Trends and Concepts of Business Application Architecture

Course Introduction

Prof. Dr. Hasso Plattner, Dr. Michael Perscheid

Enterprise Platform and Integration Concepts

Hasso-Plattner-Institut
Dr. Michael Perscheid
Chair Representative of Prof. Dr. h.c. mult. Hasso Plattner

Born and grown up in Potsdam
Helmholtz Gymnasium

2003-2008 B.Sc. and M.Sc. in Software Engineering
Hasso-Plattner-Institute (HPI), University of Potsdam

2013 Dr.-Ing. (Ph.D.) in Computer Science
HPI Research School, Software Architecture Group
Thesis: Test-driven Fault Navigation for Debugging Reproducible Failures

2014 Software Developer and Researcher
SAP Innovation Center Potsdam

2015 Development Manager
Chairman Projects, SAP Innovation Center Network

Since 2019 Vice President
Strategic Projects, SAP Central Engineering/New Ventures and Technologies

Since 2020 Chair Representative
Enterprise Platform and Integration Concepts (EPIC), HPI, University of Potsdam

2021 ACM Senior Member
Motivation
In the Beginning

Motivation

Today

## Motivation

From On-Premise to the Cloud

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You manage

Service provider manages
Motivation
The Future

Learning Goals
Trends and Concepts of Business Application Architecture

- Understanding of ...
  - Complexity and use cases of business applications, incl. a general vocabulary (e.g., ERP, FI/CO, SD, CRM...)
  - How business requirements are implemented in applications
  - The basics of modern columnar in-memory database systems
  - Architectural challenges of and solutions for business applications on-premise and in the cloud

- Hands-on experience with ...
  - Enterprise Resource Planning Software (SAP S/4HANA)
  - Database systems (SAP HANA, PostgreSQL, Hyrise) and a data schema from practice
  - Development on an enterprise cloud platform (SAP Business Technology Platform)
We want to reach a foundational understanding of business requirements, concepts, their applications and technical architecture.

Even if SAP systems are used in the lecture, the concepts and architectures will be general-purpose.

Compared to the Trends and Concepts I lecture of last years, we included 95% new content. You are allowed to attend again.

However, if you have heard „Foundations of Business Applications 2021“ (Bachelor Course, Only 2021!) there will be much overlap.
Teaching Team
General Information

Prof. Dr. h.c. mult. Hasso Plattner

Dr. Werner Sinzig

Dr. Michael Perscheid

Franziska Dobrigkeit

Dr. Ralf Teusner

Lukas Böhme

Stefan Halfpap

Dr. Ralf Teusner

Tobias Wuttke

Dr. Werner Sinzig
General Information
Trends and Concepts of Business Application Architecture

- 6 ECTS (graded)/4 (semester periods per week)
- Course format: Lecture with exercises + block week
- Enrollment period: 01.04.2022 - 30.04.2022
- Language: German preferred / English possible (+SAPisch)

- First meeting: 20.04.2022 13:30 - 15:00, L-E.03

**We encourage you to join us in the lecture hall**, but we also offer [Zoom](Meeting ID: 973 3946 5373; Passcode: 796558)

- Contact: michael.perscheid@hpi.de
Weekly Lecture: Every Wednesday, 13:30 - 15:00, L-E.03

Please check website for dates (subject to change)

Digitalization of Business Processes

Enterprise Resource Planning
- Sales and Distribution
- Finance, Accounting, and Controlling
- Human Resources
- Material Management and Production Planning

Columnar In-Memory Database Systems for Business Applications

Customer Relationship Management

Enterprise Cloud Platforms for Integration and Extensions

(Block Week: Architecture Deep Dives)
Course Overview
Part II: Block Week – September 2022 (TBA)

**General information**
- When: 19.-22. September (CW 38)
- Lectures given by Prof. Plattner
- Additional lectures by guests from industry
- Discussions about open questions in enterprise computing with knowledgeable experts are a vital part of the lecture!

**Focus areas**
- Trends and challenges in enterprise computing
- Technical architecture of business applications
- Advanced principles of in-memory databases
- Influence of cloud-native development
- Experience reports from industry
Course Overview

Every Wednesday, 13:30 - 15:00
+ a 4-day block week with Prof. Plattner and guests from industry

Schedule

- Introduction
- Voluntary Exercise
- S/4HANA Finance Exercise
- 1-in-Memory DBS Exercise
- Business Technology Platform Exercise
- Start Block Week
- End Block Week

Lecture

20th of April
4th of May (Dies Academicius)
8th of June
6th of July
27th of July
Vacation in August

Block Week

19.-22.09.
(CW38)
One Week in September
Prerequisites and Grading

Trends and Concepts of Business Application Architecture

- **Prerequisites**
  - None
  - Business economics (BWL I and II) and database knowledge (DB I) are advantageous for the lecture, but not mandatory

- **Grading**
  - All exercises need to be passed
  - The final grade consists of an *oral exam*
    (or written exam depending on the number of participants)
  - Exam date: TBA (after block week)
Preparation
Further Reading

*Plattner & Leukert:*
The In-Memory Revolution
How SAP HANA Enables Business of the Future

*Saueressig, Stein, Boeder & Kleis:*
SAP S/4HANA Architecture

*Saueressig, Gilg, Betz & Homann:*
SAP S/4HANA Cloud – An Introduction

*Reznik, Dobson & Gienow:*
Cloud Native Transformation:
Practical Patterns for Innovation

Exercise submissions, announcements and offline discussions via https://moodle.hpi.de/course/view.php?id=302

- All Moodle posts are anonymized
- Please, use also the lecture for Q&A
Do you want to...

- better understand how in-memory databases work?
- gain experience in systems development?
- improve your C++20 skills?
- work in small teams on a larger in-memory data management project?

If this sounds interesting to you, DYOD might be the right project seminar for you. You can work on

- **small engineering tasks** with accompanying lectures to learn about basic concepts of in-memory databases.
- **complex database topics** in the context of our research systems **Hyrise** and **Skyrise** during the project phase.

https://hpi.de/plattner/teaching/summer-term-2022/develop-your-own-database.html
Your task is to analyze how customers currently develop with SAP cloud technology. Based on that, you rethink how they can improve their efficiency when developing with cloud technology under the assumption that any data is available globally with (almost) zero response time.
Enterprise Platform and Integration Concepts (EPIC)
Research Group of Prof. Dr. h.c. mult. Hasso Plattner

Visit us (epic.hpi.de; @HPI_EPIC)
HPI Campus II
Villa, Second Floor

Dr. Michael Perscheid
Chair Representative
Hasso-Plattner-Institut