Variability is a "key fact of most, if not all, systems" and therefore a relevant concern of those systems. "Variability is the ability of a software system to be adapted for different contexts. Variability affects functionality as well as quality attributes of software systems. Even though variability is primarily studied in the software product line (SPL) domain, variability is a concern not only in the context of product lines but of many systems, including service-based systems.

Many software systems are designed to support variability, either at design time (for example, as product lines or product families) or at runtime, especially for self-adapting or service-based systems. Variability itself comes in two dimensions: functional variability and variability in software qualities.

Variability in software quality has not been in the focus of the software engineering research. While there are many works covering variability in functionality, there is a research gap regarding variability in software qualities. This gap is in contrast to the importance of variability in software engineering. Besides the development of single systems, variability is a frequently used key concern in Software Product Line Engineering (SPL). Variability in SPL represents the set of properties which vary in those products. Variability caused by introducing quality attributes has a significant impact on the architecture of an SPL as reported in a recent survey. For SPL, most works that cover variability only take functionalities into account. Additionally, many works that analyze variability in quality attributes only focus on qualities that are related to product lines such as flexibility, while software quality attributes are often neglected.

The VAQUITA Workshop

There is an obvious imbalance between the importance of variability in the context of quality attributes and the intensity of research in this area. The VAQUITA workshop aims at bringing together researchers and practitioners to share ideas and experiences, analyze research trends and upcoming research challenges, discuss open problems, and propose promising solutions with a particular focus on handling variability in software architecture with respect to quality attributes. Beside facilitating the research about variability, quality, and software architectures, we strive at formulating a roadmap on the matter.

VAQUITA targets people with interests not only in software architectures, but also in variability considering qualities such as performance, security, privacy and similar, software engineering, and related areas. The identification of research gaps in variability in existing approaches exhibits the need for a workshop with a particular focus on these gaps in order to offer researchers and practitioners a platform for exchanging ideas and experiences, analyzing research challenges, discussing open problems, and proposing promising solutions. This makes VAQUITA the premium venue for presenting the latest research results in software architecture variability for qualities. As such, VAQUITA will allow established researchers to quickly identify who is doing research in software architecture variability with respect to quality, and early career researchers to join and help grow the variability and quality community. Moreover, VAQUITA will benefit from practitioners who can provide an informed opinion about current challenges they face, and research topics they believe need to be addressed.

Topics

Topics addressed by VAQUITA are those which will promote discussion about advancing variability consideration for software qualities in software architecture. These include, but are not excluded to:

- Modeling variability in the software architecture
- Variability in quality attributes
- Architectural patterns, styles, and tactics for variability
- Identification of variability in quality attributes at the architecture level
- Linking requirements engineering and software architectures in the context of variability and quality
- Variability in qualities for reconfigurable and self-adaptive architectures
- Use of aspect-oriented architectures for quality-based variability
- Detecting and resolving conflicts among variants especially regarding qualities
- Interaction analysis for software product lines with respect to quality attributes
- Managing interactions between design decisions and quality-based variability in the software architecture
- Variability in quality attributes and optimization
- Quality-centered evolution and variability
- Variability across the software lifecycle with regard to qualities

Special Issue

We plan to publish a roadmap, which will be created during the workshop, as a workshop result and problem statement at least in ACM SIGSOFT Software Engineering Notes. The Organizing Committee is currently in negotiations about a special issue on the topic of VAQUITA. Selected revised and extended papers are planned to be invited to be published in this special issue.

1 Hilliard (2010), On Representing Variation
2 Galster et al. (2014), Variability in Software Systems - A Systematic Literature Review
3 Mahdavi-Hezavehi et al. (2013), Variability in quality attributes of service-based software systems: A systematic literature review
4 Pohl and Metzger (2014), Software Product Line Engineering and Variability Management: Achievements and Challenges

http://www.sigsoft.org/SEN/
Submission

Authors are invited to submit either research or position papers on the workshop topics. For research papers, VAQUITA accepts papers with six pages of content at maximum. One additional page is granted for the bibliography only, making it seven pages total for a research paper. For position papers, VAQUITA accepts four pages at maximum. The papers for the workshop will be selected from all submissions in a double blind review. Workshop papers must follow the ACM format and submission guidelines (http://www.acm.org/sigs/publications/proceedings-templates). Proceedings will be published in the ACM Digital Library.

At least one author of an accepted paper has to register for the VAQUITA workshop and attend it. Abstracts and papers are expected to be submitted using the easychair submission system (https://www.easychair.org/conferences/?conf=vaquita2015).

Workshop Format

The workshop runs as a full-day event with a strong focus on discussions. The workshop will consist of an invited speech, three technical paper sessions, and a closing session.

We will open the workshop with an invited keynote speech. Following the keynote talk, there will be three technical paper sessions. Paper presentations are expected to be short, and presenters will be expected to focus on their key contributions, lessons learned, open questions, and future directions. Hence, there will be a sufficient amount of thought provoking statements and time for lively discussions.

To further ensure the interactive format of the workshop, the organizers will pre-assign discussants to each paper. Each presenter will act as a discussant for one or more accepted papers. Discussants will also be responsible for moderating the question and answer sessions for their respective papers. After a paper is presented, the corresponding pre-assigned discussant will stimulate the discussion by asking questions focusing on identified challenges and open problems. Each session will be moderated by a sessions chair, who is one of the workshop organizers. At the end of each session, there will be a small wrap-up slot in which the most important lessons learned, open questions, challenges and future directions will be collected by the session chair in discussion with the audience. In the fourth and final session, VAQUITA will be closed with a wrap-up and brainstorming session, in which open questions, challenges, and future directions, that were collected throughout the day, will be compiled, discussed and a potential roadmap for addressing them will be proposed.

Important Dates

- Abstract submission: **April 26, May 10, 2015**
- Paper submission: **May 3, May 17, 2015**
- Notification: **June 5, June 19, 2015**
- Camera ready: June 29, 2015
- Workshop: September 7, 2015

Organizing Committee

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- Maritta Heisel (University of Duisburg-Essen)
- Uwe Zdun (University of Vienna)
- Azadeh Alebrahim (University of Duisburg-Essen)
- Stephan Faßbender (University of Duisburg-Essen)
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Further Information

For further information and updates see the VAQUITA website [http://www.vaquita-workshop.org](http://www.vaquita-workshop.org).

Program Committee

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- Kristian Beckers (ITESYS)
- Amel Bennaceur (The Open University)
- Götz Botterweck (Lero - The Irish Software Engineering Research Centre)
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