

Hints for Organizing a Successful Doctoral Symposium

An Experience Report

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Abstract: This paper describes our joint experience in organizing a Doctoral Symposium co-located with one of the main software engineering conferences. It presents the issues we addressed during the organization of the symposium, as well as during the symposium. This paper is addressed (1) to the organizers of Doctoral Symposiums aiming to provide a recipe with the main ingredients and preparation steps and their related significance in the entire organization process, as well as (2) to the PhD students providing our feedback on the expectations, evaluation, and presentation of their contributions.

1 INTRODUCTION

PhD students in software engineering represent the pool of researchers who aim to follow an academic carrier (and, thus, teach students how to do software engineering) or to join an industrial reality (and, thus, follow the engineering of large and complex software) (Almi, 2011); (Subrahmanyam, 2009); (Villavicencio, 2012); (XueYun, 2010). In this perspective, PhD students should be able to make a research plan of high quality and to follow its implementation from all the points of view (technical and organizational/managerial). Moreover, they should be able to properly interact with all the stakeholders of their research work (e.g., in this particular context, experts in the research domain who are not the requesters/contractors of the project and do not know any detail or history of the project, but who may "buy" the idea and/or the solution).

The Doctoral Symposiums organized in the context of the main conferences give the PhD students the possibility to present their research projects (and research results) and to have a valuable feedback from experts in the software engineering domain. A presentation in the context of a Doctoral Symposium should be seen as a preview of a PhD dissertation.

This paper presents the experience of the co-chairs of a Doctoral Symposium co-located in the

context of one of the most important software engineering conferences: European Conference on Software Architectures (ECSA, 2013).

1.1 Why This Paper?

The motivation beyond this paper is twofold.

The first concerns the organization of the Doctoral Symposium. The co-chairs have experience in organizing such types of events (e.g., conferences, workshops, doctoral symposiums). Concerning the Doctoral Symposiums, we have gathered quite different experiences in organizing different symposiums, differences coming from the research area and from the co-located conferences. Hence, in this paper we aim to summarize the hints and the lessons learned from the organization of such events by providing as an example our experience in organizing this Doctoral Symposium (Ovaska, 2010).

The second concerns our feedback through this paper to the PhD students. In our opinion it is very useful for them to know the rules of the game in order to prepare and present a meaningful research plan, convince the reviewers and the attendees of the significance of their work, justify the results and value of the proposed work, and make a capturing/interesting presentation in front of the software domain experts. This will help students also in their future academic or industrial carriers.

1.2 Which Are the Lessons Learned?

Concerning the organization work, the co-chairs have learned that there is little material (except the Web sites of the conferences and workshops) on the organization rules of Doctoral Symposiums in general, and on the evaluation criteria in particular.

Concerning the feedback for the PhD students, the co-chairs have to outline that PhD students are often confused and have difficulties to present a research agenda for three-four years. Especially, describing the expected results and their validation seems particularly difficult for students. However, they are rather familiar with presenting workshop and conference papers which have a different objective. They also have difficulties to interact with domain experts (potential stakeholders) due to various reasons.

This paper summarizes the experience of organizing a Doctoral Symposium from the co-chairs point of view. The paper addresses aspects concerning both organization aspects and lessons to be learnt by the PhD students.

The rest of the paper is organized as follows. Section 2 presents the main steps of organizing a Doctoral Symposium, as well as the motivation behind these steps. Section 3 describes an actual example by focusing on the evaluation of the contributions. The lessons to be learnt are listed in Section 4. Conclusions are dealt with in Section 5.

2 ORGANIZATIONAL HINTS

This section lists the meaningful aspects the co-chairs have to address during the organization of the Doctoral Symposium.

2.1 Call for Contributions

The call for contributions should indicate the macro research topics of the Doctoral Symposium. Usually, they are the same or a sub-set of the topics of the main conference which the symposium is co-located with. This aspect is important because it is closely related to the expertise of the program committee members. Typically, part of the main conference program committee members also serve as the evaluators of PhD students research plans and are available and committed to face discussions with PhD students.

The call for contributions should mention the minimum and maximum length of the expected papers. The length may be imposed by the editors of

the proceedings if the papers are accepted to be published in the conference proceedings or in a co-related publication. If no constraints are imposed, the contributions should be long enough to present the main aspects of the students' work, and in the same time as short as possible in order to avoid the insertion of details.

The call for contributions should clearly state what main aspects are to be addressed in the contribution and further used in the evaluation process. It is fair that the students know in advance the rules of the game. Based on their experience and after making a survey on the call for contributions for Doctoral Symposiums co-located in main software engineering conferences (e.g., ICSE (ICSE, 2013), FSE (FSE, 2013), ASE (ASE, 2013), ASWEC (ASWEC, 2013), APSEC (APSEC, 2013), WICSA (WICSA, 2013)) the co-chairs consider as significant the following ones:

- *the problem to be solved, its location and importance in the research field*; this shows the ability of the PhD students to focus on a problem, to locate it in the research field and to evaluate the possible impact if the results are achieved;
- *previous work*, which has addressed similar problems explaining why they have not been previously solved; this shows the ability of the PhD students to understand the research field and to avoid already known problems and mistakes;
- *the proposed approach*; this shows the ability of the PhD students to find appropriate solutions to problems and to make a medium-long term plan for achieving the identified solutions;
- *the expected results*; this shows the ability of the students to identify the impact and the value of their work, as well as the expected results after investing a significant effort to solve a non-trivial problem;
- *a plan for the evaluation of the results*; this shows the ability of the PhD students to sustain and demonstrate concretely the obtained results; this request is usually consciously or unconsciously avoided by the students, hence it has been decided to explicitly introduce it in the call for contributions.

Another significant aspect mentioned in the call for contribution is the stage of the PhD work. This influences the evaluation process (see Section 2.3).

2.2 Program Committee

The program committee should fulfil at least three

different criteria:

- members should be known experts in the field;
- the committee should be balanced and include members from academia and industry;
- members (or at least part of them) should be present during the workshop to discuss directly with the students; this is not easily achievable also because of the parallel events (e.g., sessions, workshops) usually organized during conferences, and hence experts may be involved in various events contemporaneously.

2.3 Evaluation Criteria

Based on the current stage of the PhD work, the five main points listed in the call for contributions are translated into the following evaluation criteria:

- problem addressed and its link to the Doctoral Symposium topics;
- motivation of the problem as an open research issue;
- importance of the problem in the research field;
- identification of the main related works;
- a proposed research plan with milestones for evaluation;
- appropriateness of the research plan for the problem;
- expected results;
- evaluation plan of the expected results;
- appropriateness of the evaluation plan for the results.

Furthermore, the clearness and the presentation quality are added to this list of evaluation criteria.

These evaluation criteria should be made available to the reviewers to achieve a homogeneous evaluation and as objective as possible results.

The co-chairs decided to not accept contributions which are in a very early stage (less than 6 months) because it is difficult for the students to present properly the last three points listed in the evaluation criteria. In early stage, students may start to know the previous work and try to identify a real problem and formulate it in a meaningful way. However, it is typical that they are not able to define a research plan, identify the possible results and/or make their evaluation plans. Furthermore, the co-chairs decided to not accept contributions which are in the advanced stage (less than 6 months to their finish) because the symposium date is usually a couple of months after the submission of the contributions and the feedback provided by the program committee members may hardly influence the thesis even if

problems or open issues are identified.

The program committee members' feedback and the impact of the feedback on the students work are different in an early stage and in an advanced stage. In an early stage, the feedback may influence significantly the students' work starting from the definition of the problem until the evaluation plan of the results. In an advanced stage, the feedback may still influence the proposed approach and may focus on the results and their evaluation plan.

2.4 Letter of Recommendation

The role of the letter of recommendation is to confirm that the submitter is currently a PhD student. In addition, it should indicate the current stage of the PhD student's work and provide a qualitative and brief evaluation of the work done until the submission of the contribution.

2.5 Presentations and Feedback

The students' presentations during the PhD workshop should be perceived by the students as a short version of their final dissertation presentation. For example, a solution may be to allocate 45' to each student, 25' minutes for the presentation and 20 minutes for discussion. The discussion should consider both positive and negative aspects of the presented work in a constructive way.

2.6 Extended Abstract for the Doctoral Symposium

The co-chairs have to prepare an extended abstract about the Doctoral Symposium, abstract which is included in the conference proceedings. The extended abstract summarizes the call for contributions, introduces and thanks the members of the program committee for their collaboration, and provides an overview of the accepted papers (because the Doctoral Symposium papers are not always included in the main conference proceedings) (Ovaska, 2010).

3 AN ACTUAL EXAMPLE

In the case of this Doctoral Symposium, the received contributions were eleven, among which seven have been accepted for the presentation during the Doctoral Symposium. Three of accepted papers got an "accept" decision, while four of them a "weak accept" one.

The strong points of the "accepted" papers can be summarized as follows:

- (1) real open problems identified,
- (2) clear presentation of the problem and of the plan to address it,
- (3) meaningful case study presentations,
- (4) proper identification of the expected results,
- (5) sustainable evaluation plan of the results.

However, also for the accepted papers improvement aspects have been suggested:

- (1) extend the evaluation plan to further case studies or application domains (because some of them seemed narrow-scoped),
- (2) discuss the impact of the results both from theoretical and practical points of view,
- (3) delimit better the contribution of the PhD work if it is developed in the context of a research group/project which involves many researchers.

The strong points of the "weak accepted" papers can be summarized as follows:

- (1) meaningful research question identified,
- (2) potentially good solution plan introduced,
- (3) acceptable expected results,
- (4) promising evaluation of the expected results.

The limitations of the "weak accepted" papers concern:

- (1) the unclearness of the overall presentation,
- (2) poorly or very briefly addressed some of the required points explicitly indicated in the call for contributions,

- (3) missing details for the comprehension of the overall approach,
- (4) English-language presentation problems (which may contribute to the low quality related to the first three mentioned problems),
- (5) format presentation problems (e.g., the requested format has not been adopted and hence, the length of the contribution is less or longer than the requested one).

The main reasons why four of the papers have been rejected are the following. One paper was not focused on the conference topics (e.g., the main stream of this software engineering conference research topics) and hence, on the topics of the co-located Doctoral Symposium. The second rejected paper was in a very early stage and the evaluation criteria were not met. In spite of the fact that the problem addressed and the idea behind the solution were very challenging, the paper was rejected. The third rejected paper did not describe clearly the addressed problem, the proposed approach, and the expected results. Its presentation quality was also quite poor. The fourth rejected paper was a particular case because it was a short version of the paper submitted and accepted to be presented during the main conference. In addition, it did not address all the requirements specified in the call for contributions, being thought from the beginning for the main conference.

The qualitative evaluation (considering as values: excellent, good, fair, and poor) of the contributions is shown in Figure 1.

Paper Number	Current Stage (Years)	Expected date of dissertation	Problem Addressed	Motivation of the Problem	Importance of the Problem	Related Work	Proposed Plan	Appropriateness of the Proposed Plan	Expected Results	Evaluation Plan	Appropriateness of the Evaluation Plan	Presentation Quality	Evaluation Reviewer 1	Evaluation Reviewer 2	Evaluation Reviewer 3	Additional Comments	Final Decision
1	2	2011	Excellent	Good	Excellent	Good	Excellent	Good	Good	Fair	Good	Good	Accept	Accept	Weak Accept		ACCEPT
2	1.5	2011	Good	Good	Good	Good	Good	Good	Good	Fair	Fair	Good	Accept	Weak Accept	Weak Accept		ACCEPT
3	1	2012	Good	Good	Good	Good	Good	Good	Fair	Fair	Fair	Good	Accept	Weak Accept	Weak Accept		ACCEPT
4	0.5	2013	Good	Good	Good	Good	Fair		Fair	Fair	Fair	Good	Borderline	Weak Accept	Accept	The requested format has not been respected.	WEAK ACCEPT
5	2	2011	Good	Good	Good	Good	Good	Good	Fair	Poor	Poor	Fair	Borderline	Accept	Weak Accept	Parts of the required points are mixed.	WEAK ACCEPT
6	1	2012	Good	Good	Good	Fair	Good	Good	Fair	Poor	Poor	Fair	Accept	Weak Accept	Borderline	Parts of the required points are mixed.	WEAK ACCEPT
7	1	2012	Good	Good	Fair	Fair	Good	Good	Fair	Fair	Fair	Fair	Borderline	Weak Accept	Weak Accept	More than a research topic it seems to me a case study.	WEAK ACCEPT
8	2	2011	Good	Good	Good	Fair	Poor	Poor	Poor	Poor	Poor	Poor	Weak Reject	Weak Accept	Borderline	The paper does not match the PhD workshop topics.	WEAK REJECT
9	2	2012	Good	Good	Good	Good	Good	Fair	Good	Good	Fair	Fair	Reject	Weak Reject	Weak Accept	Too early stage.	WEAK REJECT
10	0.5	2013	Good	Good	Good	Fair	Good	Fair	Poor	Poor	Poor	Good	Reject	Weak Reject	Borderline	An extended version of this paper has been presented and accepted to the main conference.	REJECT
11	2 years	2011	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Accept	Weak Accept	Weak Accept	Terminology inconsistencies.	REJECT

Figure 1: Example of evaluation results concerning the actual example.

4 LESSONS LEARNED

This section summarizes the main lessons the organizers and the PhD students should learn from and for a Doctoral Symposium.

4.1 Lessons to Be Learned by the PhD Students: Preparation of Contributions

PhD students interested in presenting their work in the context of a Doctoral Symposium should first understand the following hints:

1. Read carefully the call for contributions. First, meet the topics and then try to address all the requirements.
2. A Doctoral Symposium paper is not just another paper. PhD students should be really motivated and interested to receive a valuable feedback from experts to improve their three-four years work. It should describe a research plan/agenda, which may address one or more challenging research problems connected among them and which should be developed through three-four years. It is true, three-four years may seem a very long period especially in the IT world, and this may lead to changes in the agenda. However, the PhD students should be able to provide and sustain their research agenda also in a changing research environment.
3. The PhD research may be co-located within one or more research projects. An important observation should be made here: the projects should not be confused with the research plan/agenda of a PhD student. Students should clearly state their own agenda and the link with the co-related projects. In addition, a PhD student should clearly delimit his/her own contribution from the other members of the research group.
4. Do not try to invent problems. Try to find a real one, also considering the interaction with the industrial partners and lessons learned in industry settings.
5. The page limit may be a problem. Try to be concise, and in the same time precise.

4.2 Lessons to Be Learned by the PhD Students: Presentations and Feedback

The PhD students who have their work accepted to

be presented at a Doctoral Symposium should consider the following hints:

1. Each presentation should indicate the potential application domains of the results of the research work and describe how the results will be validated in a case study or a set of case studies. Even if in the paper there is no space for such information, the presentation should include application domains and case studies.
2. PhD students should listen carefully to the questions and the comments made by the audience (program committee members and other experts) and only after the interlocutor has finished the question/feedback try to answer and provide further details. PhD students tend to answer immediately showing that they have quickly understood the intention of the interlocutor and that they have already thought about the raised problem. Students should admit that the audience may know more on a particular topic than themselves, even if there are persons in the audience who do not publish papers in this domain, but work in this domain.
3. PhD students should consider their interlocutors as friends, not enemies, which try to help them by even making uncomfortable questions and comments. Furthermore, they should establish closer contacts with (at least part of) the program committee members.
4. PhD students should also listen carefully to the other PhD students' presentations and ask questions about their work because they can learn about the more advanced PhD students' work and avoid repeating the similar problems in their own work. Furthermore, the presenters will be their future colleagues.

4.3 Lessons to Be Learned by the Doctoral Symposium Co-chairs

The organizers of a Doctoral Symposium should consider the following aspects:

1. Insert a request in the call for contributions which asks for a gantt concerning the main milestones for the proposed plan/agenda. Or, require the presentation of the gantt during the Doctoral Symposium.
2. The letter of recommendation has currently a formal role, indicating the submitter is currently a PhD student and that the research field is the one described in the paper. In addition, it specifies the year of the PhD research. This letter should have a more important role. It should

provide an overview of the student research and organizational abilities and a qualitative evaluation of the current status of the PhD student's work. It should also state the collaborators in this work (e.g., MsC students making their final thesis on topics concerning the research plan, as well as senior researchers in case the PhD work is co-located with an European or National project).

3. Require a list the accepted and submitted publications concerning the PhD research plan.
4. Provide a template for presenting the PhD research plans and clearly stipulate that it should be strictly followed.
5. Encourage PhD students' participation by allocating them one of the papers for evaluation. In this way, a PhD student can practice his/her competence on making analysis and representing the evaluation results in a critical, but polite manner and discuss about them with the program committee and workshop members.
5. Be always two or more co-chairs especially if the organizational period (e.g., review process) may include holidays and one of the co-chairs may not be available for several days.

5 CONCLUSIONS

PhD students are the talent of the future who shall solve the emerging challenges in increased complex situations in innovative ways. Thus, it is extremely important that they can get all the support for making their journey towards the core of their research community as fruitful and easy as possible. The primary intend of this paper is to support PhD students in making top-class research and to provide the guidelines for the chairs of Doctoral Symposiums to organize successful events. Indirectly, this kind of guidance can influence the quality and effectiveness of research, which in turn will have a positive impact on IT based innovation and business as well.

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