



Inspections



(Week 8)

Motivation

- ▶ Detecting errors late in the development cycle is expensive
 - ▶ E.g. A requirements defect that is found only at testing costs almost 100 times more to fix than if it had been found and fixed at requirements itself
 - ▶ Need to rework not only the requirements doc, but all other deliverables produced from it: change the design, change the code, rerun tests!
 - ▶ The earlier in the lifecycle we find problems, the cheaper they are to fix



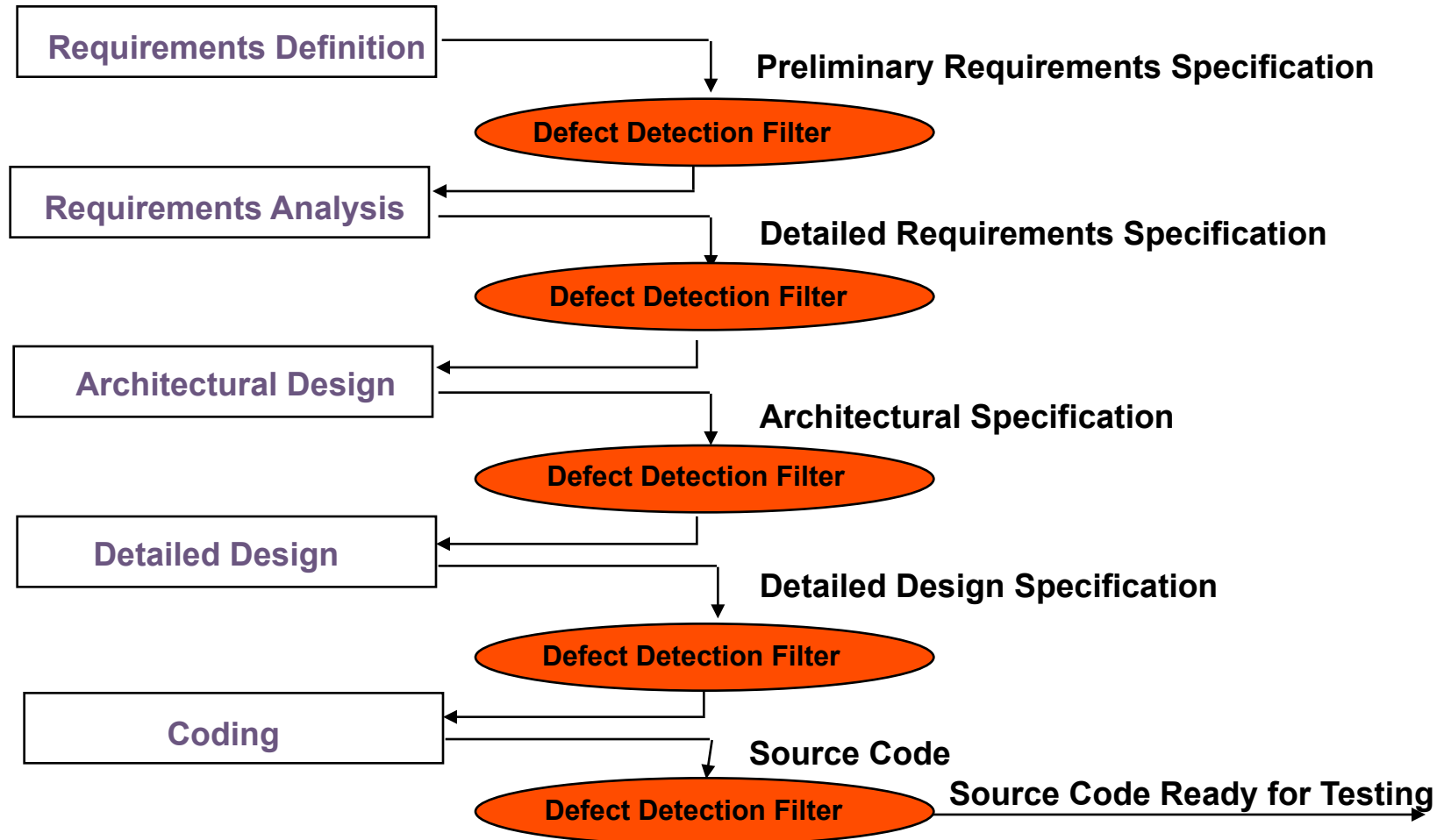


Motivation

- ▶ **Multiple stages of defect removal**
 - ▶ If we inspect each deliverable (requirements, design, code), and then do multiple stages of testing (unit tests, integration tests, system tests), then we get many chances to find defects
 - ▶ Like filtering multiple times: the result is much cleaner!



Multiple Stages of Defect Removal

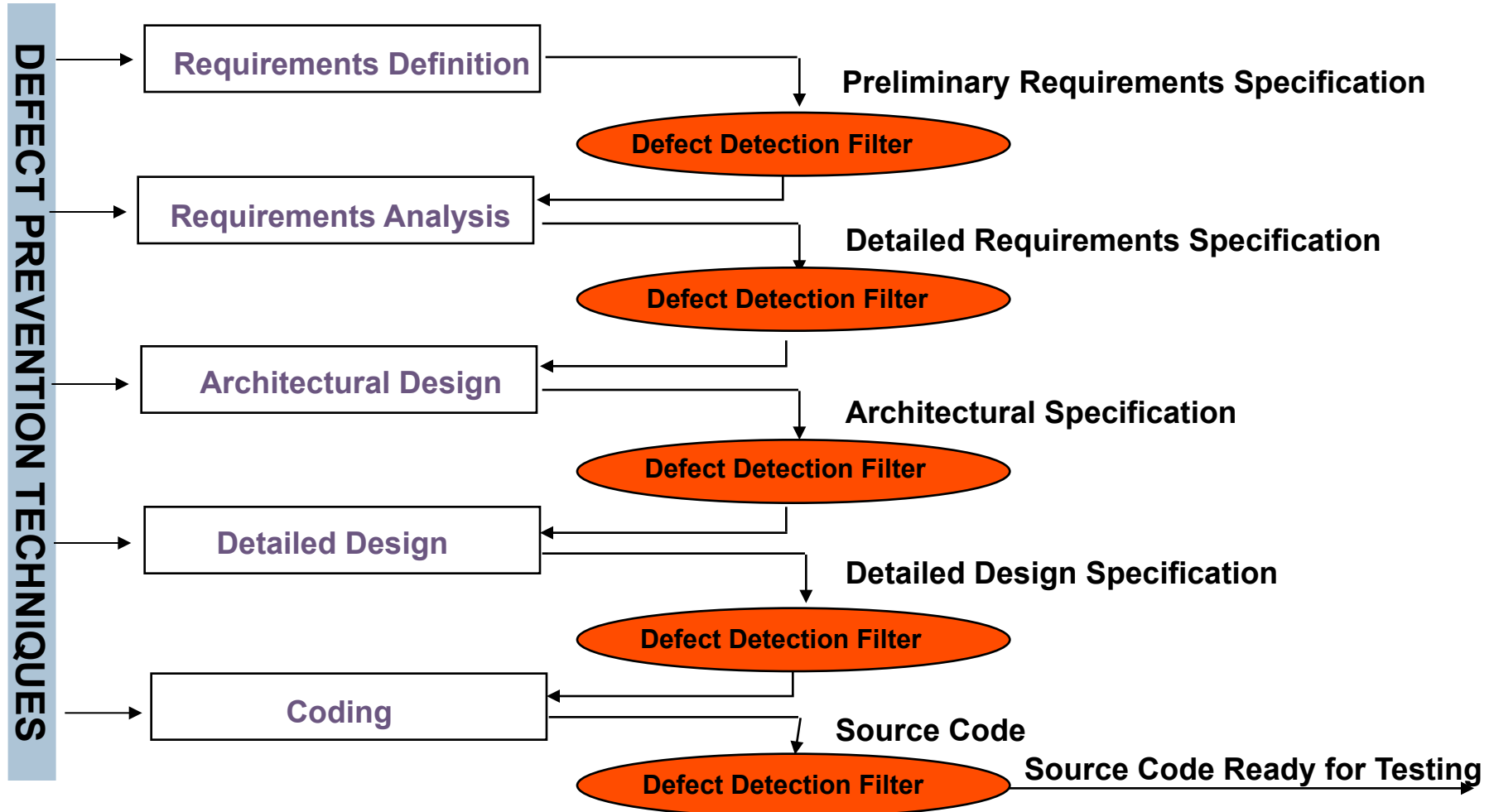


Defect Prevention

- ▶ In addition to removing defects through inspections, we can eliminate defects using
 - ▶ Checklists: common mistakes, concerns to address, activities to do
 - ▶ Templates: standard document formats that list the different aspects to be covered
 - ▶ Reduce work and avoid incompleteness
 - ▶ Tools and workflow automation
 - ▶ Avoid errors, inconsistencies and missing steps
 - ▶ Reduce effort too!



Quality-Centered Development

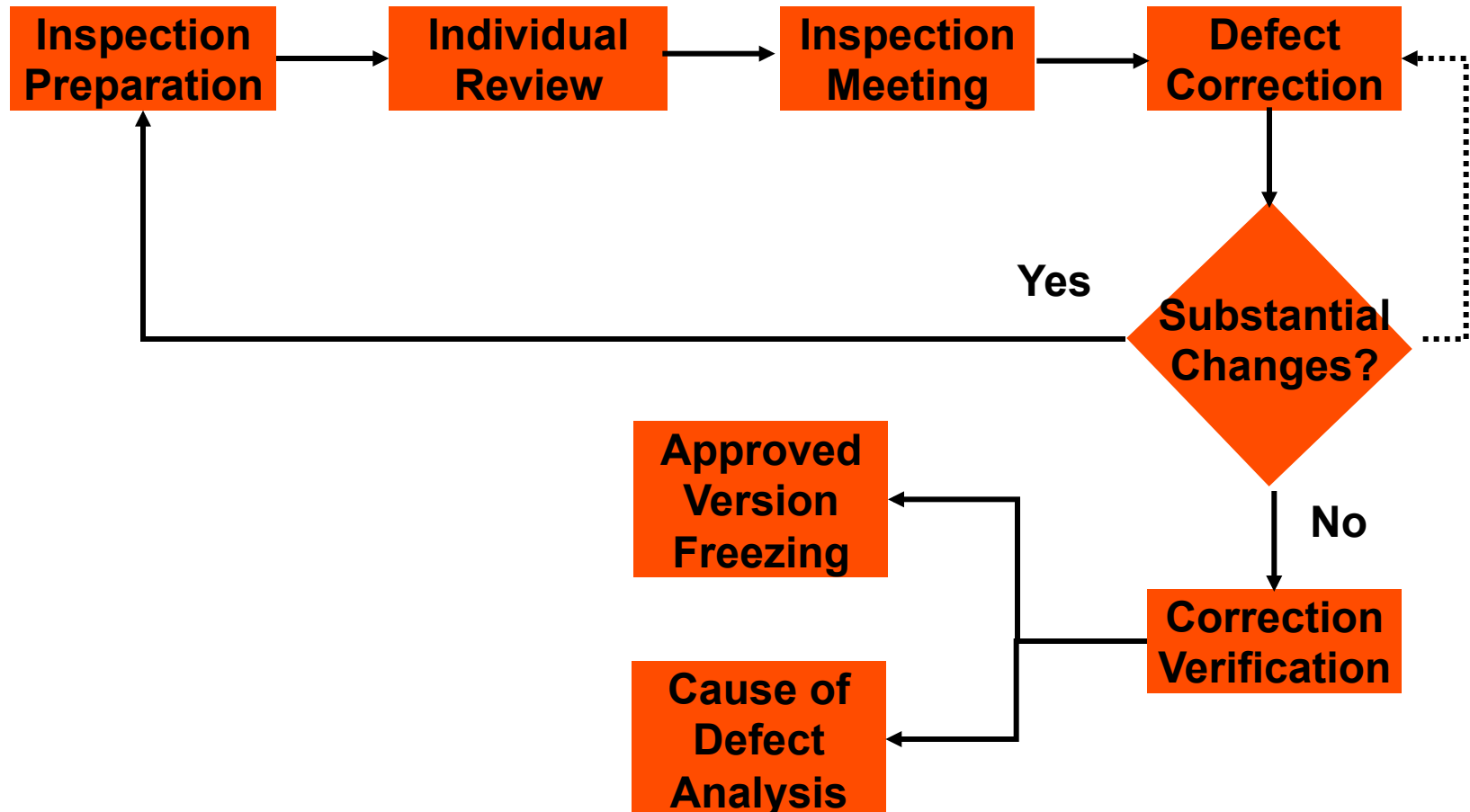


Inspections

- ▶ A group of people review an artifact (code, documents) to find defects and identify opportunities for improvement
- ▶ Can be used for any document or code produced during the development
 - ▶ Preferably, **all** major development artifacts should be inspected
- ▶ Each reviewer spends several hours going through the artifact and finding problems and possible improvements
- ▶ Hold a review meeting to discuss the inputs from each reviewer and identify the problems that need fixing
- ▶ Fix problems, re-review if necessary



Inspection Phases



Formal inspection process

- ▶ Defined roles: Author, Reader, Moderator, Scribe, Inspectors
- ▶ **Author** distributes the artifact ahead of time, arranges time for meeting
- ▶ **Reader** interprets the code for the inspectors
 - ▶ If reader is different from author, reduces possibility of author propagating their own misunderstandings
- ▶ **Inspectors** prepare comments before meeting, provide their inputs and contribute to discussions during meeting
- ▶ **Moderator** keeps the discussions on track, also responsible for checking later that the problems found have been fixed
- ▶ **Scribe** ensures that problems found get recorded



Inspection Meeting Preparation Process

- Author prepares the artifact to be inspected and makes it available to the moderator
 - Preferably at least 2 days prior to meeting
 - Give inspectors time to prepare
- Moderator obtains the inspection checklist and other support material
- Moderator distributes materials to all inspectors
- Inspectors inspect the artifact *prior* to coming to the meeting and make their own notes



Inspection Meeting Process

- ▶ The meeting is called to order by the moderator
- ▶ The reader interprets for the team as he/she understands what is in the artifact being inspected
 - ▶ In code inspections, the reader paraphrases the code as opposed to reading it line by line
- ▶ Based on their own reviews, inspectors question, add value, and contribute to the meeting
- ▶ The scribe records all issues raised on the appropriate inspection report form
- ▶ The author answers questions when necessary



Inspection Meeting Guidelines

- ▶ The objective of an inspection *is not* to correct defects but to set plausible course of action
- ▶ Author is there to clarify and to answer questions *not to* justify decisions he/she made
- ▶ Avoid personal attacks on the producer
- ▶ In code reviews *avoid* discussions of style, concentrate on important issues
- ▶ Inspection meetings must not last more than two hours



Tracking Process

- The scribe collects the defect report forms from all inspectors and uses them to finish up the inspection report form
- Author develops a response for each defect found during the meeting
- Author corrects all defects
- Author submits the corrected product to the moderator
- Moderator makes sure all defects were satisfactorily corrected and, if warranted, calls for a second inspection
- Moderator approves the final version so it can be frozen



Other benefits of Inspections

- ▶ Team members get familiar with the code
 - ▶ Backup if someone is unavailable
- ▶ More uniform design and coding practices across team
- ▶ Knowledge sharing
- ▶ Shared understanding & improved communication
 - ▶ Identify miscommunication and misperceptions
- ▶ More perspective on how everything comes together

