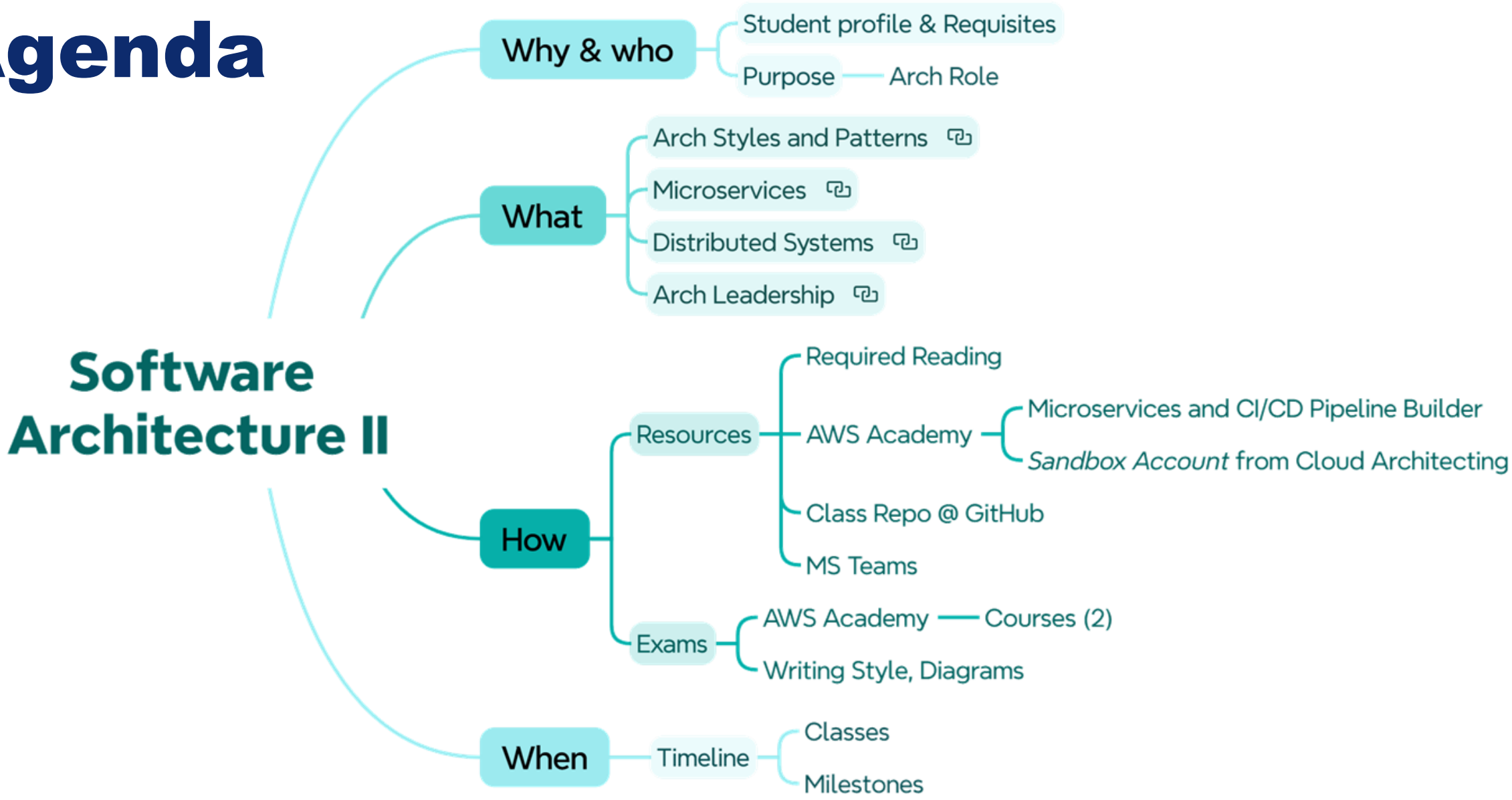
Software Architecture II

Arquitectura de Software II

Universidad de La Sabana

FACULTAD DE INGENIERÍA

Agenda


Software Architecture II
Why & who
Student profile & Requisites
Purpose
Arch Role
What
Arch Styles and Patterns
Microservices
Distributed Systems
Arch Leadership
How
Resources
Required Reading
AWS Academy
Microservices and CI/CD Pipeline Builder
Sandbox Account from Cloud Architecting
Class Repo @ GitHub
MS Teams
Exams
AWS Academy
Courses (2)
Writing Style, Diagrams
When
Timeline
Classes
Milestones

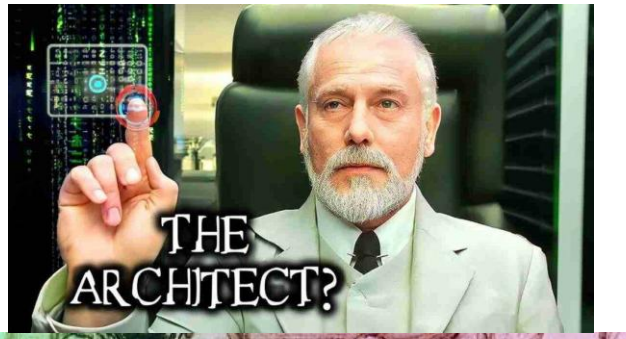
Why: Student Profile

- Curious and Discipline: Read IT topics on several sources and plan his/her works.
- Dev: AWS Labs use Node, but knowledge of a modern language is enough (Go, Rust, Clojure, Java, Python).
- Usage of GenAI Tools for specific tasks only.

Prerequisites:

- Containerization: Usage of Docker CLI. Course on this MSc (Arquitectura de Software I).
- Database: Knowledge on NoSQL DB Design. Course on this MSc (Diseño y Optimización de Bases de Datos).
- Cloud: Knowledge on AWS. Course on this MSc (Arquitecturas en la Nube). Focus on ECS, CodePipeline and CodeDeploy (Asynch Class).

Why: Architecture Role



- To set responsibilities of an architect role.
- To apply proven (industry) methods to solve problems.
- To learn how to make good things (best practices), possible things (constraints) and control exceptions (antipatterns).

See laws and expectations after R*equired Reading*

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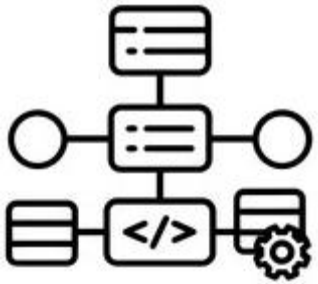
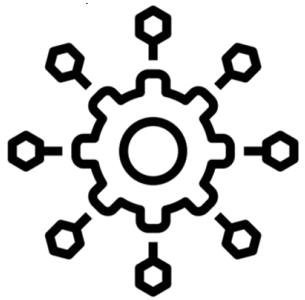
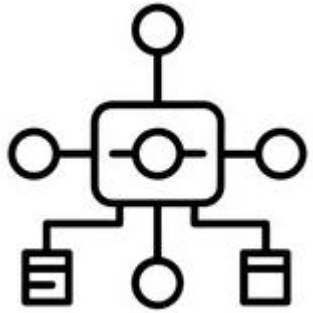
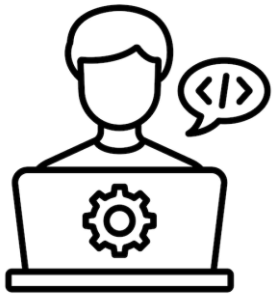
What

Estilos y Patrones Arquitectonicos	Architectural Styles and Patterns
Microservicios	Microservices
Sistemas Distribuidos	Distributed Systems {Platforms, Infrastructure, Computing}
Liderazgo en Arquitectura	Architecture Leadership









How: Resources

01 **AWS Academy**

02 **Class Repo@GitHub**

03 **MS Teams**

04 **Unisabana e-Learning**

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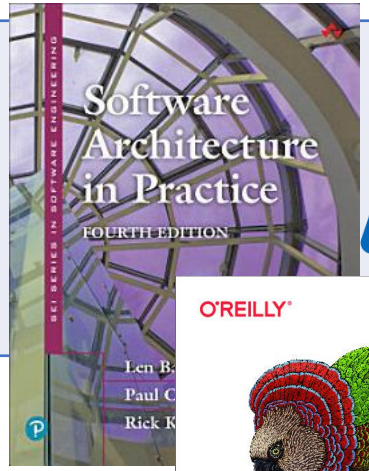
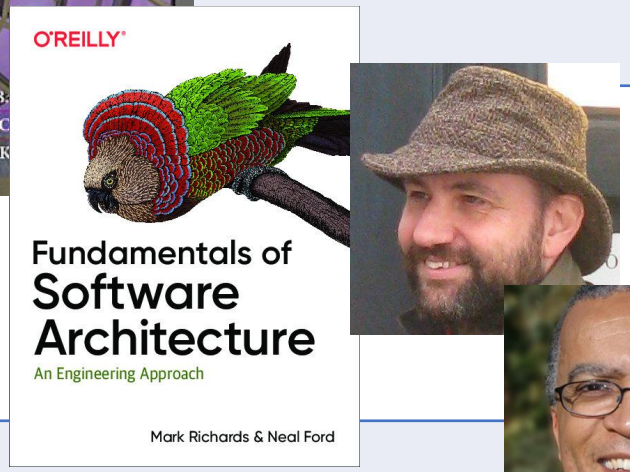
Note: Take advantage of AWS Academy promos. All links or books are referenced on the slide or at the end of presentation.

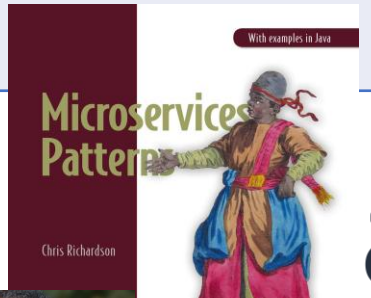
How: Required Reading

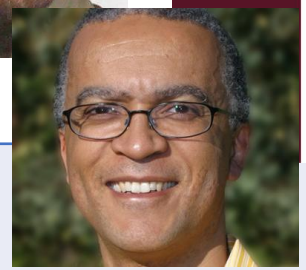
Architectural Styles and Patterns



Microservices



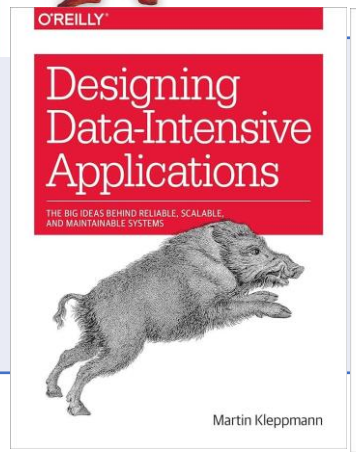


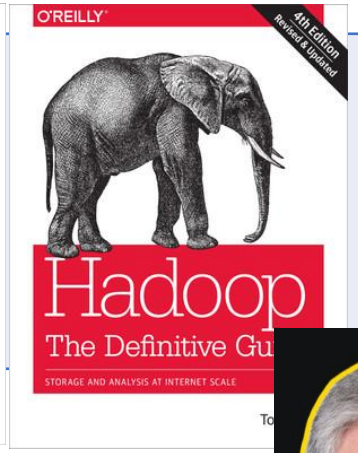


aws

Distributed Systems {Platforms, Infrastructure, Computing}

Base





Architecture Leadership

[Many……]

See How my reference system at the end

How: Exams

Item	%	Deadlines	Type	On
Arch Styles and Patterns	20	3rd Class	Doc	Email/Uni e-learning
Microservices	50	5th Class	Doc & Lab	AWS Academy & Uni e-Learning
Distributed Systems	15	Last Class	Doc & Lab	AWS Academy & Uni e-Learning
Arch Leadership	15	Last Class	Docs (2)	Email/Uni e-learning

Proposals to run scripts for labs: Mondays, Thursdays or Fridays.
For anyday, the professor will run the scripts at 5 pm, if you send the credentials and specify the day.

AWS Academy issues: Create support the ticket directly and keep inform the professor. AWS Academy will need all screenshots.

Unisabana e-Learning issues: Review with University Point-of-Contact, the IT support.

Extra Time with regular process **only**: Review with University Point-of-Contact, the procedure and evidences.

Take care of the end date for Courses on AWS Academy to take advantage of the promos and labs.

AWS Academy

- Task 2: For this course, Microservices and CI/CD Pipeline Builder.
- Task 3: Take advantage of the Sandbox Account from previous course, “Cloud Architecting”.

Those tasks are evaluated by the professor using scripts. AWS Academy doesn’t offer a grade for those elements.

Preferred style

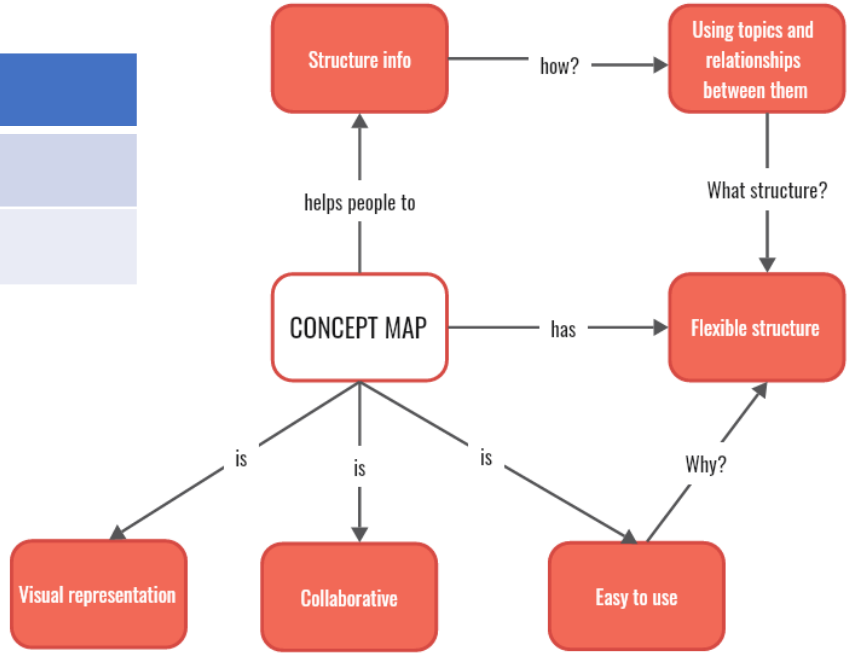
Simple

Well-Structured

Relevant info

Header1	Header2
Or using	A table
With clever	order

- Using bullets,
- It can be a
- Great idea!

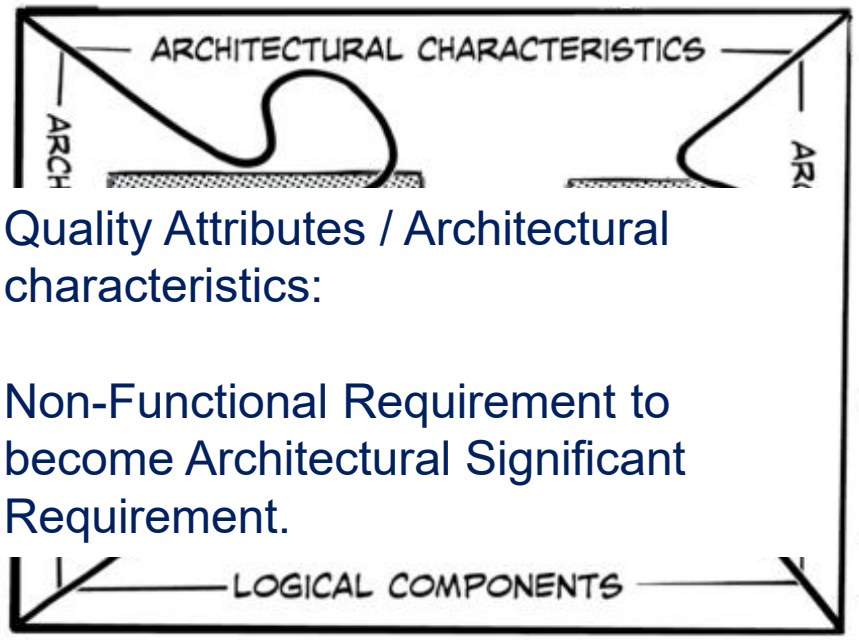


When: Timeline

* Review updated dates on Repo@GitHub.

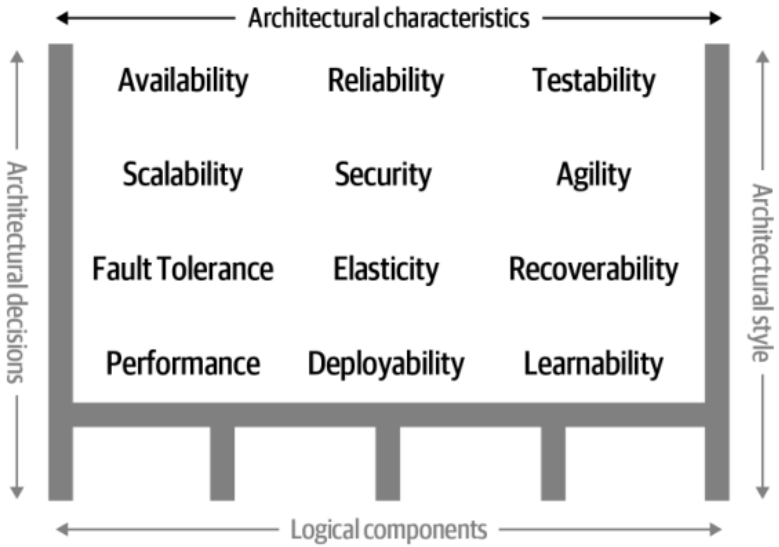
Class #	Date	Module	Milestone
1	- Jul	0, 1	
2	- Jul	1	
3	- Jul	2	Doc for Module 1
4	- Aug	2	
5	- Aug	3	Doc and lab for Module 2
6	- Aug	4	Doc and lab for Module 3, Doc for Module 4

SA Dimensions: Quality Attributes

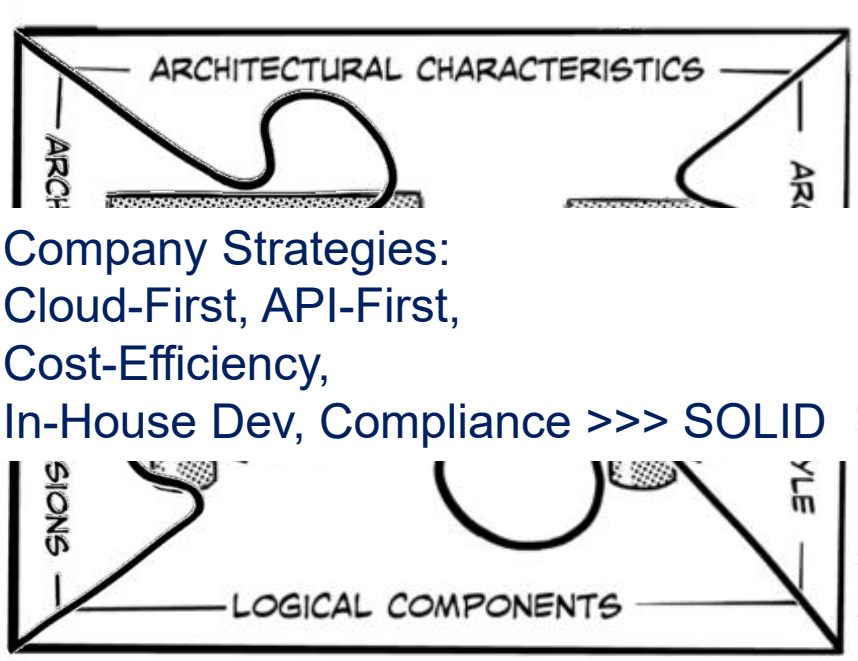


Quality Attributes / Architectural characteristics:

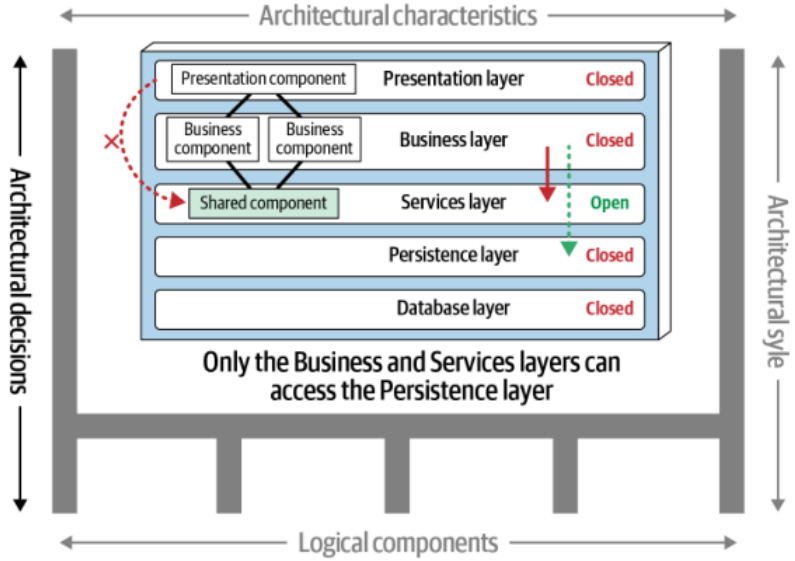
Non-Functional Requirement to become Architectural Significant Requirement.



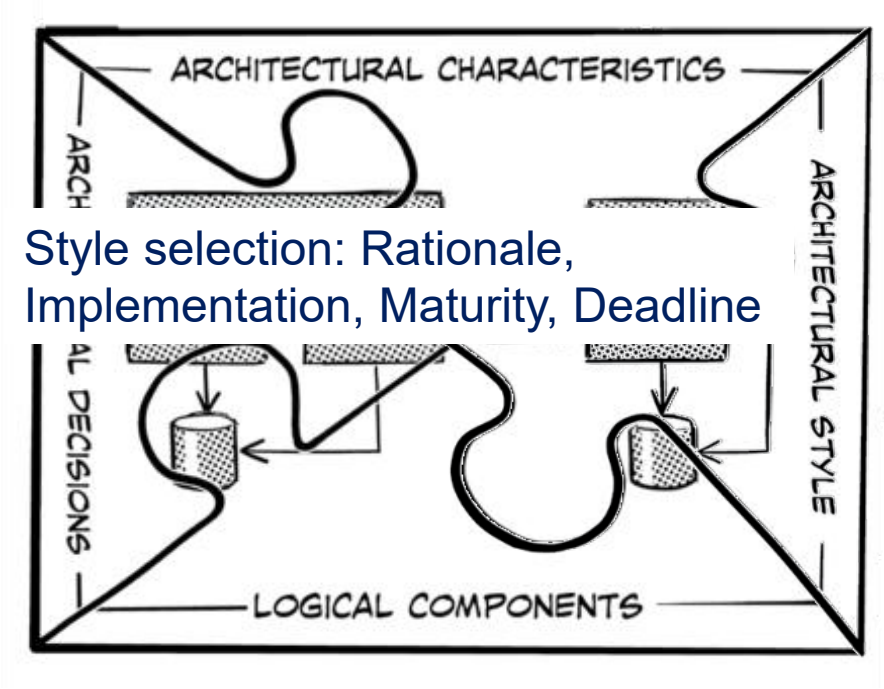
SA Dimensions: Architectural Decissions

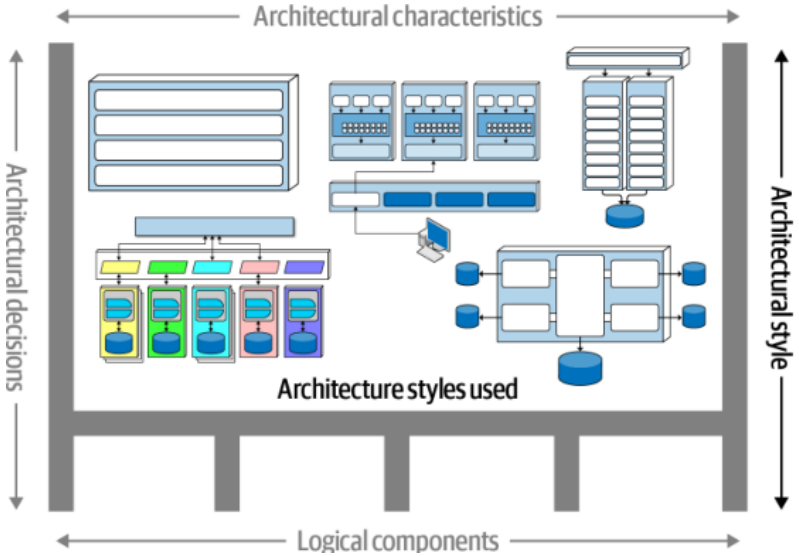


Company Strategies:
Cloud-First, API-First,
Cost-Efficiency,
In-House Dev, Compliance >>> SOLID

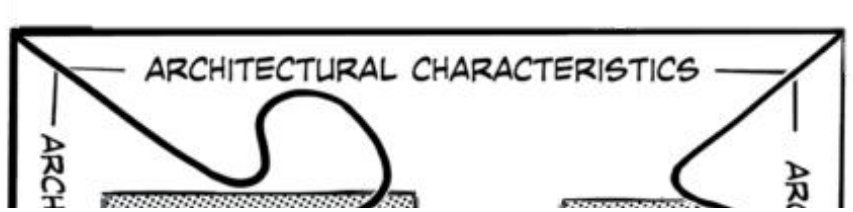


SA Dimensions: Architectural Styles

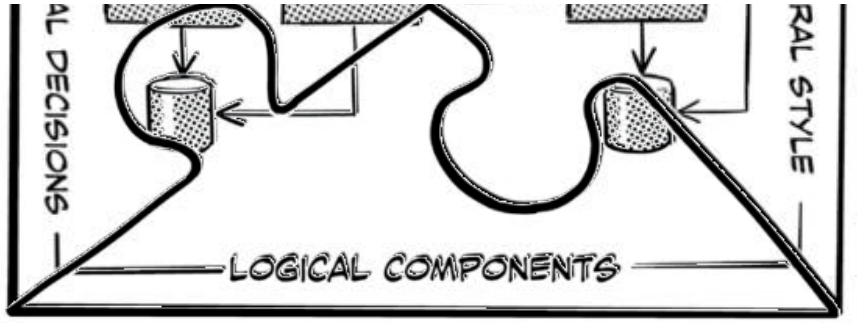


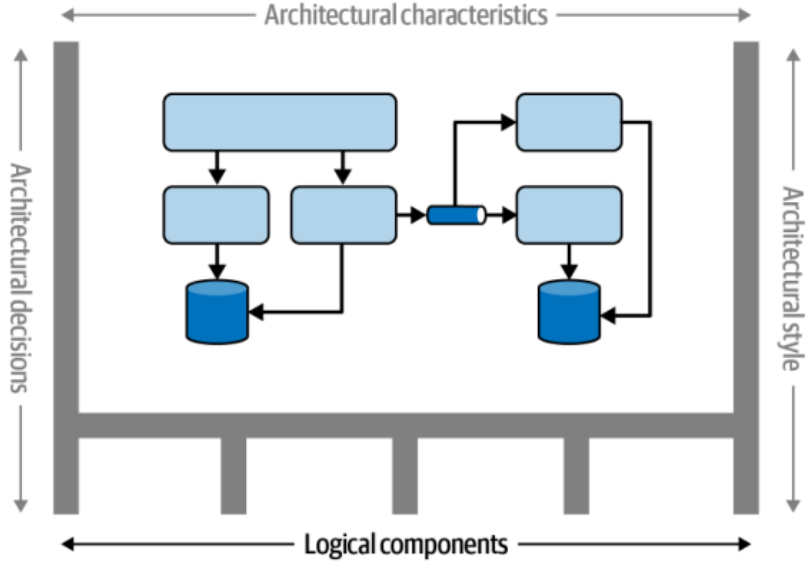


SA Dimensions: Logical Components



Goes deep, maybe to Design Architectures.
Out of scope of this course.





Scope and Laws

Laws of Software Architecture

1. Everything in software architecture is a trade-off.
2. Why is more important than how.
3. Most architecture decisions aren´t binary but rather exist on a spectrum between extremes.

Expectations

- Make architecture decisions
- Continually analyze the architecture
- Ensure compliance with decisions
- Keep current with latest trends
- Understand diverse technologies, frameworks, platforms, and environments
- Know the business domain
- Lead a team and possess interpersonal skills
- Understand and navigate organizational politics

Leadership

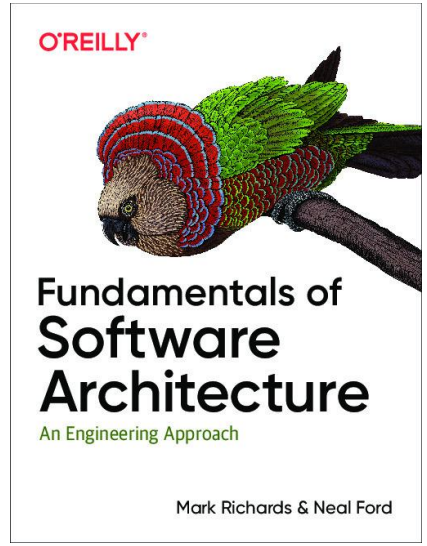
- Transparent
- Discipline
- Original

References

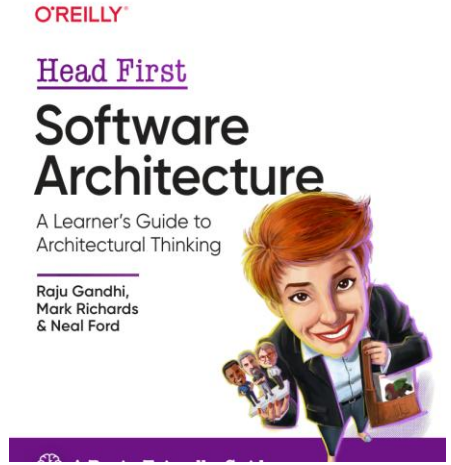
Links are everywhere can be exasperating, so it is better to have an ending slide with the chapters and the acronym.

The abbreviations to be referred are here.

- [FoSA] Richards, M., & Ford, N. (2025). Fundamentals of software architecture (2nd ed.). O'Reilly Media.
  Ch. 1, 26 & 27



- [HFSoA] Raju, S., Richards, M., & Ford, N. . (2024). Head First software architecture: A learner's guide to architectural thinking (1.ª ed.). O'Reilly Media.
  Ch. 1, 2 & 3



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