SOFTWARE QUALITY ASSURANCE

Lecture 13

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Switch off mobile phones during lectures, or put them into silent mode

TERM PAPER

- Finalize Group Members   26-Feb-2013
- Finalize Topic   12-Mar-2013
- Search Papers and Sort Selected (TODAY)   20-Mar-2013
- Go Through the Abstract and Introduction of Selected Papers   27-Mar-2013
- Submit a Summary and Comments on related papers   09-Apr-2013
- Present Your Work till Today   09-Apr-2013
- Submit Initial Draft   30-Apr-2013
- **Final Paper Submission**   **21-May-2013**
- Feedback on Final Submission + Plagiarism Report   28-May-2013
- Final Presentation   4-June-2013

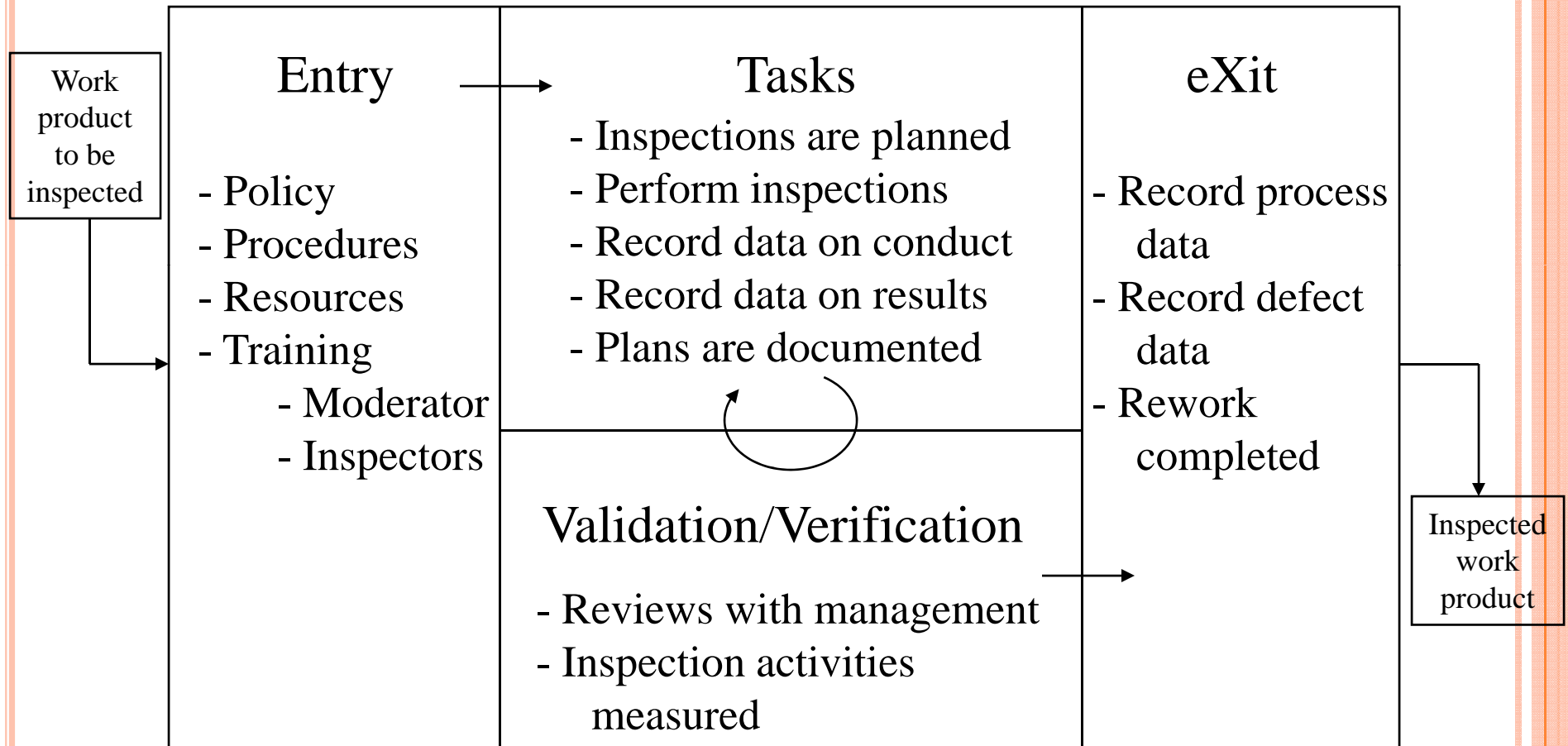## *Please note that Every Phase has Marks*

RESPECT!!!

CONTENTS

- Inspections Process
- Inspections Follow-Up
- Prevention Meeting
- Data Recording and Reports
- Inspection Process Monitoring

PRACTICES IN THE INSPECTION PROCESS

Entry	Tasks	eXit

- Policy
- Procedures
- Resources
- Training
   - Moderator
   - Inspectors
	- Inspections are planned
	- Perform inspections
	- Record data on conduct
	- Record data on results
	- Plans are documented
		- Record process
		  data
		- Record defect
		  data
		- Rework
		  completed

Work product to be inspected

Validation/Verification

- Reviews with management
- Inspection activities measured

Inspected work product

Inspection Process

INSPECTION PROCESS

- Planning and scheduling
- Overview
- Preparation
- Inspection meeting
- Analysis meeting
- Rework
- Follow-up
- Prevention meeting
- Data recording and reports
- Inspection process monitoring

PLANNING AND SCHEDULING - 1

- To ensure adequate time and resources are allocated for inspections and to establish schedules in the project for work products to be inspected, to designate the inspection team, and to ensure the entry criteria are satisfied

PLANNING AND SCHEDULING - 2

- All project plans exist at three levels of knowledge as the project progresses
  - Those things that are unknown
  - Those things that are becoming known
  - Those things that are known
- Plan details reveal themselves to the planner as a rolling wave

PLANNING AND SCHEDULING - 3

- The project lead must plan which inspections are to be performed at the initial stages of the project
- Unknowns become knowns
- Has two sections
  - Inspection planning
  - Inspection scheduling

INSPECTION PLANNING: RESPONSIBILITY

- The project lead or whoever is responsible for managing the work for a specified software project is responsible for performing the activities for Inspection Planning

INSPECTION PLANNING: TASKS

- Determine what will be inspected
- Estimate resources for inspections and allocate budget
- Set milestones for the inspections
- Identify dependencies on other groups

INSPECTION PLANNING: EXIT CRITERIA

- There is a project plan showing the inspections to be held, including resources and milestones that may be known in the early stages of the project

- Where milestones may not be known a boundary of probable dates should be noted in the plan for the inspections

- Adequate resources are allocated in the project plan for inspections

INSPECTION SCHEDULING: RESPONSIBILITY

- The project lead is responsible
  - For requesting, selecting, or assigning Moderators when a work product approaches inspection readiness
  - For ensuring the work product will be ready for inspection
  - For ensuring that the participants are made available
  - For making known to a qualified Moderator that an inspection is to be scheduled

INSPECTION SCHEDULING: TASKS

- Send a notification that an inspection will be needed
- Determine the inspection meeting date
- Ensure that the work product to be inspected meets entry criteria
- Schedule the inspection meeting

INSPECTION SCHEDULING: EXIT CRITERIA

- The inspection activities have been recorded as Performed on the scheduled dates and Closed within the dates determined at the inspection meeting or rework

OVERVIEW - 1

○ Provides the inspection participants a background and understanding, when warranted, of the scheduled inspection material

○ An overview is not an inspection meeting

○ If inspectors are sufficiently familiar with the work product, the overview can be skipped

OVERVIEW - 2

○ Another reason for an overview meeting, is to identify any open issues in the work product

○ An open issue is an acknowledgement of the fact that a subpart of the work product is not complete for some reason

○ The producer may want focus the inspectors on subparts that are problematic or of some concern

OVERVIEW: RESPONSIBILITY

- The producer's primary responsibility for the success of the overview meeting is to deliver the presentation

- If overview material is provided, it is the producer's responsibility to make sufficient copies for the meeting either directly or via the moderator

OVERVIEW: TASKS - 1

- Producer prepares for the overview using a format and style that will best convey the information to the participants
- Moderator invites the participants to the overview meeting
- Producer presents the overview
- Inspection team members concur that the overview satisfies the needs for preparation and inspection meeting

OVERVIEW: TASKS - 2

- Any open issues are documented in the inspection report
- If the overview is used to familiarize the participants with their roles, the inspection process, or some other aspect key to this inspection, the moderator will provide this briefing
- Defects, if any, are documented

OVERVIEW: EXIT CRITERIA

- The overview meeting was determined to be satisfactory by the inspectors and SQA
- Open issues are documented
- Potential problems areas are noted to the participants for preparation and for the reader for the inspection meeting
- Defects, if any, are documented

PREPARATION

- Allows time for the inspection participants to sufficiently prepare for the inspection meeting and list potential defects
- During preparation the inspectors should:
  - Increase their understanding of the material
  - Inspect the work product using the checklist appropriate to the work product
  - Identify possible defects that will be discussed at the inspection meeting
  - Create a list of minor defects and provide them to the producer
  - Note the amount of time spent in this activity

PREPARATION: RESPONSIBILITY

- Primary responsibility is with the inspectors to ensure they have properly prepared for the inspection meeting
- If an inspector cannot prepare sufficiently, the moderator must be notified immediately and a backup inspector selected
- The inspection meeting may have to be cancelled in those situations if backup inspector is not available
- Decision should be recorded to learn during analysis

PREPARATION: TASKS - 1

- Each inspector uses the scheduled time to complete the preparation in a style and format they are comfortable with

- The material to be inspected is marked with questions, concerns, and possible defects, both major and minor, found during inspection

- The minor defects are either recorded on a separate sheet that will be delivered to the moderator at the start of the inspection meeting or they are clearly noted in the marked material that will be delivered to the moderator at the end of the inspection meeting. Each minor defect should be noted by location in the work product when using a minor list

PREPARATION: EXIT CRITERIA

- Each inspector has completed sufficient preparation based on organization and project preparation time criteria
- Minor defect inputs are complete
- Preparation notes are recorded on the work product materials or defect lists

INSPECTION MEETING - 1

- Identifies defects before work product is passed into the next project stage
- Some discussions are held in the inspection meeting
- The identified defect is agreed to be a defect, or at least a potential defect, by the inspection team, including the producer
- If a discussion item cannot be agreed to be a defect, it should be noted as an open issue to be resolved after the meeting

INSPECTION MEETING - 2

- The defect can be classified by class, severity, and type
- The defect can be described crisply but sufficiently
- The inspection meeting has schedule and entry requirements. If inspectors are late by ten minutes, postponement should be considered
- The critical inspectors include the moderator, producer, and reader

INSPECTION MEETING: RESPONSIBILITY

- The moderator is responsible for managing an effective and efficient meeting

INSPECTION MEETING: TASKS - 1

- Brief introduction (moderator)
- Preparedness check (moderator)
- Read the work product (reader)
- Identify defects (inspectors)
- Record defects (recorder)

INSPECTION MEETING: TASKS - 2

- Determine disposition of material (inspection team)
  - Accept the material
  - Accept the material after verification with follow-up inspector
  - Request the work product to be re-inspected after rework
  - Recommend re-engineering of the work product followed by a new inspection

INSPECTION MEETING: EXIT CRITERIA - 1

- The inspection materials have been inspected and coverage of the work product is completed as planned
- The inspection results fall within expected tolerance of performance for
  - Time spent during preparation
  - Time spent at the inspection meeting
  - Defect density

INSPECTION MEETING: EXIT CRITERIA - 2

- The defects and the conduct of the inspection have been recorded and the team concurs with the contents

- Open issues have been recorded for follow-up during rework

- The moderator or a designee has been appointed to perform follow-up with the producer

INSPECTION MEETING: EXIT CRITERIA - 3

- Data is available to update the process data base
- Any associated deviations or risks are noted
- Decisions to re-inspect or not have been reviewed against criteria
- Decision on re-engineering has been addressed

INSPECTION MEETING: EXIT CRITERIA - 4

- Process defects have been recorded, as appropriate, as well as product defects
- The locations of the defects of the inspected work product are clearly noted to facilitate repair
- A decision is taken on the timeframe by which defect repairs and open issues will be resolved
- The inspection satisfies the criteria to be indicated as performed

ANALYSIS MEETING

- Which is held after the inspection meeting, to begin defect prevention activities

- This activity was not part of the original inspections

ANALYSIS MEETING: RESPONSIBILITY

- The moderator with the project lead determines whether this activity will be performed

ANALYSIS MEETING: TASKS

- Select the defects to discuss
- Determine the potential causes of the defects discussed
- The recorder will record the analysis meeting results and provide them to the inspection coordinator or SEPG as input for process improvement consideration within the organization at the prevention meeting

ANALYSIS MEETING: EXIT CRITERIA

- The analysis meeting records have been completed

- Data is provided to the SEPG(Software Engineering Process Group) or inspections coordinator

REWORK

- Fixes identified defects and resolves any open issues noted during the inspection
- In some cases, the repair may require a Change request to be written because of the nature or impact of the defect

OPEN ISSUES IN REWORK

- The open issue is accepted as a defect and repaired
- The open issue becomes a change request for further investigation
- The open issue was incorrectly identified as potential defect and is closed as a non-defect

REWORK: RESPONSIBILITY

- The producer is responsible for all open issues, fixing all defects, and writing any change requests

REWORK: TASKS

- The producer repairs accepted defects identified during the inspection meeting
- The producer resolves any open issues
- The moderator meets with the producer to discuss resolutions of open issues
- Change requests are written for any open issues or defects not resolved during the rework activity
- Either the minor defect list or marked work products with minor defects noted are used to repair the minor defects

REWORK: EXIT CRITERIA

- The producer resolves all defects and open issues
- Inspected work product materials are updated to account for repairs

FOLLOW-UP

- Verifies that all defects and open issues have been adequately fixed, resolved, and closed out

- **Follow-up: Responsibility**
  - The moderator is the individual primarily responsible for reviewing repairs. The moderator will also review the producer's decisions on repairs and change requests. The moderator may delegate some or all of this responsibility

FOLLOW-UP: TASKS - 1

- The moderator and producer discuss and agree on compliance with respect to defects and open issues
- In case of disagreement, the issue would be resolved by the project lead
- The producer updates the work product to reflect the fixes to defects found and open issues accepted as defects
- The producer writes any change requests that may be required
- The moderator completes the inspection report and marks the inspection as closed

FOLLOW-UP: EXIT CRITERIA

- Any change requests resulting from unresolved open issues have been submitted to the change approval process for handling
- The inspection report is completed and the producer agrees
- If necessary, a re-inspection is scheduled
- If necessary, issues are escalated to the project lead for resolution
- The inspection is noted as closed

PREVENTION MEETING

○ Which is held periodically after sets of inspections have been performed to determine probable causes for selected defect types, instances, or patterns

○ Required data about defects

PREVENTION MEETING: RESPONSIBILITY

- The prevention team leader for the prevention meeting will record the results of the meeting and deliver proposals for actions to the organization management

PREVENTION MEETING: TASKS

- Record data from the prevention meeting
- Record proposed actions to be taken for defect prevention
- Initial preparation for the proposals to be presented to management for decision

PREVENTION MEETING: EXIT CRITERIA

- The data is complete and agreed to by the prevention meeting participants

DATA RECORDING AND REPORTS

- To record the data about the defects and conduct of the inspection
- This activity is held concurrently with other activities, including at the end of the inspection process

DATA RECORDING AND REPORTS: RESPONSIBILITY

- The recorder during the overview, inspection meeting, and optional analysis meeting records data about the defects and the conduct of the inspection
- Alternatively the moderator can enter the data

DATA RECORDING AND REPORTS: TASKS

- Record data from overview, if held
- Record data at the inspection meeting, including preparation data
- Record data at the optional analysis meeting
- Record data during the follow-up activity, including sign-off to close the inspection

DATA RECORDING AND REPORTS: EXIT CRITERIA

- The data are complete and agreed to by the inspection meeting and analysis meeting participants
- The data gathered during the follow-up activity are complete and agreed to by the producer and moderator

INSPECTION PROCESS MONITORING

- This activity is held concurrently with other activities and after inspections
- The purpose is to evaluate the results of the inspection process as performed in the organization and to propose suggestions for improvement

INSPECTION PROCESS MONITORING: RESPONSIBILITY

- The inspection process coordinator or SEPG is responsible for monitoring and suggesting improvements

INSPECTION PROCESS MONITORING: TASKS

- Gather the inspection process data provided since the last monitoring report
- Review inspection reports and related data for trends and results against objectives
- Interview inspection participants to ensure understanding of results and to gather other inputs
- Perform analysis using data from the inspection reports, interviews, and surveys
- Provide the analysis to the inspection process improvement team for review and proposal to management for inspection process management

INSPECTION PROCESS MONITORING: EXIT CRITERIA

- Reports of analysis are developed
- Actions for improvements are proposed
- Actions are implemented for inspection process improvements

REFERENCES

- Inroads to Software Quality by Alka Jarvis and Vern Crandall, PH 1997 (Ch. 7)

- Software Engineering: A Practioner's Approach by Roger S. Pressman (Ch. 8)

- Software Inspections by Ronald A. Radice, Tata-McGraw Hill, 2003