2nd International Workshop on Context for Software Development (CSD 2015)

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***Abstract*—The goal of this one-day workshop is to bring together researchers interested in techniques and tools that leverage context information that accumulates around development activities. Developers continuously make use of context to make decisions, coordinate their work, understand the purpose behind their tasks, and understand how their tasks fit with the rest of the project. However, there is little research on defining what context is, how we can model it, and how we can use those models to better support software development at large. This workshop brings together scholars interested in identifying, gathering and modelling context information in software development, as well as discussing its applications.**

I. Introduction

The dictionary defines context as *"The circumstances that form the setting for an event, statement, or idea, and in terms of which it can be fully understood and assessed."* [1] Applying this definition to software development activities, there is a great deal of context that is needed for a developer to fully understand a task.

In large and complex software projects, developers must manage a large amount of context to complete their development tasks, including relevant software artifacts and their change history, requirements, design specifications, dependent tasks, concurrent work, discussions and knowledge exchanges about those tasks and artifacts, and more. In fact, context in software development is multifaceted, and what information is relevant as context for a developer working on a given task is not fully understood. Developers must make use of knowledge gleaned from all of this context to make decisions, coordinate their work, understand the purpose behind their tasks, and understand how their tasks fit with the rest of the project.

However, there is little research on what type of context is needed for a developer to complete a task, how we can model context around a task, and how we can use those models in software development at large.

Identifying and modeling context in software development will lay the foundation for future software engineering techniques and tools that leverage development context for better support of software developers as they manage and make use of the copious amount of context around their development tasks. Context is also important for empirical software engineering research since the software development process is dependent on many factors of the development setting [1]. Much empirical software engineering research does not consider the context around the development setting [2], but, to draw valid conclusions, it is important to describe the context of the study [3]. More in-depth studies of context and models of context can help software engineering researchers develop a better understanding of many facets of software development, including cognitive, behavioral, social and teamwork issues.

II. Workshop Goal

The goal of the workshop is to bring together researchers interested in techniques and tools that leverage context information around development activities for better support of software development activities.

III. Workshop Topics

Topics of interest to the workshop include, but are not limited to, the following:

- Types of context in software development
- Modeling context in software development
- Application of context in software development
- Using context to support implicit or explicit coordination
- Context in requirements engineering
- Context in testing and maintenance
- Context in collaborative activities such as bug triaging
- Context in development processes, e.g. agile processes
- Software project managers perspectives on software development context

[1] http://www.oxforddictionaries.com

IV. The Papers

We invited two kinds of submissions, 5-page long papers and 2-page short papers, to enable the submission of work at different of stages maturity and encourage researchers to participate and contribute their ideas. We were able to accept 4 long papers and 2 short papers.

A. Long Papers

- A Context-Aware Style of Software Design
  Francesca Arcelli Fontana, Pietro Braione, Riccardo Roveda and Marco Zanoni
- Modeling Context-Aware Command Recommendation and Acceptance in an IDE
  Marko Gasparic and Francesco Ricci
- On the Similarity of Task Contexts
  Walid Maalej and Mathias Ellmann
- CodeBasket: Making Developers' Mental Model Visible and Explorable
  Benjamin Biegel, Sebastian Baltes, Ivan Scarpellini and Stephan Diehl

B. Short Papers

- Untangling Development Tasks with Software Developers Activity
  Martin Konopka and Pavol Navrat
- Empirical Evidences of Factors Influencing Project Context in Distributed Software Projects
  Adailton Lima, Rodrigo Reis and Carla Reis

Our workshop will accommodate discussion on all of the research topics proposed by the papers above, using a format that balances paper presentations with panels and round-table discussion.

The discussion is likely to focus on three main themes that have emerged from the accepted papers, all of which are of great significance for research on context for software development:

- Types of context: Depending on the nature of the activity, the tools being used, the process adopted and other considerations, the kind of contextual data that can become available may look very diverse and may be of value in different ways. It is, thus, important to explore these different types of context and understand how they can be collected, modelled and used.
- Task Context: Developers use context to understand their development tasks. To facilitate developers in their development work, we need to investigate how to associate contextual data to individual development tasks. We will discuss how contextual data can be leveraged to promote a better understanding of the characteristics of each individual task and to draw useful relationships (e.g. similarity) among distinct tasks.
- Tools and methods to manage context: With a better understanding of what context is and how it relates to the activity of developers, we will discuss new methods and tools that could be devised to manage and facilitate development work by utilizing context.

V. Workshop Website

The workshop's website can be accessed at http://csd-ws.github.io.

VI. Program Committee

We are thankful to the following colleagues who contributed their time to review the workshop submissions:

- Walid Maalej, University of Hamburg
- Tore Dybå, University of Oslo and SINTEF
- John Grundy, Swinburne University of Technology
- Annie Ying, McGill University
- Bruno Antunes, University of Coimbra
- Paulo Gomes, University of Coimbra
- Andrew Begel, Microsoft Research
- Thomas Fritz, University of Zurich

VII. Organizing Committee

Kelly Blincoe is currently a Postdoctoral Fellow in the Department of Computer Science at the University of Victoria. Her research interests lie in Software Engineering and Computer-Supported Cooperative Work.

Daniela Damian is a Professor in University of Victoria's Department of Computer Science, where she leads research in the Software Engineering Global interAction Laboratory (SEGAL, thesegalgroup.org). Her research interests include Software Engineering, Requirements Engineering, and Computer-Supported Cooperative Work.

Giuseppe Valetto is currently a researcher in the Service Oriented Applications unit at Fondazione Bruno Kessler, Trento, Italy. His research interests are collaborative software engineering and distributed and self-adaptive systems.

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Kelly, Daniela and Giuseppe served on the organizing committee for the first edition of the workshop, held at FSE 2014. James was the keynote speaker at CSD 2014 and has joined the organizing committee for CSD 2015.

References

[1] P. Clarke and R. V. OConnor, "The situational factors that affect the software development process: Towards a comprehensive reference framework," *Information and Software Technology*, vol. 54, no. 5, pp. 433–447, 2012.

[2] T. Dybå, D. I. Sjøberg, and D. S. Cruzes, "What works for whom, where, when, and why?: on the role of context in empirical software engineering," in *Proceedings of the ACM-IEEE international symposium on Empirical software engineering and measurement*. ACM, 2012, pp. 19–28.

[3] K. Petersen and C. Wohlin, "Context in industrial software engineering research," in *Proceedings of the 2009 3rd International Symposium on Empirical Software Engineering and Measurement*. IEEE Computer Society, 2009, pp. 401–404.