# Foreword
# SEDES 2012
## Fourth Portuguese Software Engineering Doctoral Symposium

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### I. INTRODUCTION

THE Fourth edition of the Portuguese Software Engineering Doctoral Symposium (SEDES 2012) was held on 3 September 2012 in Lisbon, co-located with the QUATIC 2012 conference. The aim of this symposium is to bring together software engineering PhD students supervised or co-supervised by faculty members of Portuguese universities in a constructive environment where they can present and discuss their ongoing PhD projects. The symposium aims at selecting PhD students that have already settled on a specific research topic, but are at least one year apart from delivering their dissertation, so that they can still benefit from the symposium discussions. This symposium is also instrumental as a gathering point for the Software Engineering researchers in Portugal, with a tradition of synergies facilitator since its first edition. As such, an effort has been made to hold this event in different towns. Previous editions took place in Coimbra [1], Caparica [2] and Porto [3].

Regarding scope, the eligible topics for participation in SEDES include all knowledge areas defined in SWEBOK [4]. Research work in related fields such as Computer Science (including formal methods) and Information Systems (including Information Services variants) are considered within the scope of SEDES if they hold an applied perspective on the technological or methodological issues of software development or maintenance.

### II. ORGANIZATION

Six PhD students were selected for presenting their work in this edition. Submissions were blind-reviewed by at least two program committee members focusing on the quality, maturity and clarity of the ongoing research work, both in terms of scope delimitation and problem relevance, adequacy of the adopted methodology, results significance and their validation, as well as technical writing style. The reviewers' panel included Software Engineering experts from the majority of the Portuguese public universities, namely Dulce Domingos (FCUL), João Cachopo (IST-UTL), João Miguel Fernandes (Univ. do Minho), José Maria Fernandes (Univ. de Aveiro), José Paulo Leal (FCUP), Miguel Pessoa Monteiro (FCT-UNL), Pedro Guerreiro (Univ. do Algarve), Raul Moreira Vidal (FEUP), and João Varajão (UTAD). The papers presented in the symposium covered a wide range of topics and were discussed in depth, both with the symposium participants and with a set of invited senior "opponents", chosen amongst SEDES PC and Steering Committee members.

The Symposium was organized in 4 sessions. The first session included a welcome address and an "elevator pitch session", where students were invited to present their work in no more than 2 minutes each. The session continued with the first student presentation. The second and third sessions included 2 student presentations each, while the fourth session featured the last student's presentation and a closing discussion. While the invited senior "opponents" were responsible for fostering a constructive discussion on the challenges faced by each of the students, all symposium participants (and, in particular, the PhD students) were strongly encouraged to provide feedback to the presenters.

### III. PRESENTATIONS SUMMARY

Luís Alves presented his work on *"Experimental Software Engineering in Educational Context"*. In his PhD research, Luís is dealing with the challenges of conducting experimentation using students as participants. Experimentation is a crucial activity in the

evaluation of Software Engineering claims. Unfortunately, it is hard to find appropriate industry settings where experimentation is feasible. Luís is particularly interested in evaluating how the Rational Unified Process can be made compliant with the Capability Maturity Model Integration (CMMI) maturity levels 2 and 3. He is also analyzing the influence of project management tools in the evolution of the maturity of development teams. By conducting his experimentation with students, Luís will assess the extent to which the results obtained with students are comparable with those reported in related studies carried out in industry.

Ankica Barišić presented her work on *"Usability Evaluation of Domain Specific Languages"* (DSLs). DSLs are increasingly being adopted in industry due to their claimed benefits with respect to software development productivity. These languages use concepts from the corresponding application domain, thus making them potentially suitable for usage not only by professional software developers, but also by domain experts and domain users, who can then develop their own applications. In order for DSLs to succeed, their quality in use is a key element. However, there is currently little evidence of serious DSL evaluation being carried out in a systematic way. Ankica's work aims to mitigate this shortcoming by proposing methods and models to support this evaluation and promote it to a first class activity in the DSL development cycle. This work draws influences from usability engineering to language engineering.

Tiago Boldt Sousa presented his work on *"Object-Functional Patterns: Re-Thinking Development in a Post-Functional World"*. For several years, design patterns have been primarily presented using the object-oriented paradigm. More recently, the development of other paradigms has provided developers with innovative ways of solving problems. Tiago focuses his work in the increasingly popular object-functional paradigm and on how existing patterns can be migrated to this paradigm and improved by using its mechanisms. The dissertation's contribution includes reference implementations for these patterns in the *Scala* programming language, to be evaluated both in academic and industrial contexts. The benefits of patterns introduction in this new paradigm are expected to be a valuable input for language development, through patterns absorption, as well as useful for practitioners who can apply these patterns in their work.

José Martins presented his work on *"Ontologies for Product and Process Traceability at Manufacturing Organizations: A Software Requirements Approach"*. A traceability business process is a mandatory feature for organizations acting as product providers, but its implementation in a sustainable way remains a challenge, mostly due to difficulties in reaching a common understanding on the meaning of traceability concepts, concrete demands and the process nature itself. José's work aims to improve the support for traceability offered by Information Systems solutions. To this end, José is developing an ontology of the "traceability business process", upon which domain models can then be built. The main targets (from a software development perspective) are requirements elicitation and solution validation. The reported work is being conducted in close cooperation with a large manufacturing organization partner, which will foster its validation in a real-world setting.

Manuel Amaro presented is work on *"A Software Framework for Supporting Ubiquitous Business Processes: An ANSI/ISA-95 Approach"*. Ubiquitous computing is becoming increasingly important, and has a potentially deep impact in the way business processes are shaped and monitored. In particular, monitoring the execution of business processes in real-time, through ubiquitous computing, enables the possibility of adapting these business processes to changes in their environment, as well as to set up alarms to detect deviations to the planned business processes (e.g. time deviations). This approach has already been tested in two projects in the automotive industry and is currently undergoing a formalization initiative, which will facilitate the construction of a framework to monitor the real-time executions of ubiquitous business properties.

Finally, José Sousa presented his work on *"Modeling Organizational Information Systems Using "Complex Networks" Concepts"*. His work tackles the problem of understanding the information flows that emerge in the increasingly more frequent Service Oriented Architecture (SOA) information systems. José is particularly interested in defining an approach to support the adoption of a complex network metamodel upon which existing organizational information systems can be defined and later monitored and better understood. The work is inspired by complex networks research from other domains, namely physics and is expected to be instrumental in increasing our understanding on the co-evolution of enterprise and socio-technical systems.

## IV. Conclusions

Once again, SEDES was a privileged occasion for Software Engineering PhD students to get feedback on their research proposals and on the adequacy and feasibility of their research plans, as well as for getting advice on how to improve their scientific presentation abilities.

Further information on this doctoral symposium can be found at http://2012.quatic.org/sedes/

## ACKNOWLEDGMENT

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## REFERENCES

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