Architectural Views

CSSE6400

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Interesting Software is Complex

Many aspects to the design of its architecture.

Architectural Design

Is about 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 of the architecture at a time.

Architectural Views

- 4+1 Views [1]
  - logical, process, development, physical, scenario
- Software Architecture in Practice [2]
  - module, component-and-connector, allocation
- Rozanski and Woods [3]
  - context, building block, runtime, deployment
- NATO Architecture Framework [4]
  - concepts, service, logical, physical resource, architecture foundation
- The Open Group Architecture Framework (TOGAF) [5]
- ISO/IEC/IEEE 42010:2011 [6]

4+1 Views

Logical – *Structure* of how the software is implemented.

- components/classes, relationships, interactions

Process – *Dynamic* behaviour.

- concurrency & distribution, fault tolerance, process control, ...

Development – *Organisation* of the software in the development environment.

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

- A *good* diagram is worth a thousand words.
  - A thousand diagrams is just confusing.
- UML – formal, well-defined language [7]
- C4 – informal, simple structure [8]
- You probably don't want to know about alternatives.

Reading...

“Architectural Views” Notes[1] [9]

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

References

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