

Stefan Kapferer

*Software Engineer &
Architect, Lecturer in
Software Engineering and
Researcher*

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Work Experience

- 06/2023 – Present **Lecturer in Software Engineering and Researcher**, *Institute for Software at Eastern Switzerland University of Applied Sciences (OST)*, Rapperswil SG
- Lecturing modules Object-Oriented Programming, Application Architecture, Software Engineering Practices, Cloud Solutions.
 - Advising students in software engineering projects.
 - Supervision of study projects, bachelor theses as well as master theses.
 - Director of studies (“Studienleiter”) in the Master of Advanced Studies in Software Engineering (MAS SE) program.
 - Research projects in the area of Software Engineering, Domain-Driven Design, API Refactorings, Ethical and Value-Based Software Engineering.
 - Consulting, coaching and trainings in the following topics: Software Architecture, Domain-Driven Design (DDD) and/or Context Mapper, Cloud-Native Applications.
 - Creating and applying new teaching material and approaches in the area of Collaborative Modelling (EventStorming, Domain Storytelling, etc.).
- 01/2021 – 05/2023 **Software Architect**, *mimacom ag*, Zurich
- Architect and tech-lead in software engineering projects, DDD expert, leader of a team of six software engineers.
- Software Architect role in several in-house projects and in consulting assignments at customer site.
 - Planning, design and implementation of software components and integration solutions.
 - Leading project teams regarding technology, architecture and design (professional & technical coaching).
 - Domain-Driven Design (DDD) consulting (in-house and in customer projects)
 - Active participation in the architecture guild, DDD guild and requirements engineering guild (contribution of know-how in relation to DDD).
 - Technologies and methods:
 - Onion architecture and Domain-Driven Design (DDD)
 - Microservice architectures
 - RESTful HTTP, Open API specifications (Swagger), messaging with RabbitMQ
 - Arc42 software documentation, Context Mapper, PlantUML

- Technologies and methods: (continued)
 - Spring Framework
 - Java 8-17, Kotlin
 - Angular, Typescript
 - Docker, Kubernetes, OpenShift
 - GIT, Maven, Gradle, GitLab
 - JPA, Hibernate, Flyway
 - PostgreSQL, Oracle DB
 - JUnit, TDD, ArchUnit

02/2020 – 12/2020 **Software Engineer and Project Lead**, *Institute for Software (IFS) at University of Applied Sciences of Eastern Switzerland (OST / HSR), Rapperswil SG*

Leading development and research around the Context Mapper project. Supporting other research projects and teaching on software architecture, (micro-)service-oriented architectures, and Domain-driven Design (DDD).

Involved projects and activities:

- Context Mapper (contextmapper.org) open source project, "A Modeling Framework for Strategic Domain-driven Design"
- Microservice DSL (MDSL) project (microservice-api-patterns.github.io/MDSL-Specification)
- Teaching support in application architecture on B.Sc. level

05/2018 – 09/2018 **Software Engineer (temporary role before commencing MSc studies)**, *Ergon Informatik AG, Zurich*

- Implementation of business web application in the real estate industry
 - Implementation and maintenance of build and testing platforms
 - Conducting customer trainings and a requirements engineering workshop
- Used technologies and frameworks: HTML, CSS, JS, Freemarker, Java, Magnolia CMS, Gradle, Maven, Ansible

01/2014 – 08/2017 **Software Engineer Professional**, *Adcubum AG, St. Gallen*
(part-time: 60%)

- Design and implementation of tools to support developers (Eclipse plugins, command line tools, etc.)
- Development and realization of concepts concerning CI/CD
- Development, operation, and maintenance of 'adcubum SYRIUS' build and it's continuous integration environment with Gradle and Jenkins
- Development, integration, and operation of software documentation tools;
- Classic software engineering tasks with Java and J2EE
- Documentation of architecture and design
- Supporting the migration from SVN to GIT
- Supporting developers regarding IDE (Eclipse), Build (Gradle), SCM (Git), Continuous Integration, etc.

10/2012 – 12/2013 **Software Engineer**, *Adcubum AG, St. Gallen*

Product development (adcubum SYRIUS):

- Development of new features and enhancements in the module "Bestandes-/Vertragsverwaltung"
- Creation of SQL scripts for database migration (Oracle DB)
- Architecture optimization for business processes within the module
- Supporting software quality assurance processes

Used systems and technologies: Java, JEE, Eclipse, SVN, Oracle SQL, XML, Linux

- 05/2011 – 09/2012 **Software Developer Java**, *swoffice AG*, Teufen
- Product development (CRM solution)
 - Testing and operating solution (cloud-based solution)
 - Collaboration with customers in multiple projects
- Used technologies: Java, JavaFX, Spring Framework, Apache Lucene, PostgreSQL
- 09/2008 – 04/2011 **Software Developer**, *clavis IT ag*, Herisau
- Development of solution concepts
 - Specification and design of solutions in direct collaboration with customers
 - Implementation of solutions based on the following technologies, frameworks, and products: IBM Lotus Notes/Domino, Liferay Portal, Java/JEE (Tomcat and WebSphere Express), Web technologies (CSS, JS, HTML, XML), Webservices
 - Testing and documentation
 - Supporting customers with operating implemented solutions
- 08/2004 – 08/2008 **Apprenticeship in informatics (application development)**, *clavis IT ag*, Herisau
- Software development (IBM Lotus Notes, Java, web technologies)

Education

- 09/2018 – 01/2020 **M.Sc. in Engineering - Focusing on Information and Communication Technologies in the Software and Systems Master Research Unit**, *University of Applied Sciences of Eastern Switzerland (HSR FHO)*, Rapperswil
- Conducted several research projects on service decomposition, (micro-)service-oriented architectures, and Domain-driven Design (DDD) aiming to strengthen personal knowledge in software architecture. The open source tool Context Mapper is a result of these projects.
- 09/2017 – 04/2018 **Completed 21 credits towards M.Sc. in Computer Science**, *ETH Zurich*, Zurich
- Completed the following courses: Algorithms and Data Structures, Theoretical Computer Science, Linear Algebra
- 09/2013 – 08/2017 (part-time) **B.Sc. in Computer Science**, *University of Applied Sciences of Eastern Switzerland (HSR FHO)*, Rapperswil
- Thesis:* Developed a concept and prototypic implementation for an architectural refactoring of the data access security based on attribute-based access control (ABAC) in a standard software for the insurance sector.
- 10/2009 – 10/2012 **Advanced Federal Diploma of Higher Education (HF) in Computer Science**, *Zentrum für berufliche Weiterbildung (ZbW)*, St. Gallen
- Thesis:* Concept for a "State of the art Java development environment with Continuous Integration (CI)" and implementation in a case study project.
- 08/2004 – 08/2008 **Apprenticeship in informatics (application development)**, *clavis IT ag*, Herisau
- Federal Diploma of Vocational Education and Training (EFZ)

Theses, papers, and publications

- 2025 **API Refactoring and Reengineering: Distribution Patterns and Evolution Strategies**, *Olaf Zimmermann, Stefan Kapferer, Clemens Meier, Mirko Stocker*, Proceedings of the 30th European Conference on Pattern Languages of Programs, People, and Practices (EuroPLoP '25), Springer
to be published soon
- 2025 **Refactoring API Endpoints, Operations and Messages**, *Mirko Stocker, Stefan Kapferer, Olaf Zimmermann*, Proceedings of the 30th European Conference on Pattern Languages of Programs, People, and Practices (EuroPLoP '25), Springer
to be published soon
- 2025 **Domain-Driven Design Representation of Monolith Candidate Decompositions**, *Miguel Levezinho, Stefan Kapferer, Olaf Zimmermann, Antonio Rito Silva*, Enterprise Design, Operations, and Computing (EDOC) 2025, Springer Nature Switzerland
https://link.springer.com/chapter/10.1007/978-3-031-78338-8_10
- 2024 **Towards responsible software engineering: combining value-based processes, agile practices, and green metering**, *Stefan Kapferer, Mirko Stocker, Olaf Zimmermann*, 2024 IEEE International Symposium on Technology and Society (ISTAS), Puebla, Mexico, 2024, pp. 1-4, IEEE
<https://ieeexplore.ieee.org/abstract/document/10732097>
- 2024 **Value-Driven Analysis and Design: Applying Domain-Driven Practices in Ethical Software Engineering**, *Stefan Kapferer, Olaf Zimmermann, Mirko Stocker*, Proceedings of the 29th European Conference on Pattern Languages of Programs, People, and Practices (EuroPLoP '24), Association for Computing Machinery (ACM)
<https://dl.acm.org/doi/pdf/10.1145/3698322.3698332>
- 2024 **Pattern-oriented API Refactoring: Addressing Design Smells and Stakeholder Concerns**, *Mirko Stocker, Olaf Zimmermann, Stefan Kapferer*, Proceedings of the 29th European Conference on Pattern Languages of Programs, People, and Practices (EuroPLoP '24), Association for Computing Machinery (ACM)
<https://dl.acm.org/doi/pdf/10.1145/3698322.3698334>
- 2024 **Bringing Ethical Values into Agile Software Engineering**, *Olaf Zimmermann, Mirko Stocker, Stefan Kapferer*, The Leading Role of Smart Ethics in the Digital World, Universidad de La Rioja
<https://dialnet.unirioja.es/descarga/articulo/9537231.pdf>
- 2024 **Continuous Integration and Delivery in Open Source Development and Pattern Publishing: Lessons Learned With Tool Setup and Pipeline Evolution**, *Olaf Zimmermann, Cesare Pautasso, Stefan Kapferer, Mirko Stocker*, IEEE Software, IEEE, volume 41, issue 1
<https://doi.org/10.1109/MS.2023.3322312>

- 2022 **“Domain-Driven Design (DDD) in Practice – Experience with Context Mapper”**, *Stefan Kapferer*, Blogpost
blog.mimacom.com/ddd-and-context-mapper-experience
- 2021 **“Domain-Driven Design in der Praxis - Erfahrungen mit dem Open-Source-Tool Context Mapper” (GERMAN)**, *Stefan Kapferer, Olaf Zimmermann*, JavaSPEKTRUM, 6/2021, pages 20-23
<https://contextmapper.org/background-and-publications/>
- 2021 **Domain-driven Architecture Modeling and Rapid Prototyping with Context Mapper (Revised and Extended Selected Papers)**, *Stefan Kapferer, Olaf Zimmermann*, 8th International Conference on Model-Driven Engineering and Software Development - MODELSWARD, Springer CCIS, volume 1361
https://doi.org/10.1007/978-3-030-67445-8_11
- 2020 **Domain-driven Service Design - Context Modeling, Model Refactoring and Contract Generation**, *Stefan Kapferer, Olaf Zimmermann*, Papers From the 14th Advanced Summer School on Service-Oriented Computing (SummerSOC'20)
https://doi.org/10.1007/978-3-030-64846-6_11
- 2020 **Domain-specific Language and Tools for Strategic Domain-driven Design, Context Mapping and Bounded Context Modeling**, *Stefan Kapferer, Olaf Zimmermann*, Proceedings of the 8th International Conference on Model-Driven Engineering and Software Development - MODELSWARD, pages 299-306, INSTICC, SciTePress
<https://doi.org/10.5220/0008910502990306>
- 2020 **A Modeling Framework for Strategic Domain-driven Design and Service Decomposition**, *Stefan Kapferer*, Master thesis, University of Applied Sciences of Eastern Switzerland (HSR FHO)
 Proposing a modular architecture for a Strategic Domain-driven Design (DDD) modeling framework including a DSL, a reverse engineering framework, Architectural Refactorings (ARs), service decomposition analysis on the basis of coupling criteria, and multiple graphical generators. More information can be found in the open source project contextmapper.org for more information. <https://eprints.ost.ch/821/>
- 2019 **Service Decomposition as a Series of Architectural Refactorings**, *Stefan Kapferer*, Term project, University of Applied Sciences of Eastern Switzerland (HSR FHO)
<https://eprints.ost.ch/784/>
- 2019 **Empirical Research in Software Engineering**, *Stefan Kapferer*, Seminar paper, University of Applied Sciences of Eastern Switzerland (HSR FHO)
 Scientific research strategies applied to software engineering.
<https://eprints.ost.ch/820/>
- 2018 **A Domain-specific Language for Service Decomposition**, *Stefan Kapferer*, Term project, University of Applied Sciences of Eastern Switzerland (HSR FHO)
 A formal approach to strategic Domain-driven Design (DDD) and service decomposition implemented in the Context Mapper open source tool.
<https://eprints.ost.ch/722/>

- 2018 **Model Transformations for DSL Processing**, *Stefan Kapferer*, Seminar paper, University of Applied Sciences of Eastern Switzerland (HSR FHO)
Proof of concept for the implementation of refactorings for Domain-specific Languages (DSLs) on the basis of the Henshin tool and algebraic graph transformations.
<https://eprints.ost.ch/819/>
- 2017 **“Attributbasierte Autorisierung in einer Branchenlösung für das Versicherungswesen”**, *Stefan Kapferer, Samuel Jost*, Bachelor thesis, University of Applied Sciences of Eastern Switzerland (HSR FHO)
Concept and prototypic implementation for attribute-based access control (ABAC) in a (micro-)service-oriented architecture. <https://eprints.ost.ch/602/>
- 2016 **“Architectural Refactoring der Data Access Security”**, *Stefan Kapferer*, Semester thesis, University of Applied Sciences of Eastern Switzerland (HSR FHO)
Extracting the data access security of a monolithic application into a separate Bounded Context (DDD) or microservice. <https://eprints.ost.ch/564/>

Certificates, Further Education, and Awards

- 2025 **iSAQB Advanced Module: SOFT - “Soft Skills für Architekten”**
- 2025 **iSAQB Advanced Module: AGILA - “Agile Softwarearchitektur”**
- 2025 **“CAS in Hochschuldidaktik“ (10 ECTS) at Eastern Switzerland University of Applied Sciences (OST)**
- 2024 **iSAQB Advanced Module: DDD - “Domain-Driven Design”**
- 2023 **“Starter Kit in Hochschuldidaktik“ at Eastern Switzerland University of Applied Sciences (OST)**
- 2022 **iSAQB Advanced Module: IMPROVE - “Evolution und Verbesserung von Softwarearchitekturen”**
- 2021 **iSAQB Certified Professional for Software Architecture - Foundation Level**
- 2020 **SummerSoC Young Researcher Award 2020**,
For the paper: “Domain-driven Service Design - Context Modeling, Model Refactoring and Contract Generation”,
Symposium and Summer School on Service-oriented Computing
Sponsored by ServTech (Scientific Academy for Service Technology)

Open Source Projects

Open source projects I contribute(d) to:

Context Mapper:

A Modeling Framework for Strategic Domain-driven Design

github.com/ContextMapper

Value-Driven Analysis and Design (VDAD), *Technology should support humanity and avoid harming people and their values; we want to help engineers and technology creators create solutions that promote positive values and aim to reduce harm to our society and people.*

ethical-se.github.io/value-driven-analysis-and-design

Ethical Software Engineering (ESE), *Ethical values and IEEE 7000 meet agile practices (for mutual benefit)*

github.com/ethical-se/ease-practices

Cloud Application Lab (OST), *Sample apps for the cloud; focus on Serverless and AWS.*

github.com/OST-Cloud-Application-Lab

Interface Refactoring Catalog (IRC), *A collection of API refactorings and related architectural refactorings.*

interface-refactoring.github.io

Microservice Domain-Specific Language (MDSL)

github.com/Microservice-API-Patterns/MDSL-Specification

Lakeside Mutual, *a fictitious insurance company which serves as a sample application to demonstrate microservices and domain-driven design (DDD)*

github.com/Microservice-API-Patterns/LakesideMutual

Software / Service / API Design Practice Repository (DPR)

github.com/socadk/design-practice-repository

protobufgen: A Java Library to Serialize Protocol Buffer Files

github.com/Microservice-API-Patterns/protobufgen

Languages

German Mother tongue

English Fluent

Certificate in Advanced English (University of Cambridge)

Interests

- Software Engineering
- Software Architecture
- Domain-driven Design (DDD) and Collaborative Modelling
- Object-oriented Analysis and Design (OOAD)