



**JEPPIAAR INSTITUTE OF TECHNOLOGY**

**“Self-Belief | Self Discipline | Self Respect”**



**DEPARTMENT  
OF  
COMPUTER SCIENCE AND ENGINEERING**

**LECTURE NOTES  
IT8076 – SOFTWARE TESTING  
(Regulation 2017)**

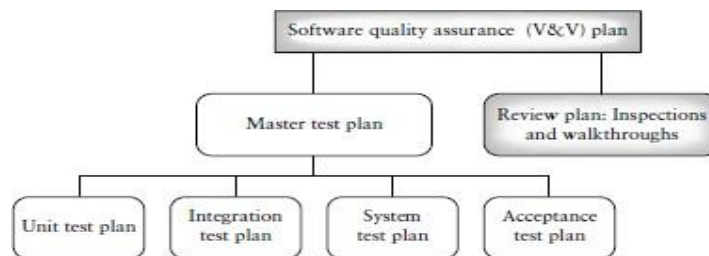
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## Unit -IV

### Test Management

- A plan is a document that provides a framework or approach for achieving a set of goals.
- Milestones are tangible events that are expected to occur at a certain time in the project's lifetime. Managers use them to determine project status
- Test plans for software projects are very complex and detailed documents. The planner usually includes the following essential high-level items.
- Overall test objectives
  - What to test (scope of the tests).
  - Who will test.
  - How to test.
  - When to test.
  - When to stop testing



### Test Plan Components

Test Plan Components
1. Test plan identifier
2. Introduction
3. Items to be tested
4. Features to be tested
5. Approach
6. Pass/fail criteria
7. Suspension and resumption criteria
8. Test deliverables
9. Testing Tasks
10. Test environment
11. Responsibilities
12. Staffing and training needs
13. Scheduling
14. Risks and contingencies
15. Testing costs
16. Approvals

## Components of a test plan

<b>4.0 Test Planning</b>	
4.1	Meet with project manager. Discuss test requirements.
4.2	Meet with SQA group, client group. Discuss quality goals and plans.
4.3	Identify constraints and risks of testing.
4.4	Develop goals and objectives for testing. Define scope.
4.5	Select test team.
4.6	Decide on training required.
4.7	Meet with test team to discuss test strategies, test approach, test monitoring, and controlling mechanisms.
4.8	Develop the test plan document.
4.9	Develop test plan attachments (test cases, test procedures, test scripts).
4.10	Assign roles and responsibilities.
4.11	Meet with SQA, project manager, test team, and clients to review test plan.

A breakdown of testing planning element

### Test Plan Attachments

<b>Requirement identifier</b>	<b>Requirement description</b>	<b>Priority (scale 1-10)</b>	<b>Review status</b>	<b>Test ID</b>
SR-25-13.5	Displays opening screens	8	Yes	TC-25-2 TC-25-5
SR-25-52.2	Checks the validity of user password	9	Yes	TC-25-18 TC-25-23

Example of entries in a requirements traceability matrix

### Test Design Specification

- Test Design Specification Identifier
- Features to Be Tested
- Approach Refinements
- Test Case Identification
- Pass/Fail Criteria

**Test Case specification**

- Test Case Specification Identifier
- Test Items
- Input Specifications
- Output Specifications
- Special Environmental Needs
- Special Procedural Requirements
- Intercase Dependencies

**Test procedure specification**

- A procedure in general is a sequence of steps required to carry out a specific task.
- Test Procedure Specification Identifier
- Purpose
- Specific Requirements
- Procedure Steps

**i) setup: to prepare for execution of the procedure;**

**(ii) start: to begin execution of the procedure;**

proceed: to continue the execution of the procedure;

**(iv) measure: to describe how test measurements related to outputs will**

be made;

**(v) shut down: to describe actions needed to suspend the test when unexpected**

events occur;

**(vi) restart: to describe restart points and actions needed to restart the**

procedure from these points;

**(vii) stop: to describe actions needed to bring the procedure to an orderly**

halt;

**(viii) wrap up: to describe actions necessary to restore the environment;**

**(ix) contingencies: plans for handling anomalous events if they occur**

during execution of this procedure.

### **Locating Test Items: The Test Item Transmittal Report**

(i) version/revision number of the item;

(ii) location of the item;

(iii) persons responsible for the item (e.g., the developer);

(iv) references to item documentation and the test plan it is related to;

(v) status of the item;

(vi) approvals—space for signatures of staff who approve the transmittal.

### **Reporting Test Results**

- **Test Log**

- Test Log Identifier
- Description
- Activity and Event Entries
  - Execution description
  - Procedure results
  - Environmental information
  - Anomalous events
  - Incident report identifiers

- **Test Incident Report**

1. Test Incident Report identifier: to uniquely identify this report.

2. Summary: to identify the test items involved, the test procedures, test cases, and test log associated with this report.

3. Incident description: this should describe time and date, testers, observers, environment, inputs, expected outputs, actual outputs, anomalies, procedure step, environment, and attempts to repeat.

4. **Impact: what impact will this incident have on the testing effort**, the test plans, the test procedures, and the test cases

- **Test Summary Report**

1. Test Summary Report identifier: to uniquely identify this report.

2. Variances: these are descriptions of any variances of the test items from their original design.

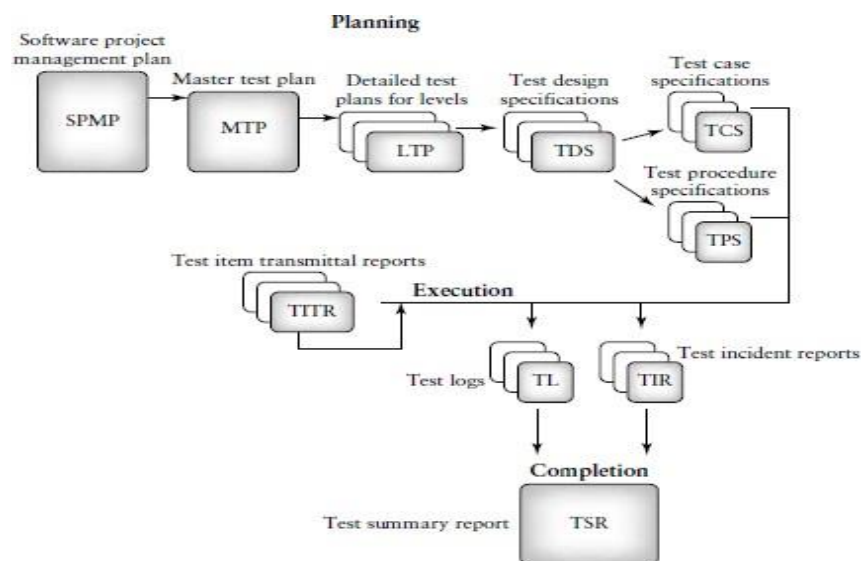
3. Comprehensiveness assessment: the document author discusses the comprehensiveness of the test effort as compared to test objectives

Summary of results: the document author summarizes the testing results.

5. Evaluation: in this section the author evaluates each test item based on test results.

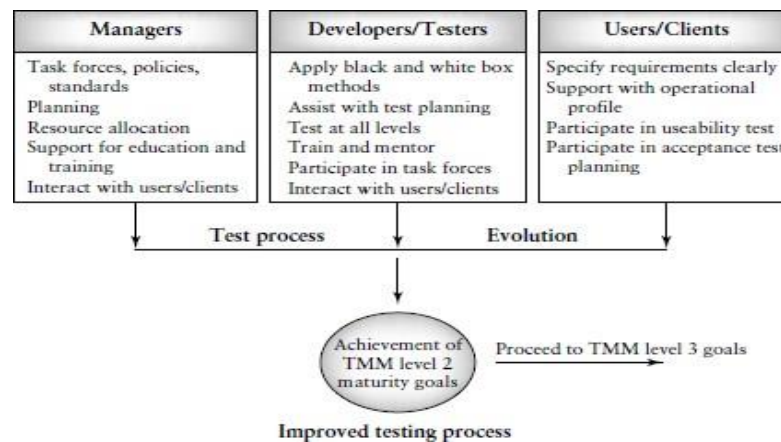
6. Summary of activities: all testing activities and events are summarized.

7. Approvals: the names of all persons who are needed to approve this document are listed with space for signatures and dates.



Test-related documents as recommended by IEEE[5]

## The Role of the Three Critical Groups in Testing Planning and Test Policy Development



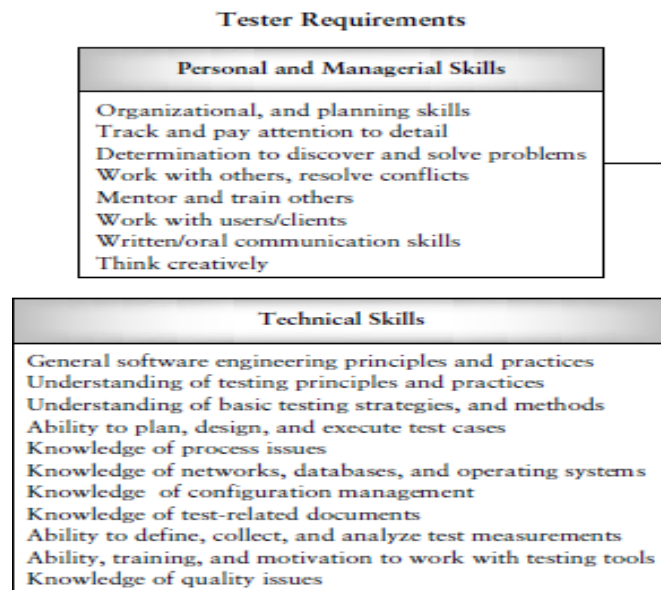
Reaching TMM level 2; summary of critical group roles

### Introducing the Test Specialist

- maintenance and application of test policies;
- development and application of test-related standards;
- participating in requirements, design, and code reviews;
- test planning;
- test design;
- test execution;
- test measurement;
- test monitoring (tasks, schedules, and costs);
- defect tracking, and maintaining the defect repository;
- acquisition of test tools and equipment;
- identifying and applying new testing techniques, tools, and methodologies;
- mentoring and training of new test personnel;
- test reporting.

### Skills Needed by a Test Specialist

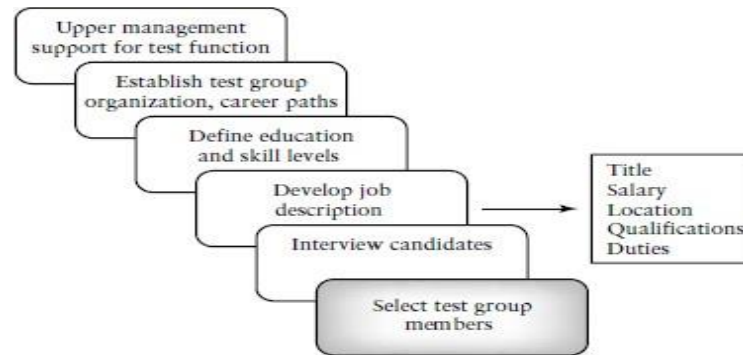
- organizational, and planning skills;
- the ability to keep track of, and pay attention to, details;
- the determination to discover and solve problems;
- the ability to work with others and be able to resolve conflicts;
- the ability to mentor and train others;
- the ability to work with users and clients;
- strong written and oral communication skills;
- the ability to work in a variety of environments;
- the ability to think creatively



Test specialist skills

### Building a Testing Group

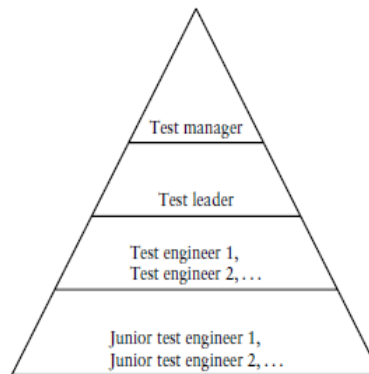




### Test specialist skills

#### The Structure of the Test Group

- maintain testing policy statements;
- plan the testing efforts;
- monitor and track testing efforts so that they are on time and within budget;
- measure process and product attributes;
- provide management with independent product and process quality information;
- design and execute tests with no duplication of effort;
- automate testing;
- participate in reviews to insure quality;
- work with analysts, designers, coders, and clients to ensure quality goals are met;
- maintain a repository of test-related information;
- give greater visibility to quality issues organization wide;
- support process improvement efforts.



The test team hierarchy

### **The Technical Training Program**

- quality issues;
- measurement identification, collection, and analysis;
- testing techniques and methodologies;
- design techniques;
- tool usage (for all life cycle phases);
- configuration management;
- planning;
- process evaluation and improvement;
- policy development;
- technical review skills;
- software acquisition;
- project management skills;
- business skills
- communication skills.