Software Architecture

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February 26, 2024

Interesting Software is Complex

Many aspects to the design of its architecture.

Architectural Design

Managing technical complexity.

Question

How do you describe a complex architecture, without making it too difficult to understand?

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Answer

Architectural Views – Only consider one aspect at a time.

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- Software Architecture in Practice^[Bass et al., 2021]
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- The Open Group Architecture Framework (TOGAF) [Forum, 2018]
- ISO/IEC/IEEE 42010:2011^[iso, 2011]

Context

• How software system fits into broader *environment*

$\operatorname{Context}$

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- Structure Containers, Components, Code
 - *Levels* of detail

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• How elements *interact* to deliver features

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Infrastructure – Deployment

• How system is *deployed* on computing platforms

Logical – *Structure* of how the software is implemented • components/classes, relationships, interactions

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Process - Dynamic behaviour

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• concurrency & distribution, fault tolerance, process control,

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- Physical -Map executable software containers to hardware
 - address non-functional requirements
 - availability, reliability, scalability, throughput, ...

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Scenario - *Demonstrate* functionality delivered by architecture

- use case details

 - *validate* design of architecture
 - *illustrate* purpose of architecture

Diagrams & Notation

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- C4 informal, simple structure^[Brown, 2023]
- UML formal, well-defined language^[uml, 2017]
- You probably don't want to know about alternatives

Reading...

"Architectural Views" Notes¹ [Thomas and Webb, 2023]

¹Remember, I said you had to read the notes.

References

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