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Software Engineering Aspects of Continuous Development and New Paradigms of Software Production and Deployment

First International Workshop, DEVOPS 2018
Chateau de Villebrumier, France, March 5–6, 2018
Revised Selected Papers

Springer

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Preface

The study of software development processes has a long and respectable history as a subdiscipline of software engineering, so long and venerable indeed that the field became a bit sleepy and self-complacent when the jolt of agile methods caught it by surprise in the 2000s. Another incentive to question long-established wisdom was the spectacular rise of technologies made possible by the World Wide Web, notably cloud computing and software-as-a-service. No longer could we content ourselves with the well-honed scheme in which a software system is analyzed, then designed, then programmed and tested, then released unto the world, then updated at a leisurely pace as problem reports and requests for new features get filed, weeded out, and patiently implemented. The pace frantically increases: For idea–development–deployment cycles that we used to think of as spreading over months, the timeline now is days, hours, even minutes.

In 2009 Patrick Debois coined the term "Devops" to cover this new framework of software development. He and his colleague Andrew Shafer understood the need to combine the skills of software development and system administration, long considered disjoint. They also realized the critical role of deployment, often considered a secondary matter as compared with development.

Devops poses endless challenges to experts in software engineering: Which of the traditional lessons gained over five decades of the discipline's development stand, and which ones need to be replaced in the dizzying world of immediate deployment? An example of a question that takes on a full new life is quality assurance: The stakes are quite different if you have a V&V (validation and verification) phase of a few weeks to prepare for the next release, as in the old world ("old" in IT means, like, 15 years ago), and in the brave new world of deploying this morning's change in the afternoon for the millions of users of your Web-based offering.

DEVOPS 2018 (https://www.laser-foundation.org/devops/2018/), held during March 5–6, 2018, was one of the first scientific events devoted to the software engineering issues raised by the new development models. The event was kicked off by an outstanding introduction to the field by Professor Elisabetta Di Nitto from Politecnico di Milano, and featured an invited talk by Professor Benoît Combemale from Toulouse to start the education panel. The participants came from diverse organizations, with a strong representation of industry along with academia. This volume gathers their papers, considerably enhanced thanks to the feedback received during the conference. This post-conference proceedings format also enabled us to include precious material that usually does not transpire from conference-based publications: partial transcripts of the insightful discussions in panels.

The contributions cover a wide range of problems arising from Devops and related approaches, current tools, rapid development–deployment processes, effects on team performance, analytics, trustworthiness, microservices and related topics, reflecting the thriving state of the discipline and, as is to be expected in such a fledgling field, raising

new questions when addressing known ones. A significant number of contributions cover education, as a number of the authors have to teach the new development paradigms to both university students and developers in companies. These contributions provide a fascinating insight into the state of the art in this new discipline.

DEVOPS 2018 was one of the first scientific events held at the new LASER center in Villebrumier near Montauban and Toulouse, France. Inspired by the prestigious precedent of the Dagstuhl center in Germany (the model for all such ventures), but adding its own sunny touch of *accent du sud-ouest* (the songful tones of Southwest France), the LASER center (http://laser-foundation.org, site of the foundation that also organizes the LASER summer school in Elba, Italy) provides a venue for high-tech events of a few days to a week in a beautiful setup in the midst of a region rich with historical, cultural, and culinary attractions. The proceedings enjoy publication in a subseries of the Springer *Lecture Notes in Computer Science* series.

Several events are planned for 2018–2019, including the next DEVOPS: Participants agreed that the workshop merited another edition, which will take place May 6–8, 2019, again at the Villebrumier center, by invitation (write to any of us if you would like to be invited). We hope that you will benefit from the results of DEVOPS 2018 as presented in the following pages and, who knows, that they might even spur you into participating in DEVOPS 2019.

October 2018

Jean-Michel Bruel
Manuel Mazzara
Bertrand Meyer

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