Different Types of Reviews

Code review is systematic examination (often as peer review) of computer source code.

Pair programming is a type of code review where two persons develop code together at the same workstation.

Inspection is a very formal type of peer review where the reviewers are following a well-defined process to find defects.

Walkthrough is a form of peer review where the author leads members of the development team and other interested parties through a software product and the participants ask questions and make comments about defects.

Technical review is a form of peer review in which a team of qualified personnel examines the suitability of the software product for its intended use and identifies discrepancies from specifications and standards.

Code review

- Systematic examination (often as peer review) of computer source code intended to find and fix mistakes overlooked in the initial development phase, improving both the overall quality of software and the developers' skills.
- Code reviews can often find and remove common vulnerabilities such as format string exploits, race conditions, memory leaks and buffer overflows, thereby improving software security.
- Online software repositories based on **Subversion** others allow groups of individuals to collaboratively review code.
- Additionally, specific tools for collaborative code review can facilitate the code review process.

Pair programming

- Two programmers work together at one keyboard.
  - One types in code, the other reviews each line of code as it's typed
  - The person typing is called the **driver**
  - The person reviewing the code is called the **observer** or **navigator**.
  - The two programmers switch roles frequently.
- While reviewing, the observer also considers the strategic direction of the work, coming up with ideas for improvements and likely future problems to address.
- Freeing the driver to focus all of his or her attention on the "tactical" aspects of completing the current task, using the observer as a safety net and guide.

Benefits

- *Design quality*
- *Reduced cost of development*
- *Learning and training*
- *Overcoming difficult problem*
- *Improved morale*
- *Decreased management risk*
- *Increased discipline and better time management*
- *Resilient flow*
- *Fewer interruptions*
- *Fewer workstations required*

Drawbacks

- *Developer egos*
- *Developer intimidation*
- *Developer work preference*
- *Tutoring cost*
- *Potential conflict*
- *Chat sessions*

Inspection

- Refers to peer review of any work product by trained individuals who look for defects using a well defined process.
- An inspection might also be referred to as a Fagan inspection after Michael Fagan, the inventor of the process

Fagan Inspection

- Group review method used to evaluate output of a given process.
- Process is a certain activity with a pre-specified entry and exit criteria.
- In every activity or operation for which entry and exit criteria are specified *Fagan Inspections* can be used to validate if the output of the process complies with the exit criteria specified for the process.
- Examples:
  - Requirement specification
  - Software/Information System architecture
  - Programming (for example for iterations)
  - Software testing (for example when creating test scripts)

Fagan inspection the inspection process - Operations

Planning

Preparation of materials

Arranging of participants

Arranging of meeting place

Overview

Group education of participants on the materials under review

Assignment of roles

Preparation

The participants review the item to be inspected and supporting material to prepare for the meeting noting any questions or possible defects

The participants prepare their roles

Inspection meeting

Actual finding of defect

Rework

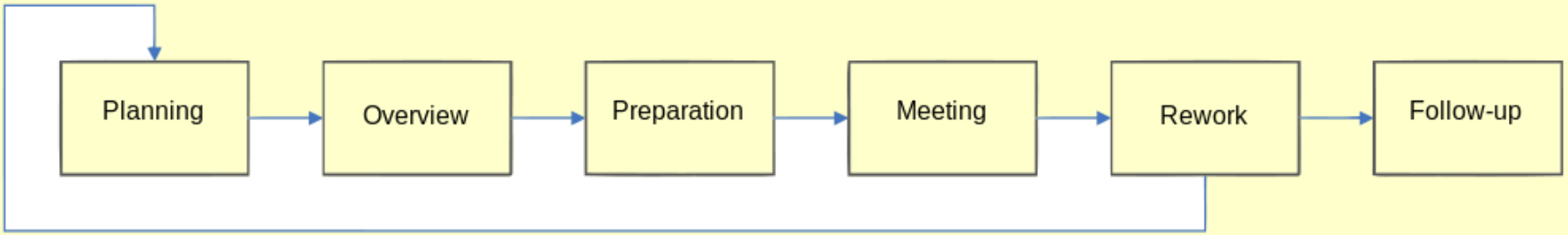
Rework is the step in software inspection in which the defects found during the inspection meeting are resolved by the author, designer or programmer…

Follow-up

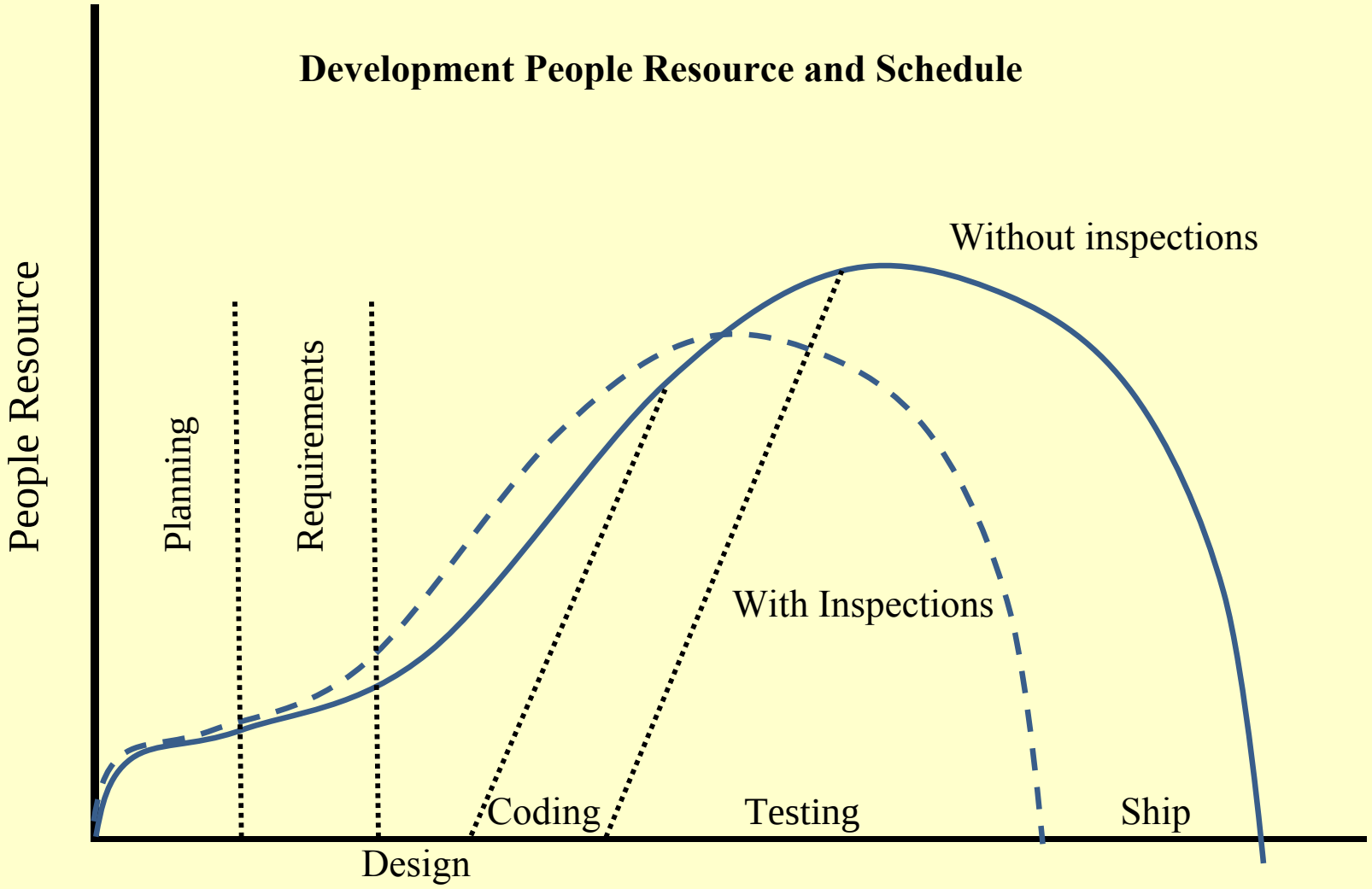
In the follow-up phase of software inspections all defects found in the inspection meeting should be corrected (as they have been fixed in the rework phase).

The moderator is responsible for verifying that all defects are fixed and no new defects are inserted while trying to fix the initial defects.

It is crucial that all defects are corrected … the costs of fixing them in a later phase of the project will be 10 to 100 times higher compared to the current costs.



Fagan: Advances in Software Inspections



Walkthrough

- A form of software peer review "in which a designer or programmer leads members of the development team and other interested parties through a software product, and the participants ask questions and make comments about possible errors, violation of development standards, and other problems
- "Software product" normally refers to some kind of technical document.
- A walkthrough differs from *technical reviews* in its openness of structure and its objective of familiarization.
- A walkthrough differs from *software inspection* in its ability to suggest **direct** alterations to the product reviewed, its lack of a direct focus on training and process improvement, and its omission of process and product measurement.

Technical Review

- A form of peer review in which a team of qualified personnel ... examines the suitability of the ***software product*** for its intended use and identifies discrepancies from specifications and standards.

  Software product normally refers to some kind of technical document.

  Examples: software design document or program source code, but use cases, business process definitions, test case specifications, and a variety of other technical documentation
- Technical reviews may also provide recommendations of alternatives and examination of various alternatives
- Technical review differs from *walkthroughs* in its specific focus on the technical quality of the product reviewed.
- Technical review differs from *software inspection* in its ability to suggest direct alterations to the product reviewed, and its lack of a direct focus on training and process improvement.

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