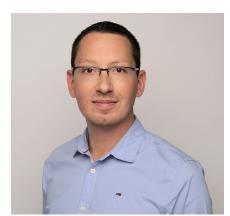# Stefan Kapferer

Software Engineer (M.Sc.)

Neue Jonastrasse 75
8640 Rapperswil SG
Switzerland
✉ *stefan@kapferer.ch*
stefan.kapferer.ch
 stefankapferer
 stefankapferer
 stefan-ka

Experience

02/2020 – Now **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 architectures of microservice applications 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 (part-time: 60%)	**Software Engineer Professional**, *Adcubum AG*, St. Gallen.
	○ 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 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	Fluently	*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