

Contract Number: 544490-TEMPUS-1-2013-1-ES-TEMPUS-JPCR

Starting date: 01/12/2013   **Ending date:** 30/11/2016

Deliverable Number: 2.3

Title of the Deliverable: AIISM teaching resources - Mobile and Cloud Computing Platforms

Task/WP related to the Deliverable: Development of the AIISM teaching resources - Mobile and Cloud Computing Platforms

Type (Internal or Restricted or Public): Internal

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Contractual Date of Delivery to the CEC: 30/09/2014

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Context

WP 2	Design of the AIISM-PBL methodology
WPLeader	Universitat Politècnica deValència (UPV)
Task 2.3	Development of the AIISM teaching resources - Mobile and Cloud Computing Platforms
Task Leader	MDU
Dependencies	UPV, MDU, TUSofia, USTUTT, UP

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History

Version	Date	Author	Comments
0.1	01/03/2014	Radu Dobrin and Sasikumar Punnekkat	Initial draft
1.0	19/09/2014		Final version

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1 Executive summary

WP 2.3 details the learning materials of the Advanced Industrial Informatics Specialization Modules (AIISM) related to the Mobile and Cloud Computing Platforms.

The contents of this package follows the guidelines presented in the MDU's documentation of the WP 1 (Mobile and Cloud Computing Platforms)

- The PBL methodology was presented in WP 1.1

- The list of the module's chapters and the temporal scheduling in WP 1.2

- The required human and material resources in WP 1.3

- The evaluation in WP 1.4

The rest of the document is organized as follows: Section 2 introduces the course and the outlines. Section 3 details the lectures, divided in subsections for each chapter. Section 4 describes the labs. There is a special subsection for each chapter. Section 5 gives an overview to the seminars. Each seminar has its own subsection. Finally section 7 lists the bibliography and the references.

2 Introduction

This lecture will be on reliability of embedded systems and usage of fault tolerance and testing for dependable systems design. Three lectures will be conducted focusing on reliability, fault tolerance and testing of mobile applications.

At the end of the lecture, the students will be able to:
- Have an overall view of reliability and how it is related to security
- Perform a simple reliability analysis using the project specification suggest a design for fault tolerance
- Understand basic testing methodologies

3 Lectures

The lectures in this chapter will be handles by the students who will explore some specific research topic, identify seminal papers and present the research to the entire class. The starting point for the students to find topics is given in the form of references [1][2][3][4][5][6][7].

4 Lab

The labs are allocated to those students who have not completed their previous assignments or want to work on some of the research findings that they made during the preparation of the lectures.

5 Seminar

The seminar session is allocated to the students who have not completed their previous seminars or to those who want to discuss the topics they presented in the lectures.

6 Miniproject

Here again, the slot is alloted to students to finish off any incomplete miniprojects or to those who want to do more research to further, e.g., publish their work.

7 References

[1] Basic concepts and taxonomy of dependable and secure computing, Avizienis, A. ; Laprie, J.-C. ; Randell, B. ; Landwehr, C., IEEE Transactions on Dependable and Secure Computing, 2004

[2] An Experimental Evaluation Of The Assumption Of Independence In Multi-Version Programming, J. C. Knight , N. G. Leveson, IEEE Transactions on Software Engineering, 1986

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[4] Algirdas   A. Avizienis, The   methodology   of   N   version   programming, http://www.cse.cuhk.edu.hk/~lyu/book/sft/pdf/chap2.pdf

[5] J.C Knight and N.G. Leveson, An experimental evaluation of the assumption of independence in multiversion programming, IEEE Transactions on Software Engineering, http://sunnyday.mit.edu/papers/nver-tse.pdf

[6] A A. Avizienis, M R Lyu, and W Schutz, In Search of Effective Diversity: A Six-Language Study of Fault-Tolerant Control Software, http://ftp.cs.ucla.edu/tech-report/198_-reports/870060.pdf

[7] J.C Knight and N.G. Leveson, A reply to the criticisms of the Knight & Leveson experiment, ACM SIGSOFT Software Engineering Notes, http://sunnyday.mit.edu/critics.pdf