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 Re- factorings (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: 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/ese-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)