# System Integration («SYI»)

Setting up new systems without being able to replace old ones. The system landscape is becoming increasingly heterogeneous, yet business processes must not suffer. Find out how to deal with this.

**Duration:** 2 days
**Price:** 1'700.–
**Course documents:** Digital Digicomp courseware

# Content

More and more companies are faced with an increasingly heterogeneous system landscape. There are many reasons for this. Old systems are proven and expensive to replace, so they are used for as long as possible. At the same time, new systems are added to meet changing requirements. For cost reasons, these new systems are often not in-house developments, but commercial software packages that bring their own data and processing models into the company. However, new applications do not necessarily have to run within the organisation, but are increasingly being sourced from the cloud.

Although the system landscape is becoming more heterogeneous, the efficiency of business processes must not suffer. In essence, this means that all these applications need to be integrated and content and technology gaps need to be bridged.

This course aims to show which concepts and technologies are currently being used to build these bridges. BPMN is an important tool for describing and ultimately executing integration processes. Either directly with BPMN execution engines or indirectly by mapping these processes to implementation tools such as Apache Camel or an Enterprise Service Bus (ESB). In addition to tools such as Camel or ESBs, general architecture concepts relevant to integration are explained, such as messaging patterns or REST architectures. In addition to these architecture topics, the advantages and disadvantages of basic integration technologies such as XML, messaging systems, files and databases are also covered.

With social media, big data, data analytics and tweets, data volumes and streams are increasing massively. To meet these new demands, it is necessary to integrate new messaging systems or platforms. This course takes a closer look at the Apache Kafka open source platform (enterprise messaging system) and explains the importance of a distributed, scalable and fault-tolerant system.

## 1 Motivation

- Process optimisation
- M&A
- Modernisation
- Synchronisation
- B2B
- Cloud (SaaS)

## 2 Concepts

- Integration layers
- Classification by latency
- The N2 Assertion
- The Canonical Data Model
- SOA and integration
- Loose coupling

## 3 Data formats

- Data formats
- JSON
- YAML
- XML
- EDI
- SWIFT
- Misc: ISO 8583 etc.

## 4 Patterns

- File Transfer/ETL
- Databases
- RPC
- Messaging patterns
- Messaging implementation
- Process Manager (Business Process Engines, BPMN)
- REST – Architecture concept and use cases
- Security (Transport/Message Layer Security, OAuth2, ...)
- Reliability
- Integration Platform as a Service (iPaaS)
- Migration patterns

## 5 Infrastructure

- Today's requirements
- Platforms (Enterprise Service Bus (ESB), Java EE, Camel, ...)
- Repositories/Registries
- Monitoring issues
- Products and Open Source solutions

## 6 Enterprise messaging system (Apache Kafka)

- Challenges of distributed systems
- Kafka architecture
- Kafka topic
- Kafka messages
- Kafka API's
- Strengths/Weaknesses
- Use Cases

## 7 Project management

- Project requirements
- Project manager
- Project financing
- Special risks
- Governance

## 8 Strategy

- Integration department
- Standardisation (technologies, protocols)
- Standardisation of suppliers
- Open Source vs Product
- In-house development vs product

## Key Learnings

- Understanding the basic concept of integration
- Understanding of implementation using different technology approaches
- Understanding the hurdles and pitfalls of integration projects
- Applying the concepts and strategies to relevant problems
- Distinguishing between marketing claims and reality
- Evaluating which tools solve which problems

## Target audience

This course is aimed at software architects, IT architects, technical project managers, IT managers, developers who want to improve their skills in systems integration.

## Further courses

- IoT, Microservices and Machine Learning – Modern Architecture-Relevant Methods and Technologies («MODTEC»)
- Model-Driven Software Development (MDSD/MDD/MDA) («MDA»)
- Service-oriented architecture («SOA»)
- Architecture-relevant IT platforms 2.0 («ARP2»)

## Any questions?

We are happy to advise you on +41 44 447 21 21 or info@digicomp.ch. You can find detailed information about dates on www.digicomp.ch/courses-software-engineering/it-architecture/system-infrastructure-architecture/course-system-integration