

Stefan Kapferer

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Experience

02/2020 – Present **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
 - Used Technologies: Domain-specific Language (DSL) with Xtext framework (Java, Xtend), Language server based on Language Server Protocol (LSP), Eclipse plugin (Java), Visual Studio Code extension (Typescript), Reverse engineering of microservice application architectures based on Spring Boot and Spring Web, Docker and Docker Compose, and Open API (OAS) specifications
- 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.
- Support of teaching in application architecture on BSc 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 training 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 its 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
 - Support and train apprentices
- 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

- 2020 **Domain-driven Service Design - Context Modeling, Model Refactoring and Contract Generation, Papers From the 14th Advanced Summer School on Service-Oriented Computing (SummerSOC'20).**
(accepted; to be published soon)
- 2020 **Domain-driven Architecture Modeling and Rapid Prototyping with Context Mapper, Model-Driven Engineering and Software Development,** Springer International Publishing, Cham.
(accepted; to be published soon)
- 2020 **Domain-specific Language and Tools for Strategic Domain-driven Design, Context Mapping and Bounded Context Modeling, 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, 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. Have a look at the open source project [contextmapper.org](https://eprints.hsr.ch/821/) for more information. <https://eprints.hsr.ch/821/>
- 2019 **Service Decomposition as a Series of Architectural Refactorings, Term project, University of Applied Sciences of Eastern Switzerland (HSR FHO).**
<https://eprints.hsr.ch/784/>
- 2019 **Empirical Research in Software Engineering, Seminar paper, University of Applied Sciences of Eastern Switzerland (HSR FHO).**
Scientific research strategies applied to software engineering.
<https://eprints.hsr.ch/820/>

- 2018 **A Domain-specific Language for Service Decomposition**, *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.hsr.ch/722/>
- 2018 **Model Transformations for DSL Processing**, *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.hsr.ch/819/>
- 2017 **“Attributbasierte Autorisierung in einer Branchenlösung für das Versicherungswesen”**, *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.hsr.ch/602/>
- 2016 **“Architectural Refactoring der Data Access Security”**, *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.hsr.ch/564/>

Talks and Presentations

- 2020 **Strategic Domain-driven Design Advanced and Context Mapper**, *Application architecture course*, University of Applied Sciences of Eastern Switzerland (OST).
(slides will be published soon)
- 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](#)

Awards

- 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
- Service-oriented Architectures / Microservices
- Domain-driven Design (DDD)
- Object-oriented Analysis and Design (OOAD)
- Concepts of Object-oriented Programming
- Java