Lecture Notes in Computer Science 4765

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Early Aspects: Current Challenges and Future Directions

10th International Workshop
Vancouver, Canada, March 13, 2007
Revised Selected Papers

Springer

Volume Editors

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Preface

Celebrating Five Years of Early Aspects

The early aspects community had its origins in the "Early Aspects: Requirements Engineering and Architecture Design" workshop organized during the first international conference on Aspect-Oriented Software Development (AOSD), in March 2002. Since then, the early aspects community has grown rapidly. At the time this project started, the Early Aspects Steering Committee (www.early-aspects.net) had organized nine editions of the Early Aspects workshop in conferences such as AOSD OOPSLA, ICSE and SPLC and edited two special issues in international journals. Workshop attendance has exceeded 200, and from these more than 60% were different individuals. This number corresponds to just over 20 participants per workshop, despite the fact that participation was allowed only to authors of accepted papers or invited researchers.

However, the early aspects community is much larger than that. A considerable number of papers have been published regularly in journals, books and conferences where the early aspects workshop has not yet been organized. The number and range of submissions to the workshop series have demonstrated that the field has a solid base of continuous research being done by established groups around the world.

The early-aspects community is now self-sustaining and continuously expanding. Therefore, we felt that the fifth anniversary of the first early aspects workshop was an appropriate juncture to upgrade the autonomous standing of the community by providing it with its own formal publication. In this way, relevant new work can be showcased in a dedicated publication, instead of being dispersed across several different events with more informal proceedings.

What Are Early Aspects?

Traditionally, aspect-oriented software development (AOSD) has focused on the implementation phase of the software lifecycle: aspects are identified and captured mainly in code. Therefore, most current AOSD approaches place the burden for aspect identification and management on the programmer working at low levels of abstraction. However, aspects are often present well before the implementation phase, such as in domain models, requirements and software architecture.

Identification and capture of these early aspects ensure that aspects related to the problem domain (as opposed to merely the implementation) will be appropriately captured, reasoned about and available. This offers improved opportunities for early recognition and negotiation of trade-offs and allows forward and backward aspect traceability. This makes requirements, architecture, and implementation more seamless, and allows a more systematic application of aspects.

Early aspects are crosscutting concerns that exist in the early life cycle phases of software development, including requirements analysis, domain analysis and architecture design activities. Early aspects cannot be localized using traditional software develop-

ment divide-and-conquer functional decomposition techniques and tend to be scattered over multiple early life cycle modules. This reduces modularity and reusability, potentially leading to serious maintenance and evolution problems.

Whereas conventional aspect-oriented software development approaches are mainly concerned with identifying aspects at the programming level, early aspects work focuses on the impact of crosscutting concerns during earlier activities of software development. Identifying, modularizing and managing aspects early in the software development process has a large and positive impact on the whole software system.

About This Volume

The tenth edition of the Early Aspects workshop was a success. The quality of the technical program, marked by three special moments, attracted some 50 participants in all. We began with a brilliant keynote given by Anthony Finkelstein on "Aspects, Views and Processes" where he emphasized the need to step away from considering aspects purely in terms of representation and start exploring the tangled relationship between processes and aspects.

The International Programme Committee selected ten high-quality papers for presetnation at the workshop. These were presented in four single-stream sessions with a discussant and emphasis on audience participation and debate. In a second, post-workshop phase, the authors were requested to produce a new version of their work to address the comments received from PC members and also specific points that were raised by their paper discussant and other participants during the workshop. These revised papers were submitted to a subset of the original PC members for a second review, each paper in this volume thus going through a two-stage revision process.

Finally a panel entitled "Early Aspects: Are There Any Other Kind?" was run at the conclusion of the workshop. The panel leader was Awais Rashid (University of Lancaster) and the panelists were Anthony Finkelstein (University College London), Gregor Kiczales (University of British Columbia), Maja D'Hondt (INRIA) and Ana Moreira (Universidade Nova de Lisboa). This panel attracted to the room not only early aspects researchers but also a whole set of software engineers usually more interested in later activities of software development. A summary of the discussions closes this volume with an editorial authored by Awais Rashid.

We would like to thank all the Programme Committee members for evaluating the papers, the authors for submitting their work and for improving it according to comments received from reviewers and discussants, and the AOSD-Europe project for sponsoring the workshop. We also would like to thank the papers discussants: Paul Clements, Ruzanna Chitchyan, Monica Pinto and Bedir Tekinerdogan. A special word of thanks is due to Anthony Finkelstein for his superb keynote and to Awais Rashid for making the panel a success. Many thanks to Gregor, Anthony, Maja and Ana for providing the participants with an enthusiastic and lively discussion. No doubt remains about the fundamental role played by early aspects in aspect-oriented software development.

September 2007   Ana Moreira
                                                                        John Grundy

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