

Software Architecture

Introduction

BSc



Ingo Arnold

Module Opening

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Education		Publications	
Computer Science (Informatik)		Books <ul style="list-style-type: none">• Enterprise Architecture Function — a pattern language for planning, building, and executing (2022)• Software Architecture — a comprehensive framework and guide for practitioners (2011)• Software-Architektur — Grundlagen Konzepte Praxis (2005, 2008) Papers & Forum Speeches <ul style="list-style-type: none">• Ingo Arnold in	
Work History			
Enterprise and Solution Architecture Consulting GmbH – CEO (4 years) Novartis — Head Architecture Management (18 years) IBM — IT Architect (3 years) Ciba Geigy — Head Business Solutions (5 years)			
Lecturing			
@ University of Luzern <ul style="list-style-type: none">• CAS Enterprise Architecture @ University of Applied Sciences North-Western Switzerland <ul style="list-style-type: none">• Software Architecture• Managing IT in a digitized World (IT Architecture)		@ University of Basel <ul style="list-style-type: none">• Software Architecture• Software Life-Cycle Management @ University of Cooperative Education, Lörrach <ul style="list-style-type: none">• Advanced Software-Engineering• Software Design Patterns	
Miscellaneous			
Family <ul style="list-style-type: none">• 2 sons (both studied computer science)		Sports <ul style="list-style-type: none">• Climbing, Mountainbiking, Snowboarding	Other <ul style="list-style-type: none">• Curious, broadly interested, nature lover, appreciate good books, deep and open conversations, ...

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Motivation

Your ...

- Name
- Experience and background
- Software architecture conception and expectations
- ...

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Few Things up-front

- **Room and time:** Room as communicated. Time: 08:15 to 11:00.
- We will have 15 minute breaks every 45 minutes (i.e., two per lecture).
- Your **active participation** and questions are prerequisites for your learning success.
- Basic knowledge of the **object-oriented paradigm**, the **Java** programming language, and software **design patterns** are prerequisites for this course.
- I do **not prescribe tools** that we use. However, examples are mostly based on the Eclipse IDE.
- I created the lecture script based on Power Point, but prefer a prose style, which makes individual slides a bit wordy. However, the advantage of a consistently readable script outweighs the disadvantages of wordy slides.
- Lecture handouts consist mainly of Power Point decks and supplementary information (mostly PDF files), which I will upload regularly to the **lecture decks location**.
- **Bibliography** is summarized at the end of each deck.

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Few Things up-front

- Exercises and Exam
 - I regularly hand out **exercises that you work on at home**. We will discuss your solutions together in the lectures of the following weeks.
 - At the end of the semester, you will write an **exam**.
 - At the same time, you will write a **preliminary exam** in the middle of the semester, 50% of which will be included in the final semester grade.



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Learning Objectives

You ...

- know the **architecture elaboration process** for systematically developing a solution to a given problem
- can **analyze requirements** with respect to their architectural significance and ensure traceability between requirement and design
- know important **architectural views** on the design of software systems
- are able to **represent the design of systems** in architectural views and recognize architectural decisions coded in them
- can **justify own design** decisions and develop own system architectures
- can **evaluate system architectures** as a whole and in parts with respect to their advantages and disadvantages

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Cornerstone Systems and Information

My contact details

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- eMail: ingo.arnold@fhnw.ch (ingo.e.arnold@outlook.com)
- Webex <https://fhnw.webex.com/meet/ingo.arnold>

Lecture decks location

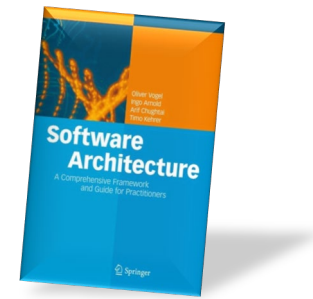
FHNW-share

IT Support

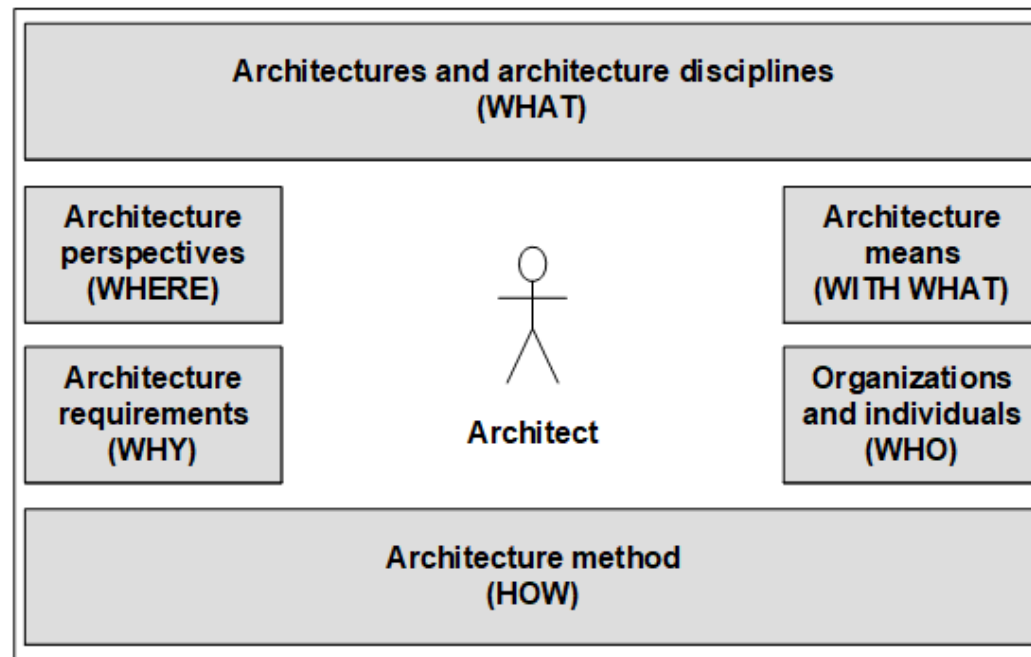
it-support@fhnw.ch / +41 61 228 50 50

Module Opening

Structure and Order

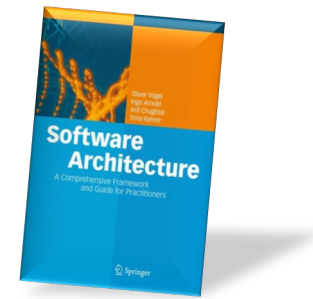


While the high-level structure of the lecture is based on the book [Software Architecture: A Comprehensive Framework and Guide for Practitioners](#) [Vogel, Arnold et al 2011], I also borrow from lecture notes by Prof. Wolfgang Weck (FHNW).

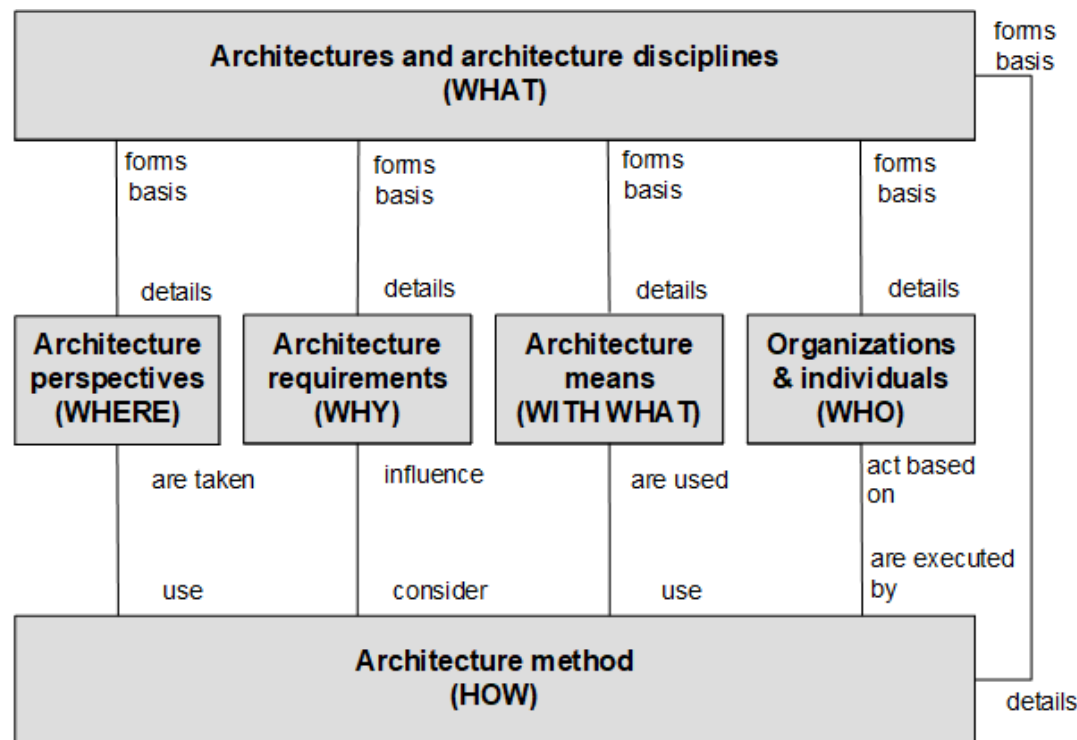


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Structure and Order



The strict differentiation of dimensions and their isolated consideration is only useful for rough orientation purposes. **Software architecture is a holistic discipline** and this entirety is lost when it is considered too particularized.

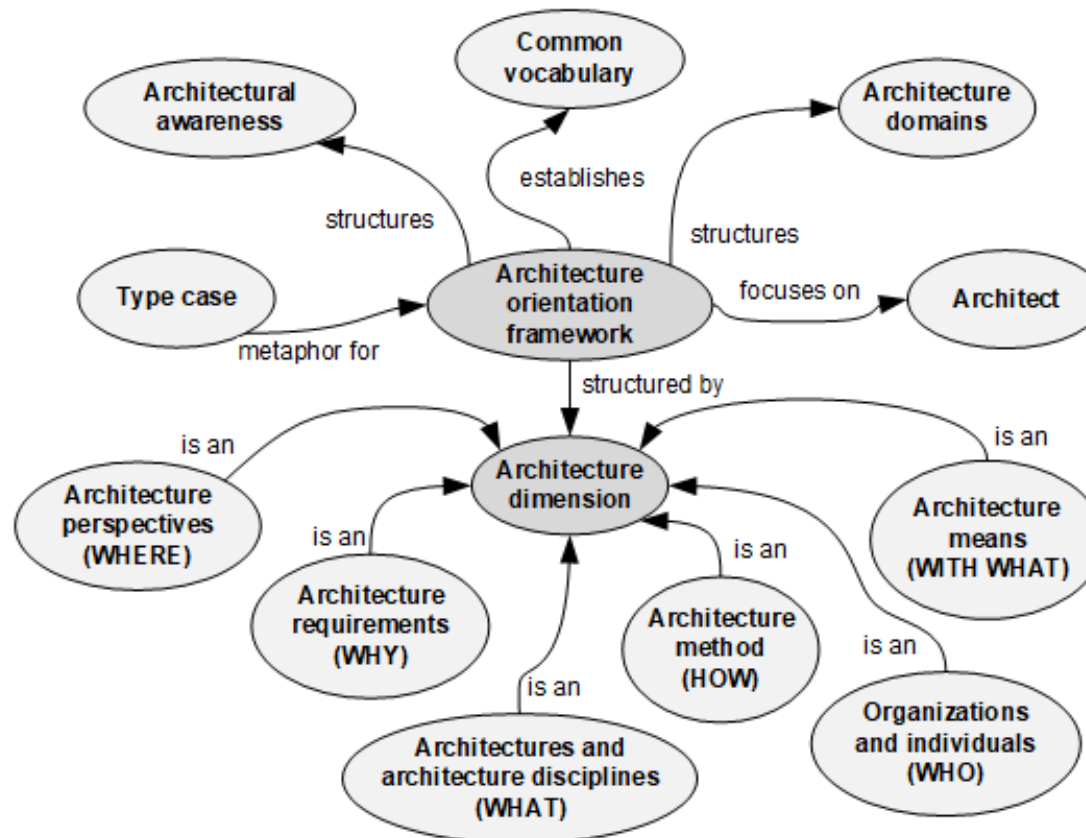


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Structure and Order



Nevertheless, we will use the dimensions as an overarching orientation framework and place short introductions to each dimension at its beginning.



Questions

