



What you offer and promise your customers is unique – your processes should be too. Our experts can develop applications tailored to your needs. We combine flexible software architecture with innovative technologies and use our expertise to create your individual solution.

## Stand out from the others with tailor-made software as good as a standard solution

### What does Software Engineering from Swisscom provide?

We offer a broad technology portfolio for tailor-made application development, enabling us to use the right technology for any problem or customer requirement. We employ open industry standards and always take the latest technological trends into account.

With state-of-the-art tools and processes, we guarantee the quality of our applications and system components.

Our experts use their wide-ranging experience throughout the lifecycle of both newly developed and existing applications.

Our solution is mostly provided from Switzerland, from design to implementation. This makes collaboration simple and ensures highly efficient, top-quality project implementation. Where it is more cost-effective, we work with near- and offshore partners.

### Your added value with Swisscom

- **First-class user experience**  
Our visual and interaction designers create intuitive user interfaces that are easy to use and tailored to your needs.
- **Project management expertise**  
Drawing on our project management experience and using agile methods, we ensure that agreed project targets are met.
- **Professional requirements engineering**  
For an outstanding result, we stay connected to everyone involved in the project and the development team during all phases of the project.

Whether it's project management, software architecture, software engineering, infrastructure, assessments or prototyping – our multi-disciplinary team offers expert consulting for every need.



## FAQ

### 1. What exactly do we support in the tailor-made application development lifecycle?

We support the entire tailor-made application development lifecycle, from the original idea to operational handover. To begin with, in the application design phase, we prefer to use domain-driven design (DDD), object-oriented analysis and design (OOAD) and rapid prototyping methods. For implementation, we focus on service-oriented architecture (SOA) and microservice architecture. Increased use of asynchronous, event-driven approaches enables us to build fault-tolerant, easily scalable applications ideally suited to the cloud. The consistent application of all these paradigms results in robust, expandable, scalable and easy-to-maintain applications that offer you a unique experience.

### 2. What do we want to achieve with flexible software architecture?

Software no longer operates in isolation on dedicated hardware, but interacts with other systems via interfaces (APIs) and operates in the cloud. This trend will continue and it requires software that fits seamlessly into a system landscape. With flexible software architecture, we ensure that your software is part of an overall solution and capable of adapting to a dynamic environment.

### 3. What are our areas of expertise in the field of application analysis and design?

Thanks to our extensive experience of business application and product development, our business analysts understand our customers' business. With this in mind, we define software requirements that are driven by our customers' needs.

In requirements engineering, we ensure that all requirements of a software solution are fully specified and documented. Our requirements engineers work with everyone involved in the project (business process managers, development team, operations staff) and support the subsequent implementation phases.

Intuitive, efficient, user-friendly user interfaces are important if a solution is to enjoy a high level of acceptance. Our experienced visual and interaction designers create mobile, web or rich client user interfaces that provide a positive user experience, intuitive operation and low training costs.

### 4. What are our tailor-made application project managers' main responsibilities?

Project managers are the primary link between the customer and the implementation team. They ensure that applications are developed with the required functionality in the agreed timeframe and within budget. They also provide transparent communication throughout the project phase.

### 5. Which technologies do we support in software development?

We have experience of all modern programming languages, frameworks and database systems. We can therefore use all common platforms and extend or integrate legacy systems. Below is a selection of our most popular technologies:

Programming languages:	Java, JavaScript, TypeScript, Objective-C, Swift, Kotlin, Python, C#, C, C++, PHP
Web technologies:	CSS, HTML, LESS, SASS, Angular, React, Bootstrap, jQuery
Back-end frameworks:	Spring, JEE, ASP.NET MVC, Symfony
Databases:	MariaDB / MySQL, Oracle, Microsoft SQL Server, PostgreSQL, MongoDB
Integration:	Apache Kafka, IBM IIB, IBM MQ, Spring Integration, Active MQ, RabbitMQ, JMS
Application servers:	Tomcat, JBoss, Websphere, Apache, nginx, Microsoft IIS
Container technologies:	Docker, Kubernetes, OpenShift



## 6. What common development tools do we use?

We use modern development tools and have the flexibility to take customers' individual wishes into account. Below is a selection of our preferred development tools:

Development environment:	IntelliJ IDEA, Eclipse, XCode, AppCode, Visual Studio (Code), WebStorm, Android Studio
Continuous integration:	Jenkins, Bamboo
Version management:	Git, Bitbucket, Gitlab, Subversion
Package management:	Maven, Gradle, NPM, NuGet, Artifactory
Other tools:	Atlassian Toolsuite (Jira, Confluence, Sourcetree), SonarQube, Checkmarx, Black Duck

## 7. Is there a recommended technology stack?

Depending on the application, we use one of our tried and tested technology stacks, which are based on state-of-the-art technologies and frameworks and can be individually adjusted.

### • Scalable, responsive single-page web application

**Front-end:** The combination of the sophisticated Angular platform or lightweight React framework with the Bootstrap library provides an outstanding user experience both on your desktop computer and on your smartphone.

**Back-end:** Whether you choose Java with the Spring Framework or .NET MVC, you will get an enterprise-ready platform that has been used millions of times before and that is prepared for any eventuality.

**Persistence:** Abstracted by Hibernate or the Entity Framework, you have the flexibility to choose between various database systems. For simple applications, we recommend a licence-free alternative such as MariaDB or PostgreSQL. Microsoft SQL Server or Oracle can be used for more demanding applications.

### • Native iOS and Android app with back-end

**Apps:** In accordance with the Mobile First approach, we recommend implementing native iOS and Android apps with Swift und Kotlin. The relevant platform's full potential can only be exploited through native app development.

**Back-end:** We use Java and Spring or .NET MVC to develop a back-end that provides technology-neutral standardised REST interfaces (APIs). The apps can communicate with the back-end via these interfaces.

### • Event-driven middleware

Do you have an established system landscape and need to integrate a large number of systems? Do you need to process large quantities of data and struggle with the complexity of point-to-point connections? If so, we recommend event-driven middleware based on Apache Kafka and Java. Apache Kafka has successfully conquered the event streaming paradigm and can become the central nervous system of your system landscape.

## 8. What are the main methods we use in application development?

Project management systems:	Agile (Scrum and Kanban), PMI
Architecture and design:	UML
Database design:	ERD, UML

## 9. How do we guarantee the quality of our software? What tools and methods do we use for software tests and test automation?

Best-practice software testing and quality management procedures help us to ensure high-quality applications and system components. We include software testing in all processes from the outset, so we can spot errors before they affect the quality of the application. Where possible, we use test-driven development (TDD), in which test automation provides a high level of quality during the development phase.

Functional test automation:	HP Quality Center/ALM, Selenium, Appium, Espresso
Unit testing:	JUnit, NUnit, Jasmine, Karma, Mockito



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#### **10. Do we only develop applications or can our customers benefit from our consulting services?**

It goes without saying that our customers can benefit from our extensive experience of application development and technological expertise. Our IT Consulting can help you successfully carry out your projects, which may involve new developments or legacy applications, for example. We're also happy to offer advice on the latest technological trends, performance optimisation, visual design and software architecture, or to support existing development teams.

#### **11. Which applications and products have we already created?**

We have successfully developed numerous solutions across many different sectors.

In the finance industry, for example, we have successfully delivered:

- complex front-end systems for retail banks with interfaces to core banking systems
- solutions for comprehensive credit and debit card management
- intuitive mobile payment apps
- reliable integration solutions in core banking
- robust transaction systems in investment banking
- a trading and storage platform in the digital assets sector

In the telecommunications industry, we provide our customers with

- apps for internal use
- invoice reporting for large-scale customers

#### **12. For which markets do we develop tailor-made applications?**

Most of our work is done in Switzerland; we develop apps for local and global use.