

Documenting Software Architecture

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- Exam is online.
 - It will be available on 11/19/2020.
 - The submission due date is 11/24

Course outcomes

1. Understand what a software architecture is and explain why it is important
2. Understand the relationship between software quality attributes and software architectures
3. Ability to elicit software architecture drivers
4. Ability to use architecture styles, patterns, and tactics
5. Ability to use the attribute-driven method to design software architecture
6. Ability to document software architecture
7. Ability to evaluate software architecture

Resources

Chapter 6 of the book
Essential Software
Architecture by Ian
Gorton



Software Architecture

Would such wall diagrams be architecture documentation?



- The documentation of the software is a representation of the software
- There is no universal accepted architecture documentation standard

Why Do You Need to Document Software Architecture?

- Trace of architecture decisions that the team agreed on
- To remind the designer about the architecture of a software
- To develop the software
- To evaluate the design

What to Document?

Factors include

1. Complexity of the software
2. Longevity of the software
3. Stakeholders
4. Time
5. Budget



Architecture Stakeholders

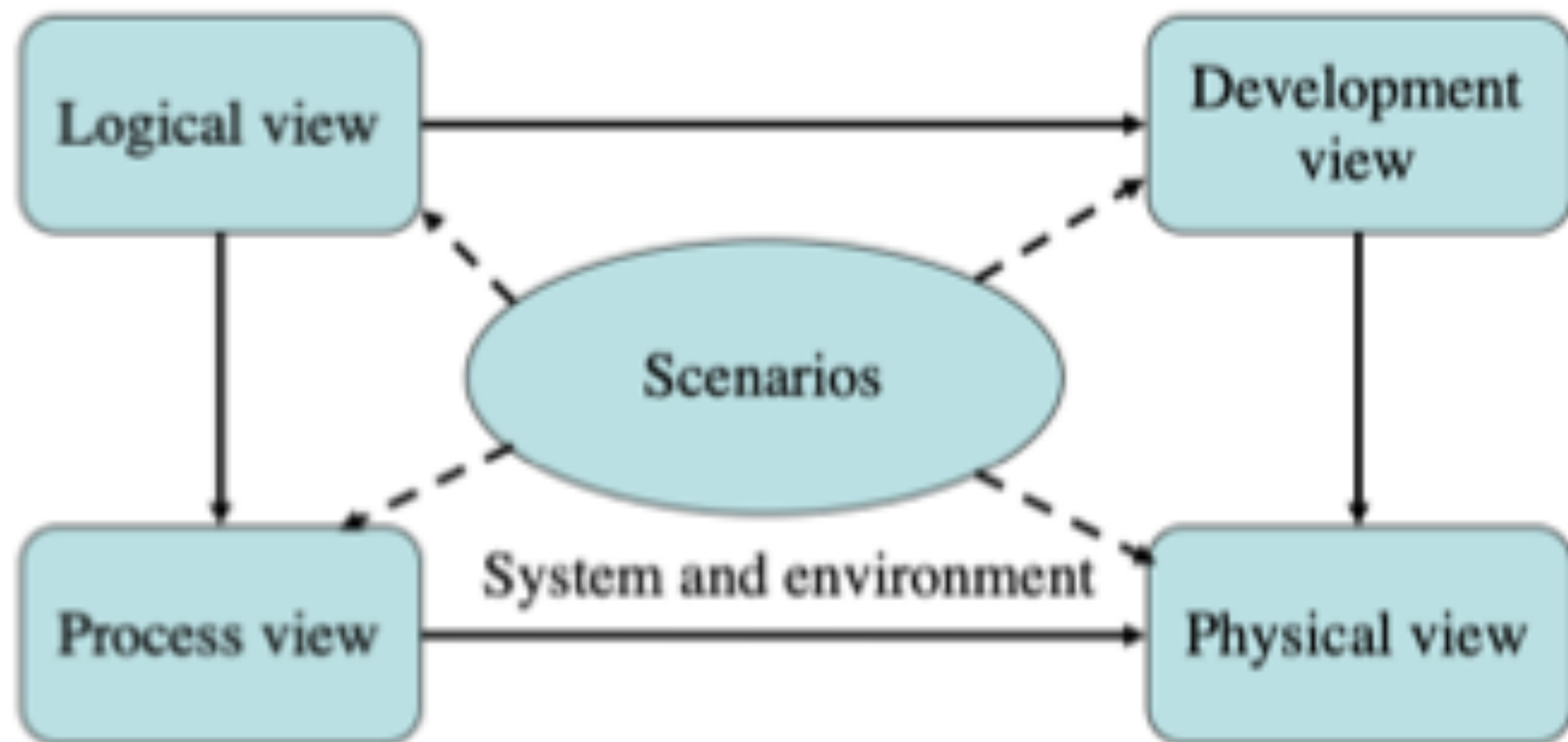


- Developers
- Project manager
- System administrator
- Network administrator
- User/customer
- Investor
- Contractor

Architecture Views

End-users

Developers



Integration, performance
scalability

System engineers

Information for Developers



COMPONENTS
INTERFACES



SUBSYSTEMS
CONSTRAINTS



TEST
SCENARIOS



THIRD PARTY
SOFTWARE



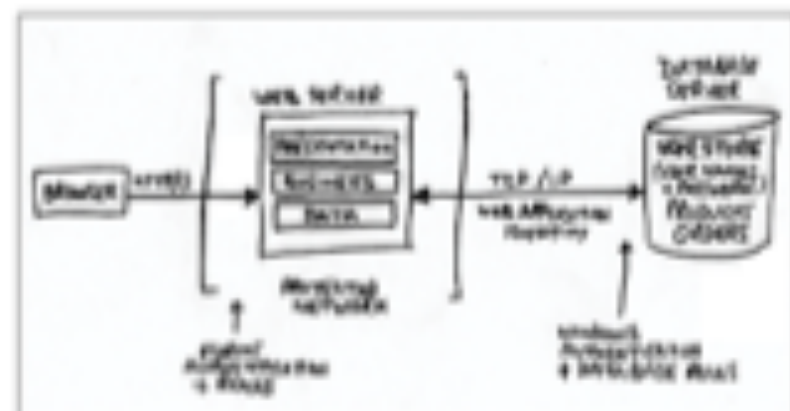
EXTERNAL
SERVICES

Diagramming

Use modeling language



Block diagram



Diagramming

The reasons for choosing UML diagrams over box-and-arrow diagrams

1. Remove ambiguity
2. Could be used for model-driven development

Commonly Used UML Diagrams

Behavior Diagrams



Collaboration diagram



State machine diagram



Activity diagram



Sequence diagram

Structure diagrams



Component diagram



Deployment diagram



Class diagram

Architecture Document Template

Project name: catchy name

- Project context
- **Architecture requirements**
- Solution
- Architecture analysis

Architecture requirements

1. Key objectives
2. Use cases
3. Functional requirements
4. Constraints
5. Non-functional requirements
6. Risks

Architecture Document Template

Project name: catchy name

- Project context
- Architecture requirements
- **Solution**
- Architecture analysis

Solution

1. Relevant architectural patterns
2. Architecture overview
3. Structural views
4. Behavioral views
5. Implementation issues

Architecture Document Template

Project name: catchy name

- Project context
- Architecture requirements
- Solution
- Architecture analysis

Architecture analysis

1. Scenarios analysis
2. Risks

Self-check



Why do we need to document software architecture?



What are the main factors that affect the level of details of the documentation?



Is it better to use modeling language or box-and-arrow diagrams to document an architecture?



What are the two categories of UML diagrams?



Do architects use the 4 architecture views categories: logical, development, process, and deployment views?



What should you include in an architecture document?

Thank you

Questions?