



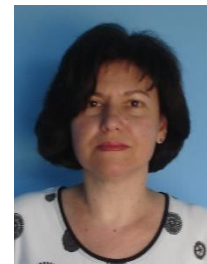
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Prof. Dr. Eng. Anca Daniela IONITA

PhD Coordination in "Systems Engineering"
Doctoral School of Automatic Control and Computers
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Research Profile:

The research profile is connected to Model Driven Engineering and Service-Oriented Systems, containing the following research fields:

- Migration of legacy applications to Service-Oriented Architecture and Cloud Computing environments
- Semantic Web and GIS services for hazard management
- Models and technologies for providing education and awareness services
- Object-oriented modeling, metamodeling and execution of models
- Software federations by model composition
- Process management for business service integration
- Code generation for composition of services

Research projects (selection from the last 10 years):

- System Interoperation based on modeling and metamodeling, CNCSIS A-37, Theme 6, AU 110613, 2006-2008, Project Director
- Local Development Cooperation Actions Enabled by Semantic Technology, LD-CAST, FP6 STREP IST-2004-2.4.13, 2006-2008, http://cordis.europa.eu/projects/rcn/78383_en.html
- Establishing an efficient network for cancer communication in Europe, Eurocancercoms, FP7 SiS-2008-1.3.1.1, 2009 – 2011, http://cordis.europa.eu/projects/rcn/92322_en.html
- Analysis and modeling of software oriented architectures in embedded systems domains, CNCSIS (National University Research Council)– IDEI, nr. 1238/ 2008 627/2009, 2009-2011
- Prototype Cyberinfrastructure-based System for Decision-Making Support in Water Resources, CNCS (National University Research Council), PNII nr. 47/2012, 2012-2016

- Early Warning and Decision Support Soft System for the Anticipative Assessment of the Fast Dynamics of Territorial Vulnerabilities Induced by Nuclear Facilities, N-WATCHDOG PN II UEFISCDI 298/2014, 2014-2017, Responsible person UPB

Memberships and Committees

- Senior Member of IEEE
- Member of INSTICC (The Institute for Systems and Technologies of Information, Control and Communication)
- IAENG (International Association of Engineers), IAENG Society of Internet Computing and Web Services and IAENG Society of Software Engineering
- Member of SRAIT (Romanian Society of Automation and Technical Informatics)
- Member of CIMR (Centre for Research & Training in Industrial Control, Robotics and Materials Engineering) University “Politehnica” of Bucharest
- Member of the Editorial Board of International Journal of Communications, Network and System Sciences (SCIRP)
- Member of the Editorial Board of International Journal on Advances in Software (IARIA)
- Member of the Editorial Board of International Journal of Practical Electronics
- Member of the Editorial Advisory Board for “Organizational, Legal, and Technological Dimensions of Information System Administrator”, IGI Global, to be published in 2013
- Organizer EASe 2016 and 2015 (First International Workshop on Models and Technologies for Providing Education and Awareness Services at a Large Scale) co-located with eLSE
- Steering Committee Member MESOCA (IEEE International Symposium on the Maintenance and Evolution of Service-Oriented Systems and Cloud-Based Environments) co-located with ICSME
- General Chair MESOCA 2014 co-located with ICSME 2014, Victoria BC, Canada, and MESOCA 2013 co-located with ICSM 2013, Eindhoven, The Netherlands
- Organizer CyRM-2013, (International Workshop on CyberInfrastructures for Natural Resource Management) in conjunction with CSCS 2013, Bucharest, Romania
- Program Co-Chair MESOCA 2012 co-located with ICSM 2012, Riva Del Garda, Italy
- Organizer MILES 2012 (The First Workshop on Migrating Legacy Applications to Service Oriented Systems) in conjunction with EIDWT 2012, Bucharest, Romania
- Program committee member of MESOCA 2011 co-located with ICSM 2011, Williamsburg, Virginia, USA
- Program committee member of CLOSER 2010 - 2017 (International Conference on Cloud Computing and Service Sciences) (ISI)
- Program committee member of CLOUD COMPUTING 2011- 2017 (International Conference on Cloud Computing, GRIDs, and Virtualization) (IARIA)
- Program committee member of KMIS 2010 – 2017 (International Conference on Knowledge Management and Information Sharing) (ISI)
- Program committee member of 2nd International Symposium of Intelligent Informatics ISI'14 2014 and ISI'13 2013, co-located with ICACCI (ISI, IEEE)
- Reviewer for IEEE Transactions on Education (ISI)
- Reviewer for Journal of Control Engineering and Applied Informatics (ISI)
- Reviewer for Scientific Bulletin of University “Politehnica” of Bucharest (SCOPUS)
- Reviewer for Revue Roumaine des Sciences Techniques – Série Electrotechnique et Energétique (ISI)
- Reviewer for TAOSD, Lecture Notes in Computer Science (Springer)

Proposed PhD Topics:

- Services for Hazard Management
- Socio-Technical Aspects of Software and System Evolution

Services for Hazard Management

Hazard management systems are based on acquiring, integrating, processing and visualizing data and information related to infrastructures with a large degree of distribution. They are based on a highly non-homogeneous acquisition of data - from existing databases, sensor networks, public websites, Internet of Things - and use complex visualization facilities, overlapped to various maps stored locally or remotely, in a Cloud environment. Apart from that, the data analysis should be capable to offer relevant inputs for complex decision systems, based on formal representation of knowledge, in order to indicate the appropriate moment and the receiver of alert messages.

The challenges are related to the adoption of proper platforms and the integration of services with legacy software for processing domain specific data and for applying mathematical models of high complexity. Besides, an important aspect is the necessity to offer awareness and early warning services for various territorial vulnerabilities (e.g. induced by the pollution from industrial agents) and to design trustful decision support systems, with rules that lead to transparency and communication speed, yet also conform to the constraints imposed by the organisms officially entitled to manage emergency situations.

Socio-Technical Aspects of Software and System Evolution

The migration of traditional software systems towards modernized solutions, based on metamodeling, Service-Oriented Architecture, and Cloud Computing, does not only imply technical challenges, but also transformations at the level of stakeholders, roles, psychology, or even organizational structures.

A PhD student would have to approach this situation by creating new languages and tools for a better visualization of the human aspect of the evolution, and for developing new rules, analysis methods and decision support facilities. This may also affect the way one models and treats security access roles to the new systems, characterized by the integration of multiple artifacts at a high level of abstraction. This represents an aspect of the migration that has been ignored so far, and has to be introduced in future tool suites, along with the support for business assessment, risk management, reengineering and model-driven engineering.