



# ANNUAL REPORT 2023

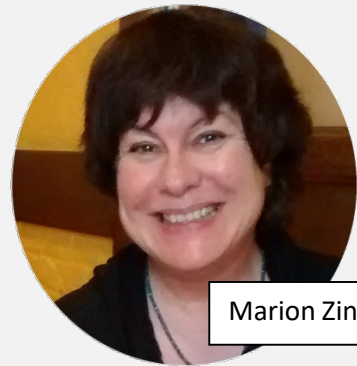
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# SWC TEAM



Horst Lichter



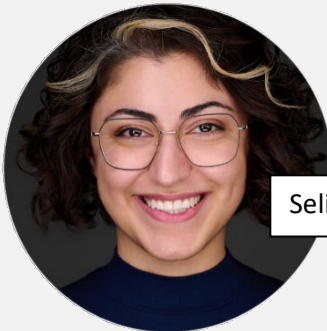
Marion Zinner



Christian Plewnia



Ada Slupczynski



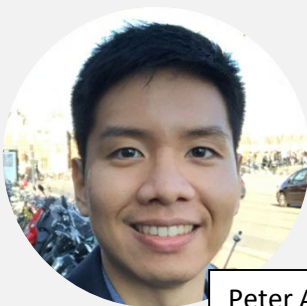
Selin Aydin



Alex Sabau



Nils Wild

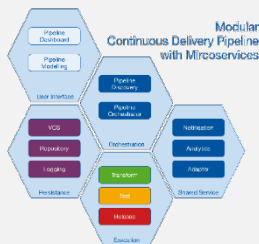


Peter Alexander



Andreas Steffens

## RESEARCH PROJECTS

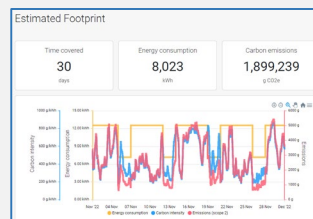


## DevOps-aware Software Engineering

Andreas Steffens

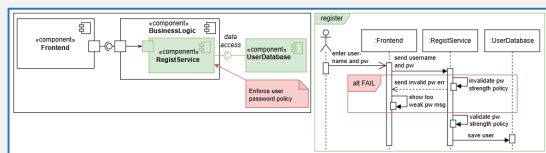
## Cloud Service Selection and Cost Optimization

Christian Plewnia



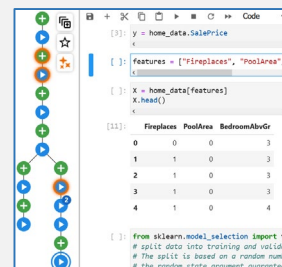
## Security-centered Architecture Modelling

Alex Sabau



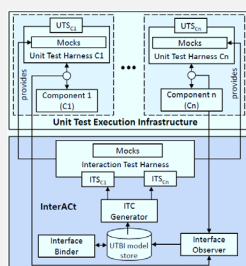
## SE4ML - Processes, People and Tools

Selin Aydın



# Vertical Reuse of Unit Test Cases to Automate Integration Testing

Nils Wild



# Enterprise Architecture Debt Management

Peter Alexander



## Modernization Approaches for Legacy Systems

Ada Slupczynski

# HIGHLIGHTS

## MARCH: SWC Research Retreat

We organized our yearly research retreat in **Hürtgenwald** this year.

As always, we had plenty of time to discuss our research topics and to develop new ideas!



# HIGHLIGHTS

## FEBRUARY: Final SW Lab Presentations

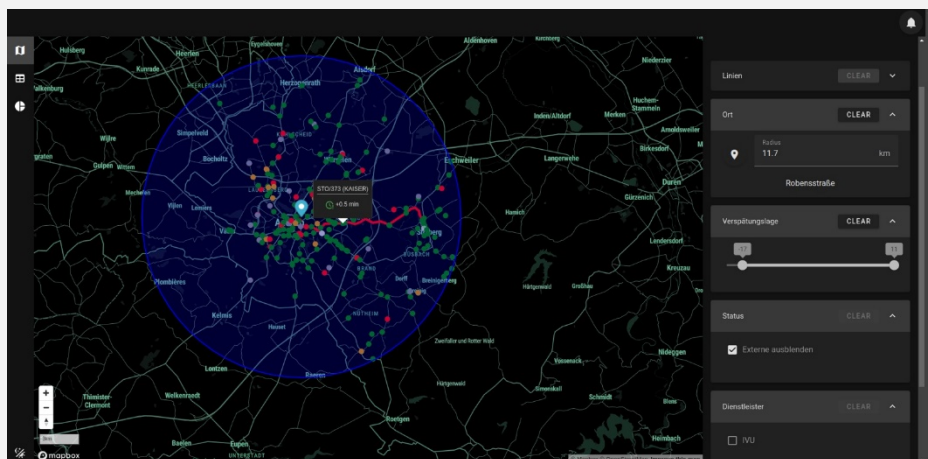
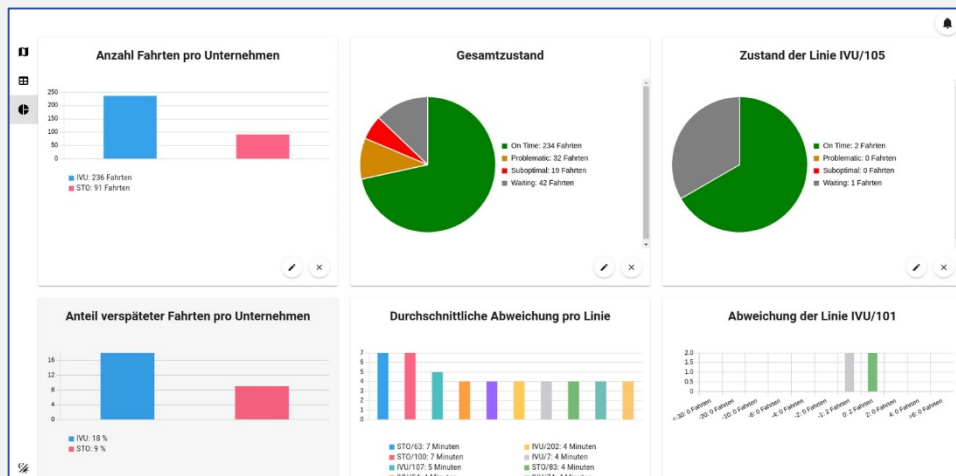
This year, **IVU Traffic Technologies** supported our **Bachelor Software Lab**.

IVU took on the role of the client in this lab. The task for four teams of students was to develop a software system that visualizes the data on the current situation in bus traffic in the form of a clear and innovative dashboard.

The final presentations took place at IVU in Aachen. The results achieved were impressive and were discussed intensively.

Thanks to IVU for offering this opportunity!

Thanks to Nils for managing this lab!





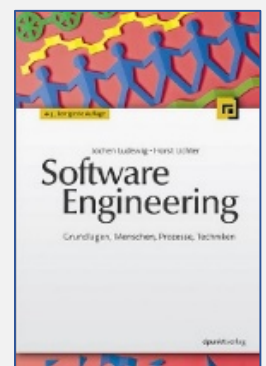
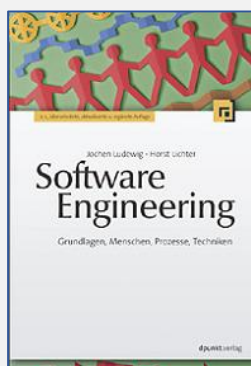
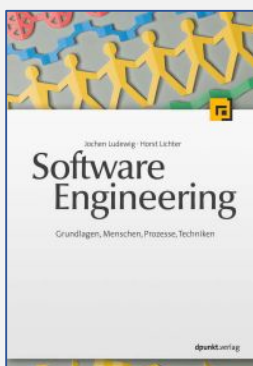
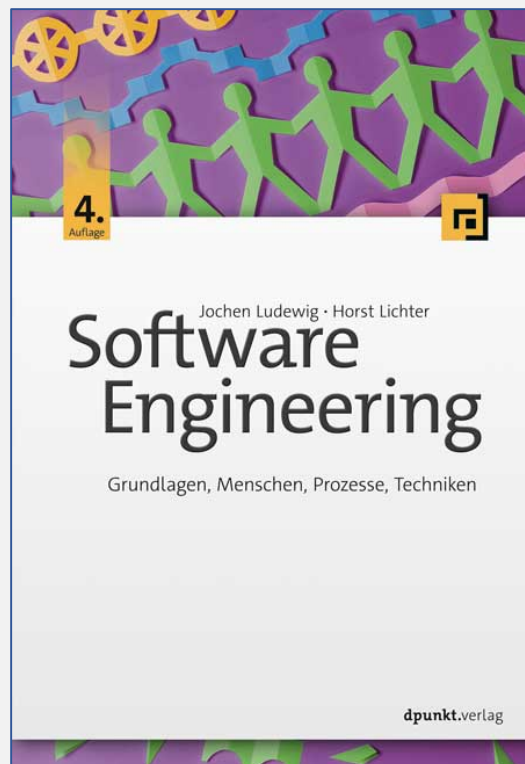
# HIGHLIGHTS

## MARCH: 4<sup>th</sup> EDITION OF OUR SOFTWARE ENGINEERING TEXTBOOK PUBLISHED

10 years after the 3<sup>rd</sup> edition of our textbook “**Software Engineering – Grundlagen, Menschen, Prozesse, Techniken**” the 4<sup>th</sup> edition has been published.

The book’s content has been revised in many chapters, and new Software Engineering topics have been added.

Many thanks to **Jochen Ludewig** for his contributions and support!



# HIGHLIGHTS

## JULY: Team Trip to Schwetzingen

Our annual team trip also had to be paused due to the COVID-19 pandemic.

But this year, it was back on.

Although the weather was bad, we spent two great days in **Schwetzingen** and **Speyer**!



# HIGHLIGHTS

## SEPTEMBER: 25<sup>th</sup> Edition of Vorkurs Informatik

# 25<sup>th</sup>

Since 1999, we have organized and conducted the Vorkurs Informatik. During this time, the learning content and the way of teaching were revised and improved several times.

Since then, approx. 6500 students from all faculties of the RWTH Aachen University have attended the Vorkurs Informatik.

This year, the 25<sup>th</sup> edition took place!

**Thanks to the former team members Andreas Ganzer, Andrej Dyck, and Konrad Fögen, as well as to Christian, Selin, and Nils, all for making the Vorkurs Informatik a success story!**

**Thanks to all the student mentors for their invaluable contributions!**





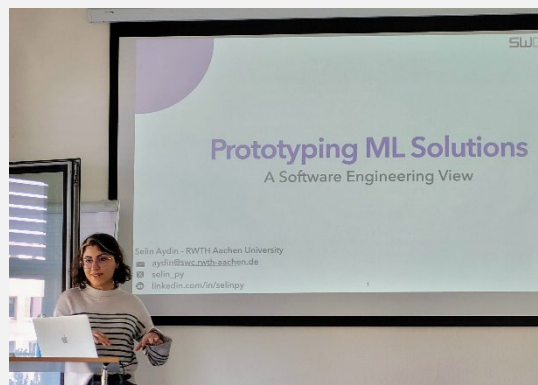
# HIGHLIGHTS

## OCTOBER: OODACH Meeting at WPS in Hamburg

The so-called OODACH meeting has been taking place for many years. It is an invitational meeting where scientists and practitioners from Germany, Austria, and Switzerland (DACH) discuss innovative and exciting software engineering topics.

However, these meetings have had to be canceled since 2019 due to the COVID-19 pandemic.

This year, the OODACH workshop was hosted by **Workplace Solutions** in Hamburg. As always, there were exciting presentations and plenty of time for discussion and networking.



# HIGHLIGHTS

## DECEMBER: 11<sup>th</sup> QuASoQ Workshop @ APSEC in Seoul

Collocated with the 30<sup>th</sup> Asia-Pacific Software Engineering Conference (APSEC 2023), we organized the **11<sup>th</sup> International Workshop “Quantitative Approaches to Software Quality” (QuASoQ)**.

After three years in which the workshop had to take place virtually, we could be on-site again this year at APSEC in Seoul.

Researchers from Japan, China, South Korea, Thailand, and Bangladesh presented their results.

Some authors could not make it to Seoul, so the workshop was held in a hybrid mode.





# WHAT ELSE HAPPENED ...

## TALKS @ APSEC 2023

In December, we attended the 30<sup>th</sup> APSEC conference in Seoul. It was an exciting week with many interesting keynotes, talks, discussions, and opportunities for networking.

It was a great experience!



# PUBLICATIONS

Horst Lichter, Thanwadee Sunetnanta, Toni Anwar (2023): [Report on the 11th International Workshop on Quantitative Approaches to Software Quality](#). In IWESQ 2023 & QuASoQ 2023 : joint proceedings of 5th International Workshop on Experience with SQuaRE series and its Future Direction (IWESQ 2023) and 11th Workshop on Quantitative Approaches to Software Quality (QuASoQ 2023): co-located with APSEC 2023, Seoul, South Korea, Dec 4, CEUR-WS.org, CEUR Workshop Proceedings, (to be published), 42-44.

Ada Slupczynski, Simon Hacks (2023): [Towards a Knowledge Base of Terms on Enterprise Architecture Debt](#). In 15th Workshop on Service-oriented Enterprise Architecture for Enterprise Engineering (SoEA4EE 2023) (to be published), Groningen, Netherlands, Nov 30.

Jochen Ludewig, Horst Lichter (2023): [Software Engineering – Grundlagen, Menschen, Prozesse, Techniken](#). 4. Aufl., dpunkt.verlag, Heidelberg, ISBN 978-3-86490-598-8.

Tsuyoshi Nakajima, Toshihiro Komiyama, Horst Lichter, Thanwadee Sunetnanta, Toni Anwar (eds.) (2023): [IWESQ 2023 & QuASoQ 2023 : joint proceedings of 5th International Workshop on Experience with SQuaRE series and its Future Direction \(IWESQ 2023\) and 11th Workshop on Quantitative Approaches to Software Quality \(QuASoQ 2023\): co-located with APSEC 2023](#). CEUR-WS.org, CEUR Workshop Proceedings, , (to be published), Seoul, South Korea, Dec 4.

Christian Plewnia, Horst Lichter (2023): [Cross-provider Cloud Cost Calculation](#). In Simon Hacks, Jürgen Jung (eds.) 13th International Workshop on Enterprise Modeling and Information Systems Architectures (EMISA 2023), Stockholm, Sweden, May 11-12, CEUR-WS.org, CEUR Workshop Proceedings, Vol. 3397.

Ada Slupczynski, Peter Alexander, Horst Lichter (2023): [A Process for Evaluating the Prudence of Enterprise Architecture Debts](#). In Joaquim Filipe, Michal Smialek, Alexander Brodsky, Slimane Hammoudi (eds.) Proceedings of the 25th International Conference on Enterprise Information Systems, (ICEIS 2023), Volume 2, Prague, Czech Republic, Apr 24-26, SciTePress, 623--630.

Nils Wild, Horst Lichter (2023): [Unit Test Based Component Integration Testing](#). In 30th Asia-Pacific Software Engineering Conference (APSEC 2023) (to be published), Seoul, Korea, Dec 4-7, IEEE Computer Society.

Nils Wild, Horst Lichter (2023): [InterACT: a Tool for Unit Test based Integration of Component-based Software Systems](#). In 18th International Conference on Software Engineering Advances (ICSEA 2023), Valencia, Spain, Nov 13-17, IARIA, ISBN 978-1-68558-098-8, 58-63.

Laurens Studtmann, Selin Aydin, Horst Lichter (2023): [Histree: A Tree-Based Experiment History Tracking Tool for Jupyter Notebooks](#). In 30th Asia-Pacific Software Engineering Conference (APSEC 2023) (to be published), Seoul, Korea, Dec 4-7, IEEE Computer Society.

Selin Aydin, Horst Lichter (2023): [Developing Machine Learning Systems: Situational Factors Shaping the Development Process](#). In 2nd International Workshop on Intelligent Software Engineering (ISE 2023) (to be published), Seoul, Korea, Dec 4, CEUR-WS.org, CEUR Workshop Proceedings.