Stefan Kapferer

Software Architect, University Lecturer in Software Engineering and Researcher

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Experience

06/2023 – Present   **Lecturer in Software Engineering and Researcher**, *Institute for Software at Eastern Switzerland University of Applied Sciences (OST)*, Rapperswil SG
- Lecturing Object-Oriented Programming, Software Engineering, Cloud Solutions.
- Supervision of study projects and bachelor theses.
- Research projects in the area of Software Engineering, Domain-Driven Design (for example Context Mapper), 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

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)
  - Advice and support software engineers in implementing tactical DDD.
  - Advice/consult on modeling (domain models) and the use of Context Mapper.
  - Consulting in projects on strategic domain-driven design (service decomposition).
  - Active participation and participation in the architecture guild, DDD guild and requirements engineering guild (contribution of know-how in relation to DDD).
  - Writing articles and blow posts on the subject of DDD.
- Leading a team of six Software Engineers within the company.
  - Professional and technical coaching of employees.
  - Support of the onboarding process for new employees.
  - Conducting regular employee appraisals.
  - Conducting development and feedback meetings with employees.
  - Advising employees on personal development, further education and training.
  - Development of employees within the company (level & salary).

01/2021 – 05/2023   **Software Architect**, *mimacom ag (continued)*
- 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
  - 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"
  - Leading project technically
  - Writing research papers on Context Mapper and Domain-driven Design related topics
- Microservice DSL (MDSL) project (microservice-api-patterns.github.io/MDSL-Specification)
  - Supporting Prof. Olaf Zimmermann in implementing MDSL generator tooling
  - Generating Java code ("moduliths"), GraphQL schemas, protocol buffer specifications, and Open API specifications out of MDSL contracts
    - Conceptual work: Map abstract API contracts to concrete interface technologies. Derive service contracts from DDD-based architecture models.
- Teaching support in application architecture on B.Sc. level
  - Domain-driven Design (DDD)
  - Context Mapper

05/2018 – 09/2018   **Software Engineering (Intern)**, *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

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

○ 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

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/

Talks and Presentations

2023 **Domain-Driven Design (DDD) with Context Mapper**, *1-Day Workshop*, CH Open Workshoptage 2023

2022 **Strategic Domain-driven Design Advanced and Context Mapper**, *Application architecture course*, University of Applied Sciences of Eastern Switzerland (OST)

2020 **Strategic Domain-driven Design Advanced and Context Mapper**, *Application architecture course*, University of Applied Sciences of Eastern Switzerland (OST)

2020 **Domain-driven Service Design - Context Modeling, Model Refactoring and Contract Generation**, *Conference talk*, 14th Symposium and Summer School On Service-Oriented Computing
Slides Link

2019	**Context Mapper: DSL and Tools for Domain-driven Service Design - Bounded context modeling and microservice decomposition**, *Java meetup talk*, Java User Group CH
	Slides Link

Certifications & Awards

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

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 and Design
- Domain-driven Design (DDD)
- Object-oriented Analysis and Design (OOAD)