WP05

Architecture Description

Design of Software Architectures

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Good architecture is…

- consistent
- unambiguous
- descriptive
- encompasses the entire design
- structured
- suitable for its purpose
- implementable
- clear
- embedded in its environment
- understandable
- future proof
- solving real life problems
- editable
- maintainable
- etc

Good architecture is correct

- The architecture is based on
  - validated statements about the environment
  - (the stakeholder concerns in particular)
- Concerns are prioritised
- Architecture balances the concerns
- Achieved by:
  - Adequate environment analysis
  - Conscious balance of interests
  - Validation of environment statements

→ “The system fits its environment”

Good architecture is consistent

- The architecture forms a whole
- Architecture statements do not conflict
- The system can become reality with the architecture
- Achieved by:
  - Verification on contradictions
  - Demonstrable PoCs
  - Conscious management

→ “The system is well engineered”

Good architecture is communicated

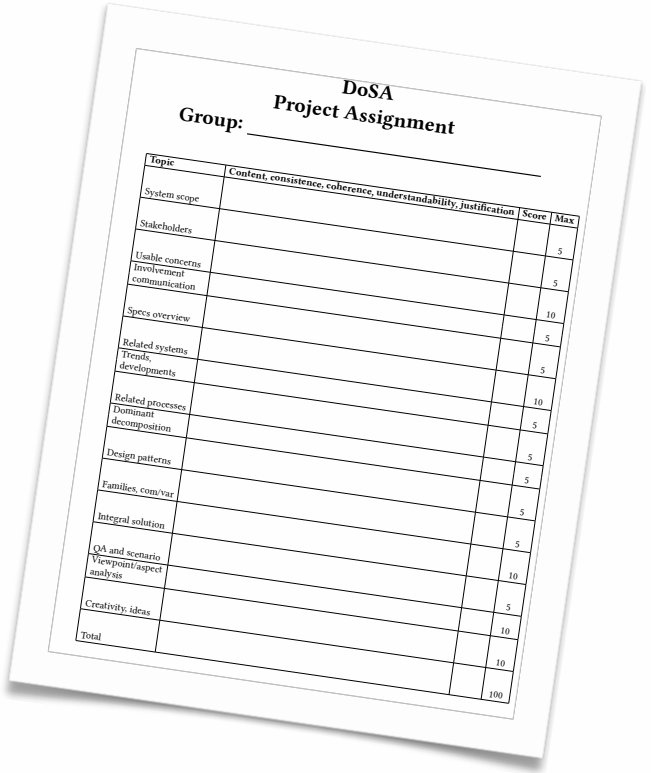
- Stakeholders
  - know their relation with the architecture
  - know what to do with it
  - understand how their concerns are (not) covered
- Starts with a communicable architecture view/description
- Achieved by:
  - Actionability by stakeholders
  - Sufficient anchoring
  - Conscious performance

→ “Everyone knows what they should know”

Suggested Structure

- Introduction
- System scope
- Environment
  - Stakeholders and their concerns
  - Related systems
  - Related processes, organisations, stakeholders
  - Main QA scenarios and use cases
  - Trends and developments
- Design
  - Dominant decomposition/style
  - Design decisions: Justification of choices related to environment
  - View 1..N
    - Per view: Used design patterns (show examples; if you cannot, generalise)
  - Consistency: relation between views, known gaps/inconsistencies.
- Appendix
  - Explanation of viewpoints, references to standards

cf. ISO 42010!



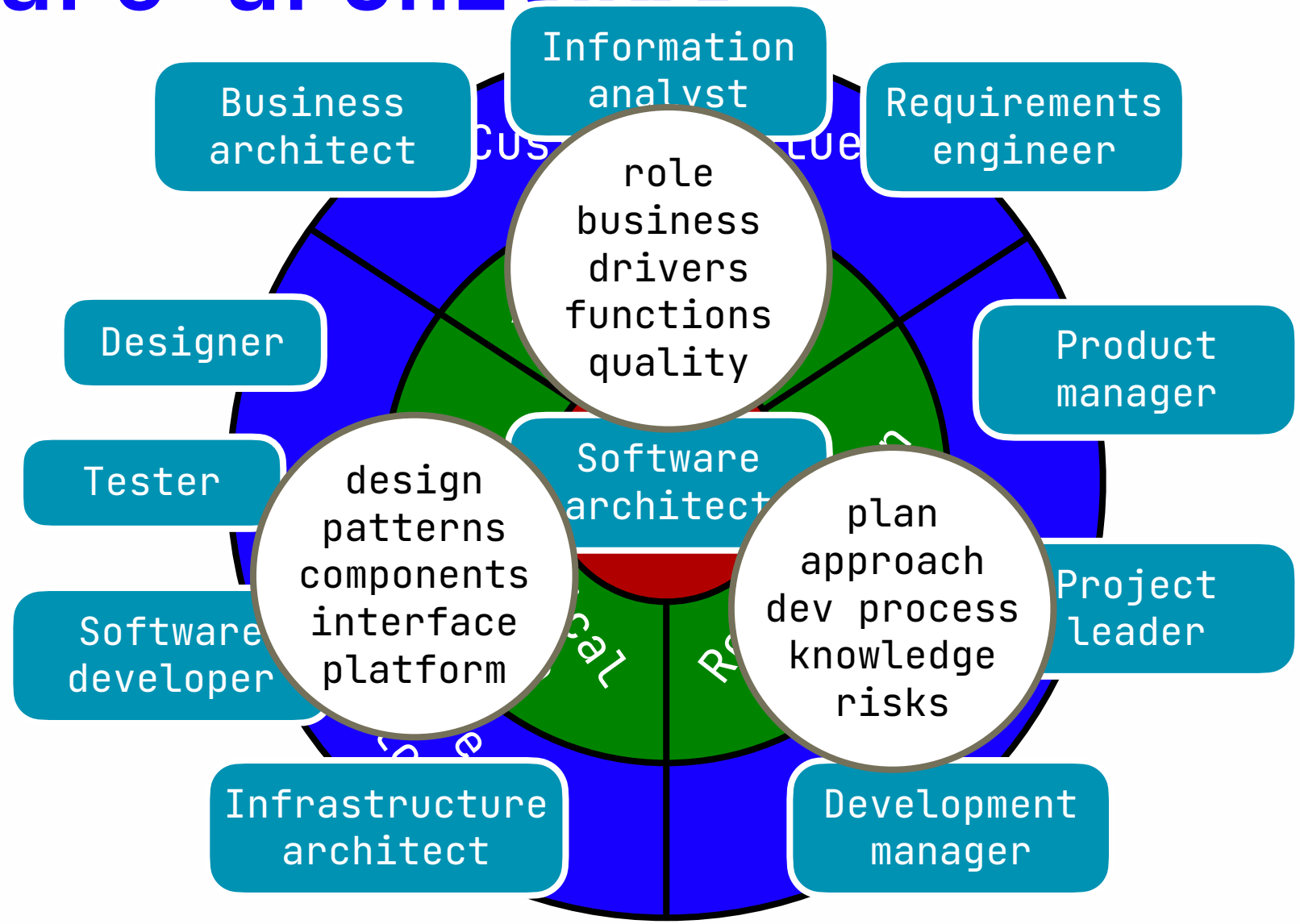
DoSA
Project Assignment
Group: _____

Topic	Content, consistence, coherence, understandability, justification	Score	Max
System scope			5
Stakeholders			5
Usable concerns			10
Involvement communication			5
Specs overview			5
Related systems			10
Trends, developments			5
Related processes			5
Dominant decomposition			5
Design patterns			5
Families, com/var			5
Integral solution			10
QA and scenario			5
Viewpoint/aspect analysis			10
Creativity, ideas			10
Total			100

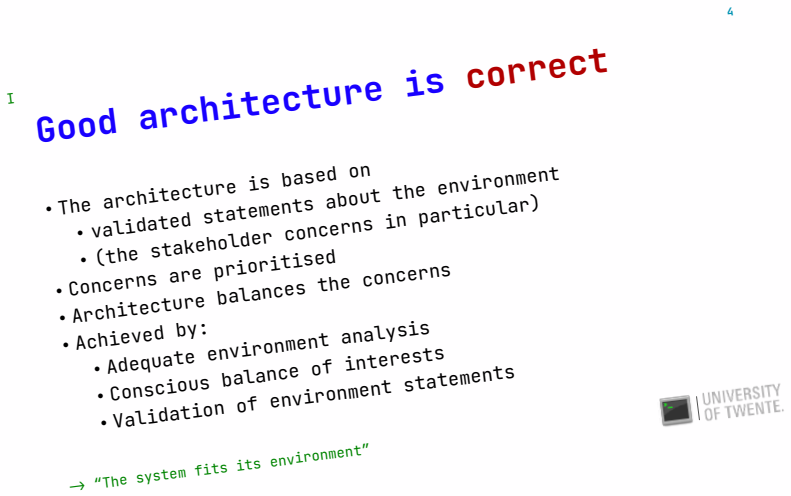
General Advice

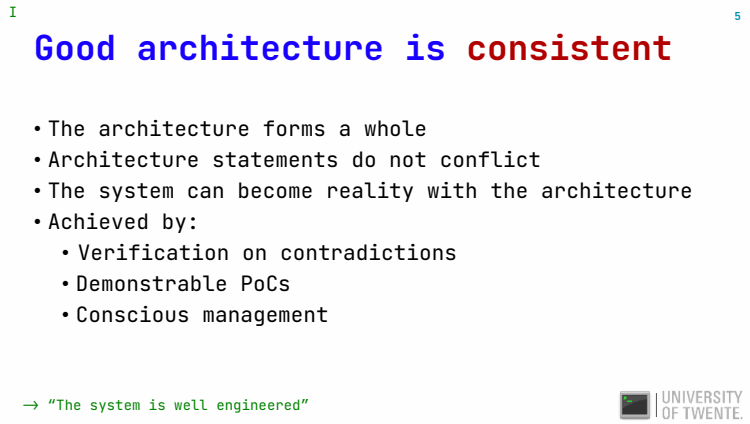
- **Consistency** is key
- Remember relations from ISO 42010
  - stakeholder –has→ concern –is-about→ quality attribute
  - stakeholder –plays-role-in→ process –involves→ view
  - system –interacts-with→ environment element
- **Quality** >> **functionality**
- Intermediate documents can go into the appendix
- Follow **WPs**
- Use the lecturer as a coach or a stakeholder

Software architect



Make it good





- Concretise the abstract advice
- Formulate guidelines for your project
  - correctness
  - consistency
  - communication

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