The First International Workshop on Requirements Prioritization and Enactment

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Abstract. Requirements prioritization and next release planning have received a considerable amount of attention from the research community, resulting in substantial contributions to research as well as industry. However, while this is to be encouraged, there are still outstanding issues that need to be addressed in both areas. Furthermore, the interaction between these two areas of research needs to be further researched, as does the collaboration between research and industry. This first PrioRE workshop is a multi-disciplinary, one-day workshop geared towards achieving these goals. In particular, it will bring together practitioners and researchers, with the aim of discussing the challenges of improving release planning by supporting requirements prioritization and their enactment. The workshop is open to the public and its format will consist of brief presentations of papers by authors, followed by a more rigorous discussion session where ideas could be further explored by participants.

Keywords: requirements prioritization, release planning, enactment

1 Introduction

The Requirements Engineering process starts with requirements elicitation and gathering, and ends with their enactment – i.e., the planning of their actual implementation and release. While the requirements elicitation phase is strongly user-oriented, as it aims at capturing the user needs and preferences, requirements enactment implies a decision making activity done by the software development company, with the purpose of finding a proper implementation scheduling on the basis of the company's resource availability and other constraints. For this reason, practitioners are continuously challenged by the need to afford costs – money, time, human resources, etc – that limit their capability to deliver the implementation of new, user-requested requirements. This cost-value trade-off weighs substantially on the success or failure of software projects, and businesses in general.

In order to tackle this problem and minimize the associated risk of failure, careful but fast decision making activities have to be put in place. Requirements

prioritization [4] is a decision making activity, which means to either (i) *prioritize by implementation order*: determining the order in which requirements are implemented in an incremental development cycle, resulting in a schedule for the implementation of the requirements; or (ii) *prioritize by importance*: determining the order of requirements based on their importance to some stakeholder according to one or more criteria, resulting in the relative necessity of the requirements. Requirements prioritization is faced by a number of issues and challenges [4], such as:

– mandatory nature of requirements: even though all requirements are mandatory, not all of them have the same priority;
– large number of requirements: consistently prioritizing a large number of requirements is difficult, hence the techniques for prioritization should support the process while keeping inconsistency low;
– limited resources: due to various limitations (e.g., budget, schedule), it may not always be possible to implement all requirements at a given increment;
– changing requirements: priorities of requirements could change over time for various reasons (business needs change, stakeholders change their minds, new requirements are added, etc.);
– stakeholder-developer collaboration: stakeholders prioritize based on the value (importance) they get, while developers prioritize/schedule based on estimates of cost and schedule;
– incompatible requirements: some requirements may not be suitable for comparison on a similar scale (e.g., performance vs maintainability);
– subjective prioritization: prioritization is typically subjective and exposed to bias from different angles. On the other side, objective prioritization based on estimates are often expensive and many not scale well;
– consequences of poor prioritization: incorrect prioritization of requirements could have serious consequences on finance and stakeholder satisfaction.

On the other hand, *Release planning* deals with the selection of a set of features to be included in upcoming releases [3, 8]. Typically, there is a larger number of features than what can be included in a particular release of a software product. Hence, a decision needs to be made on which ones to include in the upcoming release. In the literature, this issue has been widely studied and formulated as the Next Release Problem (NRP). Several approaches have been proposed [2] to find appropriate solutions to NRP, with the ultimate objective of providing support to experts while making decisions on which set of features to include in upcoming releases.

The need for this workshop is partly based on the observation that research [1, 5–7] should also focus on the synergy between these two activities, i.e., requirements prioritization and release planning, and explore potential advantages to be gained from jointly entertaining these two closely related areas of research.

The Workshop on Requirements Prioritization and Enactment (PrioRE 2015) therefore aims to play a pivotal role in bringing research experts and practitioners together, and provide them with a platform to exchange their visions on

requirements prioritization, release planning and their enactment. The main focus will be on how requirements can be best prioritized, and how the releases are planned and enacted.

Techniques to improve the efficiency and effectiveness of the prioritization and enactment decision making processes may consider for example collaborative or distributed prioritization activities, or exploit drastically new approaches and perspectives. Already existing optimization approaches will of course be taken into account in this discussion. The end product will be a shared concept of every step, from the emergence of needs and innovative ideas to their specification and management, to their realization in development and management artifacts, to the evaluation of the implementation. This, in turn, will form the basis of a concrete roadmap from fundamental research and the practical application of requirements prioritization and enactment methods.

This workshop proposal describes the workshop goals and themes that will appear in the call for papers for the target audience. It further provides contact information and short bios of the members of the organizing committee, and lists the tentative program committee members.

2　Topics

PrioRE mainly aims at discussing questions related to the finalization of the requirements engineering phase. Such questions include (but are not limited to):

– Requirements prioritization
– Requirements dependency management
– Distributed and collaborative requirements prioritization
– Agile requirements prioritization
– Release planning
– Requirements negotiation
– Gamification approaches for decision making
– Tools and techniques for requirements prioritization
– Tools and techniques for release planning

3　Target audience

The intended audience of the PrioRE 2017 workshop is a mix of academic and industrial participants. The workshop organization will promote in particular the participation of industrial representatives, as the topic acts naturally as the join point between theoretical research on requirements engineering and their operationalization in a production context.

4　Dissemination strategy

The usual mailing lists related to software engineering (e.g., SEWORLD, AIS-World, RE-ONLINE) will be a primary source of participant solicitation, both

for the call for papers and the call for participation. We will also make dedicated publicity using our contact networks and industry-oriented distribution channels (e.g., blogs, industrial days) and organizations. Printed call for papers will be distributed at the conferences and events whose attendees could be eventually interested in the topic of the proposed workshop. We will use our contact network (including PC members) to identify national representatives to ask them for distribution using national lists.

In particular, we are particularly interested in fostering the participation of industry representatives.

5   Paper submission procedures

A preliminary web site for the workshop is available at the address `http://selab.fbk.eu/priore16/` Authors may submit papers in three general categories:

- Research/Teoretical papers (Max 10 pages for both, submission and camera-ready)
- Industry Report papers (Max 10 pages for both, submission and camera-ready)

Submissions will be received through EasyChair and will be reviewed by at least three members of the program committee for relevance to the workshop topics of interest. If submission through EasyChair will not be possible, we will plan for other options. The submission deadline is set for January 09, 2017, while the notification of acceptance is set for January 23, 2017. The hard deadline for camera-ready submissions will be February 03, 2017.

6   Workshop format

In general, we will push for putting in action creative strategies that promote participation and discussion, as witnessed or even applied in recent conferences and workshops. Among them, we mention:

- Introduction of the attendees at the beginning with the goal of creating a friendly atmosphere from the start. Several techniques exist (e.g., roundtable presentations to facilitate people get to know each other).
- Agile presentations. We will completely avoid 30- minute presentations (i.e., the workshop will not be a mini-conference). We plan 10-minute talks with the objective of generating discussion supported by the research results presented in the papers.
- Critical insights. We will assign a discussant to each paper who will discuss its pros and cons following which shall be any specific input from the participants. This has been successfully used at REFSQ conferences for many years (see for example: http://refsq.org/2012/event-format/). Individual discussion is assumed to be 10 minutes long.

- Plenary discussions. We plan to end every session of presentations with a plenary discussion on the topics of the papers presented. On the measure of the possible, the papers presented in each session will be organized by common topics.

We envisage a 1-day workshop, although it could be reduced to half-day if necessary. The a tentative schedule is as the following:

Table 1. PrioRE'17 tentative schedule

Session 1	
9:00-9:20	Opening. Introduction of participants
9:20-10:30	Keynote + discussion
Session 2	
11:00-12:30	Presentations with plenary discussions
Session 3	
14:00-15:30	Presentations with plenary discussions
Session 4	
16:00-17:15	Open discussion on the future trends
17:15-17:30	Wrap-up and research agenda

The concrete format will ultimately depend on the number of attendees and will be published in advance on the website of the workshop.

7 Expected participants

Being the first edition, we expect 5 to 10 submissions, resulting in 10 to 20 participants as starting point to build a community.

If accepted, we plan to involve an additional workshop chair, capable of attracting submissions, specially from the industry.

8 Organizers biography

Alberto Siena is a research scientist at Deltalab, the R&D unit at Delta Informatica S.r.l., Trento (Italy). His research interests lie mainly in the field of business information systems, and concerns topics such as system governance, regulatory compliance management, risk management, auditing, requirements engineering and business-IT alignment. He participated in organizing (RELAW) and program (iStar, WGBP, AOIS) committees of international workshops.

Fitsum Kifetew is a post-doctoral researcher at Fondazione Bruno Kessler, Software Engineering unit, Trento (Italy). His research interests mainly focus in the area of Search-Based Software Engineering (SBSE). In particular, applying optimization algorithms to various software engineering problems such as

automated test case generation, requirements prioritization, and feature model optimization. He participated in the program committee of the SSBSE international symposium and serves as reviewer in software engineering journals (TSE, IST, STVR).

David Ameller is a software engineering researcher at the Universitat Politcnica de Catalunya (UPC) and lecturer at the Universitat Oberta de Catalunya (UOC). He is a member of the Software and Service Engineering Group (GESSI). He obtained the PhD in Computing from the UPC in 2014. He has participated as member of the program committee of several Conferences (RE, CIBSE, JISBD) and as reviewer of several journals (IST, JOT, ACI). His main interests include (but not limited to): Requirements Engineering, Non-Functional Requirements, Software Quality, Empirical Research, Surveys and Interviews.

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