

# PROJECT PORTFOLIO

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## Featured Projects

### AI-Powered Receipt and Invoice Processing Pipeline

2025 to 2026 Team: 3

Cloud

Design and implementation of a data processing pipeline that utilizes AI tools like embedding models and AI agents to automatically process large numbers of receipts and invoices with minimal human oversight. The system automatically extracts data from documents in various formats, performs data validation and cleaning, and uses AI-driven matching against large product databases. The system is built as an event-driven, Kafka-based, distributed architecture deployed in the cloud.

Responsibilities:

- System design and software architecture
- Event-driven architecture design using Apache Kafka
- AI agent integration for document processing
- Overall product design consultation

Apache Kafka NodeJS Kotlin PostgreSQL LLMs AI

### Design and implementation of an agentic AI coachbot for an education startup

2025 Team: 4

Web

The task was to design and implement an agentic AI coachbot for an education startup. The coachbot will auto-adjust to the user's needs and select the best possible coaching path.

Responsibilities:

- Consultation on the product design.
- Consultation on the AI system design.
- Prototype implementation of the AI system.

AI Python NextJS AWS AWS Bedrock

## Systems Modernization for a Leading Global Airline Group

2024 to 2025 Team: 3

Web

The task is to modernize and redesign several core backend systems and to implement a multi-tenant Angular application. This also includes the move to a new OpenShift cluster.

Responsibilities:

- Modernization and redesign of several core backend systems
- Concept and implementation of a multi-tenant Angular application
- Move to a new OpenShift cluster

Angular

Spring

OpenShift

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## Implementation of a Micro-Frontend Architecture using Ionic

2023 to 2024 Team: 6

Android

iOS

Our task is to roll out an existing internal application as a mobile app. In order to give the individual teams maximum independence in terms of development speed, choice of technology and deployment, an Android app consisting of micro front ends will be built first.

In addition to the usual challenges, such as avoiding cross-team version dependencies, special challenges arise with a mobile app compared to a web app, since only one app bundle is deployed.

Responsibilities:

- Design of a distributed frontend architecture
- Team coordination
- Frontend Development
- Cloud Service Consultation (Push Notifications)

Ionic

Capacitor

WebComponents

Micro-Frontends

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## Design, Development and Rollout of a Social Networking App (häpps)

2019 to 2023 Team: 3

Android

iOS

The app is a social network that allows you to create and share events (happenings). The mobile app was developed cross-platform with Ionic for Android and IOS and rolled out, and includes a multitude of features such as wizards, friends lists, profile pages, searches, event creation, push notifications and chatrooms. The system is a complex distributed system interconnected by HTTP interfaces and message brokers.

Responsibilities:

- Planning and design of the app and its features
- Architecture design, backend and frontend
- Backend and frontend development
- Deployment and rollout of the app to the stores
- Monitoring and test management

Ionic/Angular

NodeJS/TypeScript

Flask/Python

MongoDB

Redis

RabbitMQ

## Concept, Development and Rollout of an Event App

2015 to 2018 Team: 3

Android

iOS

Web

The app shows a live map with various events in selected cities. The development of the Android/iOS apps was done cross-platform with Ionic. Various backend services have searched the Internet for events and extracted, categorized and prepared information using machine learning to centrally display it in the app.

Responsibilities:

- Planning of the app and its features
- Planning of the backend architecture
- Design, further development and tuning of the ML features
- Backend development
- Planning of the frontend architecture
- Frontend development
- Deployment and rollout of the app to the stores

Ionic/Angular

NodeJS/TypeScript

Java

Python

Machine Learning

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## Optimization and Further Development of a Telemedicine App

2020 Team: 6

Web

Assistance in the development of a telemedicine app for a startup. The app enabled doctors to communicate remotely and with emergency personnel on site, to record patient data and to prescribe medication. Challenges included the high requirements for data security, connection stability, and logging and traceability of internal processes.

Responsibilities:

- Backend development

NodeJS/Typescript

RabbitMQ

Redis

MongoDB

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## Other Projects

### Concept, Development and Rollout of an Invitation App

2018 Team: 4

Web

Development of a web app that allows sending electronic invitations to private and commercial events. The web app allowed guests to respond to invitations and organizers to keep track of events and the responses of various guests.

Responsibilities:

- Feature planning
- Design of frontend and backend architectures
- Frontend and backend development

VueJS

NodeJS/TypeScript

Flask/Python

MongoDB

## Performance Optimization of Internal Systems for a Festival Organizer

May 2021 Team: 3

Web

The internal platform manages approximately 30k staff at the Fusion Festival. Just before the start of the festival, it became clear that the platform was not scaling with the enormous amounts of encrypted data and the large number of users. A special challenge was an unusual, sluggish architecture, which however was to ensure the high standards of data security for all participants. A series of workshops analyzed the problems and then made architectural and performance improvements until the platform scaled smoothly.

Responsibilities:

- Architecture analysis
- Performance optimization
- Database optimization

NodeJS

Redis

PostgreSQL

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## Further Development of a Product Information Management System

2021 Team: 6

Web

The aim of the project was to replace the outdated Product Information Management System (PIM) as part of the redevelopment of the online store of a large fashion house. As part of the PIM team, we made further developments, adjustments and optimizations to ensure smooth operation.

Responsibilities:

- Backend development
- Frontend development

Spring/Kotlin

PostgreSQL

Apache Kafka

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## Architecture Planning and Development of Internal Market Platforms for a Large Food Retailer

2018 to 2020 Team: 5 to 20

Web

Planning of an SCS landscape for the distributed architecture of an employee portal and a marketplace. Backend and frontend development in the individual SCS. Design of a distributed search engine.

Responsibilities:

- Development (BE & FE)
- Architecture planning

Spring/Java

NodeJS/TypeScript

ElasticSearch

MongoDB

PostgreSQL

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## Transfer of an Existing E-Learning Platform to a Distributed Architecture

08.2016 to 09.2018 Team: 7

Web

To ensure the maintainability and further developability of a large e-learning platform, the monolith was broken down into several (containerized) subsystems, some of which were transferred to new technologies.

Responsibilities:

- Design and transfer of the system architecture
- Backend development
- Refactoring

Apache

Java, TypeScript

Docker

PostgreSQL, MongoDB

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## Development of a LaTeX Web-IDE

03.2018 to 07.2018 Team: 3

Web

An existing desktop IDE for the creation, management, versioning and deployment of courses of an e-learning platform was redeveloped as a web-based IDE.

Responsibilities:

- Improvement of the system architecture
- Backend development
- Refactoring

Java

Docker

Angular

MongoDB

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## Development of a New B2C Division Portal for an Online Retailer

03.2017 to 03.2018 Team: 4

Web

A prototype of a new B2C division platform was developed for a large, international auction platform.

Responsibilities:

- Design of the system architecture
- Backend development

NodeJS

MongoDB

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## Further Development and Modernization of a Large Content Marketplace

12.2011 to 06.2016 Team: 5 to 10

Web

Further development and modernization of a large, international content marketplace.

Responsibilities:

- Development (BE & FE)
- Feature planning
- Test management

Apache

PHP

HTML/JS/CSS

MySQL