$Software\ Architecture$

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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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- The Open Group Architecture Framework (TOGAF)
 [Forum, 2018]
- ISO/IEC/IEEE 42010:2011 [iso, 2011]

Context

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Structure – Containers, Components, Code

• *Levels* of detail

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 - *Levels* of detail
- Behaviour Dynamic
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- Structure Containers, Components, Code
 - *Levels* of detail
- Behaviour Dynamic
 - How elements *interact* to deliver features
- Infrastructure Deployment
 - How system is *deployed* on computing platforms.

Logical – Structure of how the software is implemented

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Process – *Dynamic* behaviour

• concurrency & distribution, fault tolerance, process control,

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 - address non-functional requirements
 - \bullet availability, reliability, scalability, throughput, \dots

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 - Physical Map executable software containers to hardware
 - address non-functional requirements
 - availability, reliability, scalability, throughput, ...
- Scenario *Demonstrate* functionality delivered by architecture
 - use case details
 - *drive* functional design of architecture
 - 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" Notes [Thomas and Webb, 2023]

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

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