Lecture # 14

Requirements Errors

Today's Topics

- Requirements errors
- Addressing requirements errors

Requirements Errors

Requirements Error/Defect

- A deficiency in the requirements quality that can hamper software development

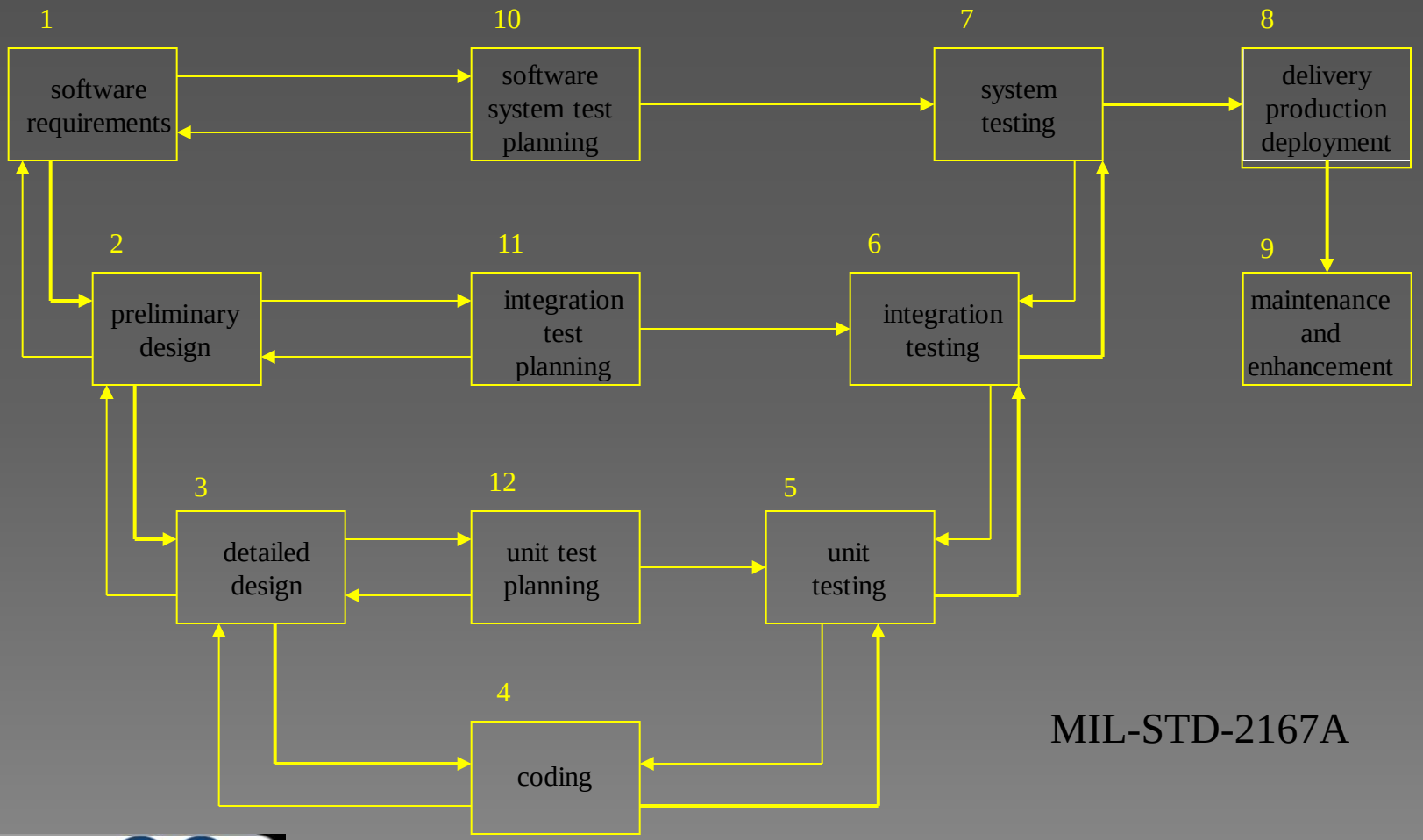
Requirements Errors - 1

- Errors and omissions find their way in different requirements documents
- If not removed, requirements errors usually flow downstream into design, code, and user manuals

Requirements Errors - 2

- It is difficult to detect requirements errors once they flow downstream
- Requirements errors are most expensive to eliminate

Software Development Process



MIL-STD-2167A

Types of Requirements Errors

- Errors of omission
- Errors of commission
- Errors of clarity and ambiguity
- Errors of speed and capacity

Errors of Omission

- Errors of omission are most common among requirements errors
- Domain experts easily forget to convey domain knowledge to requirements engineers, because they consider that to be obvious and implicit

Errors of Clarity and Ambiguity

- Second most common errors are those of clarity and ambiguity
- Primarily, because natural languages (like English) are used to state requirements, while such languages are themselves ambiguous
- For example: object

Errors of Commission

- Errors of commission can also find their way into the requirements documents

Performance Errors

- Performance, that is errors of speed and capacity, are also found in requirements
- Primarily, these occur due to conflicting understanding or competing needs of different stakeholders

Negative Impact of Requirements Errors - 1

- The resulting software may not satisfy user's real needs
- Multiple interpretations of requirements may cause disagreements between customers and developers, wasting time and money, and perhaps resulting in lawsuits

Negative Impact of Requirements Errors - 2

- Negative impact on humans
  - Unsatisfied customers and developers
  - Lack of interest in automation of processes
  - Blame game

Addressing Requirements Errors

- Prevention
- Removal

Prevention vs. Removal

- For requirements errors, prevention is usually more effective than removal
- Joint application development (JAD), quality function deployment (QFD), and prototyping are more effective in defect prevention
- Requirements inspections and prototyping play an important role in defect removal

Defect Prevention - 1

- Don't let defects/errors become part of the requirements document or requirements model in the first place
- How is it possible?
- Understanding application domain and business area is the first step in defect prevention

Defect Prevention - 2

- Training in different requirements engineering activities (elicitation, analysis and negotiation, specification, and validation) is also very important for defect prevention
- Allocating enough time to conduct requirements engineering activities also is very important in this regard

Defect Prevention - 3

- Willing and active participation of stakeholders in different activities of requirements engineering. That is why JAD is very useful in defect prevention as far as requirements errors are concerned

Defect Prevention - 4

- An overall commitment to quality and emphasis on using documented processes is also a very important
- An overall commitment to process improvement

Summary

- Introduced the concept of requirements errors and types of requirements errors
- Discussed the impact of requirements errors
- Discussed error prevention in requirements