Eleven Step Software Testing Process

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Introduction

- Testing is the process rather than single activity

- Process starts from test planning then designing test cases, preparing for execution and evaluating status till the test closure

- **Software testing** is an investigation conducted to provide stakeholders with information about the quality of the product or service under test

Software Testing

- Software testing can be stated as the process of validating and verifying that a computer program/application/product:

➢ meets the requirements that guided its design and development,

➢ works as expected,

➢ can be implemented with the same characteristics,

➢ and satisfies the needs of stakeholders

Steps for Software Testing Process

- An 11-step testing process that follows the “V” concept of testing

- The “V” represents both the software development process and the 11-step software testing process

- The first five steps use verification as the primary means to evaluate the correctness of the interim development deliverables

- Validation is used to test the software in an executable mode

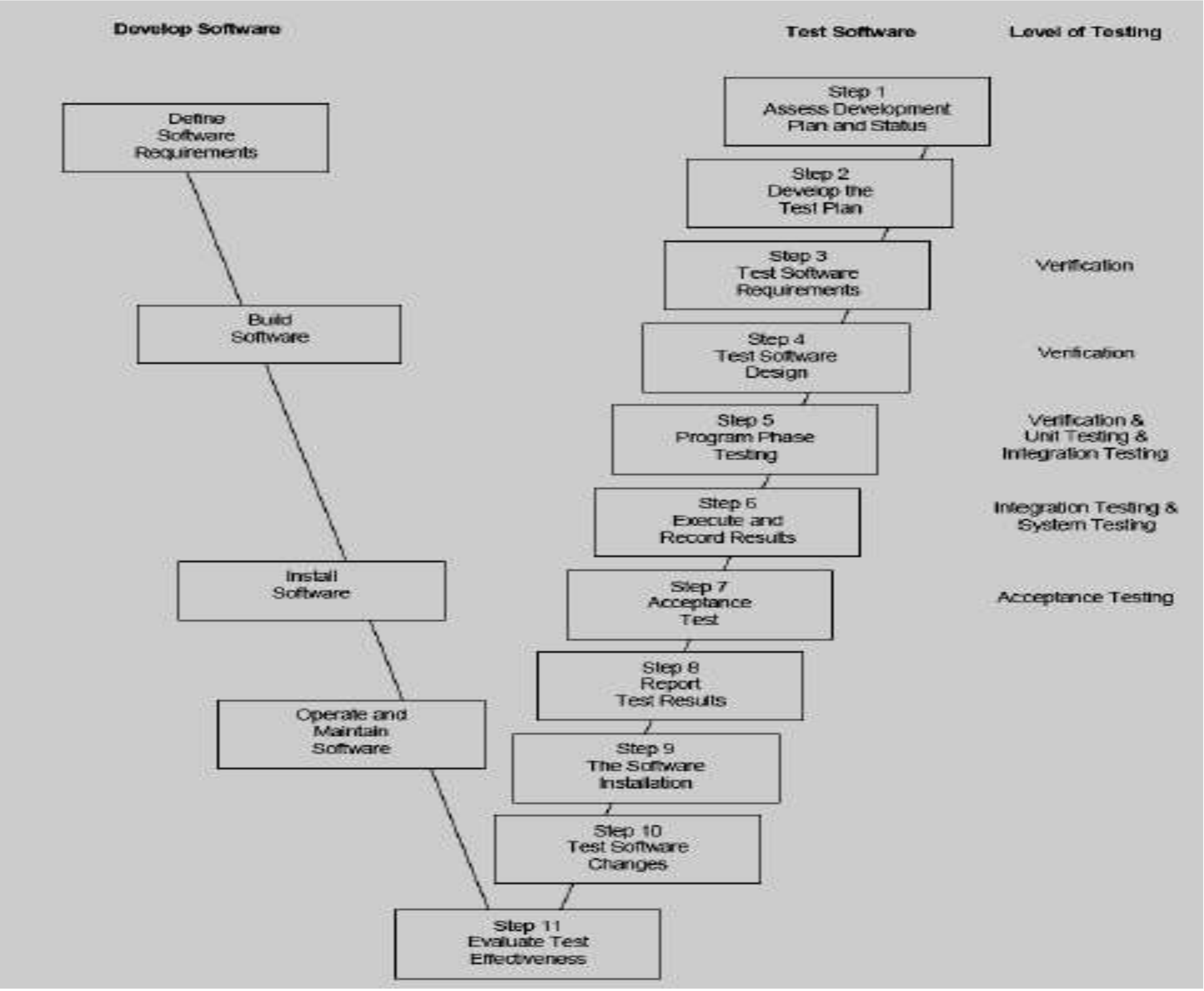
Develop Software
Test Software
Level of Testing
Define Software Requirements
Build Software
Install Software
Operate and Maintain Software
Step 1 Assess Development Plan and Status
Step 2 Develop the Test Plan
Step 3 Test Software Requirements
Verification
Step 4 Test Software Design
Verification
Step 5 Program Phase Testing
Verification & Unit Testing & Integration Testing
Step 6 Execute and Record Results
Integration Testing & System Testing
Step 7 Acceptance Test
Acceptance Testing
Step 8 Report Test Results
Step 9 The Software Installation
Step 10 Test Software Changes
Step 11 Evaluate Test Effectiveness

Figure 1:11-Step Software Testing Process

Step 1: Assess Development Plan and Status

- Testers challenge the completeness and correctness of the development plan
- Based on the extensiveness and completeness of the Project Plan the testers can estimate the amount of resources
- Three general concerns regarding available time and resources for testing

- ➢ Inaccurate estimate
- ➢ Inadequate development process
- ➢ Incorrect status reporting

Step 2: Develop the Test Plan

- Test plan describes how testing will be accomplished
- Objective of a test plan is to describe all testing that is to be accomplished, together with the resources and schedule necessary for completion
- Should provide background information on the software being tested, test objectives and risks, and specific tests to be performed
- Is a contract between the testers and the project team/users

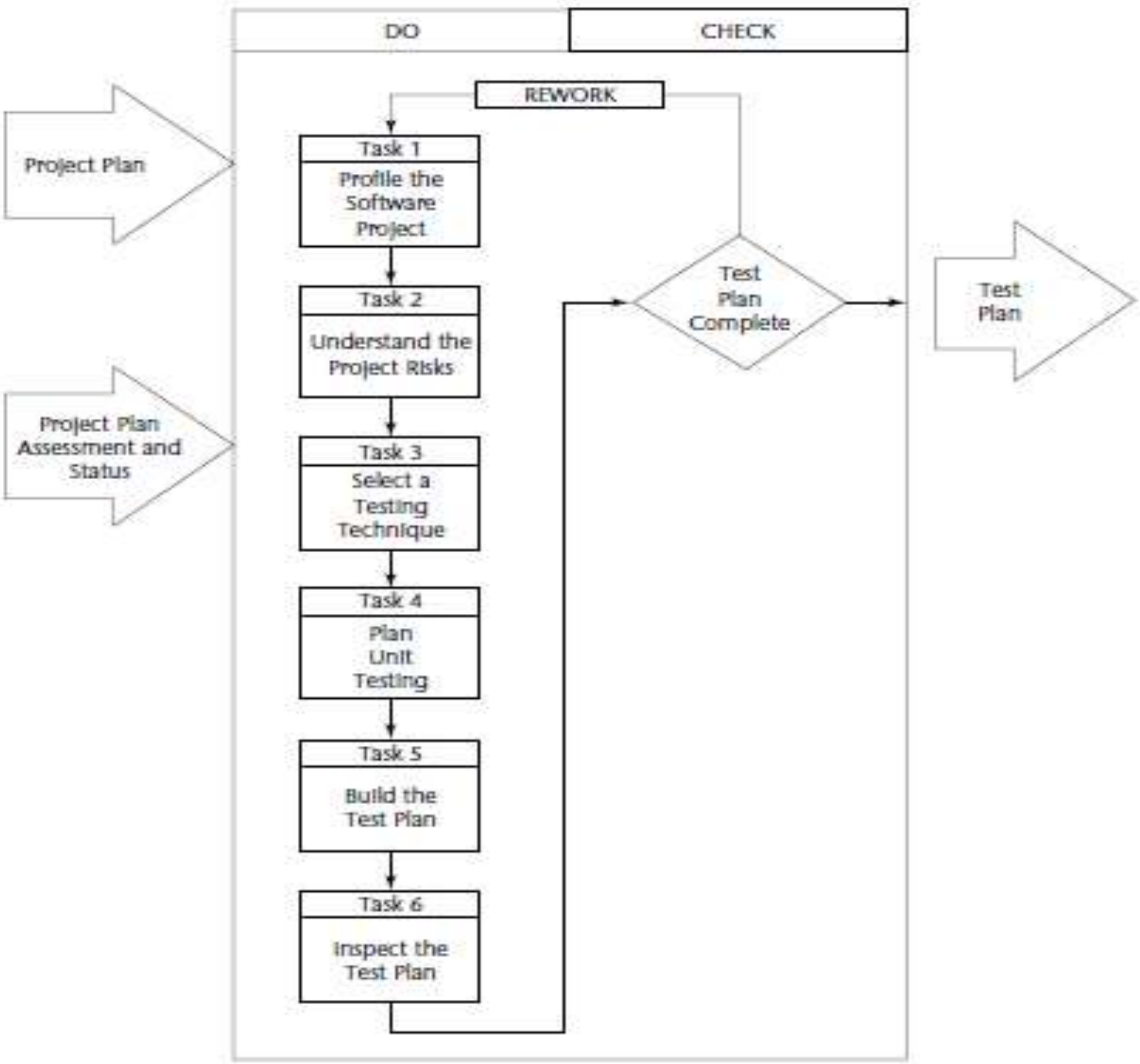

Figure 2: Workbench for Developing the Test Plan

Step 3: Test Software Requirements

- Testers, through verification, must determine that the requirements are accurate, complete, and they do not conflict with one another

- Incomplete, inaccurate, or inconsistent requirements lead to most software failures

Step 4: Test Software Design

- Tests both external and internal design primarily through verification techniques

- Testing during the design phase should be jointly shared by the user and the information services project team

- Design phase provides the opportunity to test the structure of the software application

Step 5: Program (Build) Phase Testing

- Complexity of performing the programming phase depends on the thoroughness of the design phase and the tool used to generate code
- Testing during the programming phase may be static or dynamic
- Resultant code may not be executable, and therefore may require different test tools

Step 6: Execute and Record Results

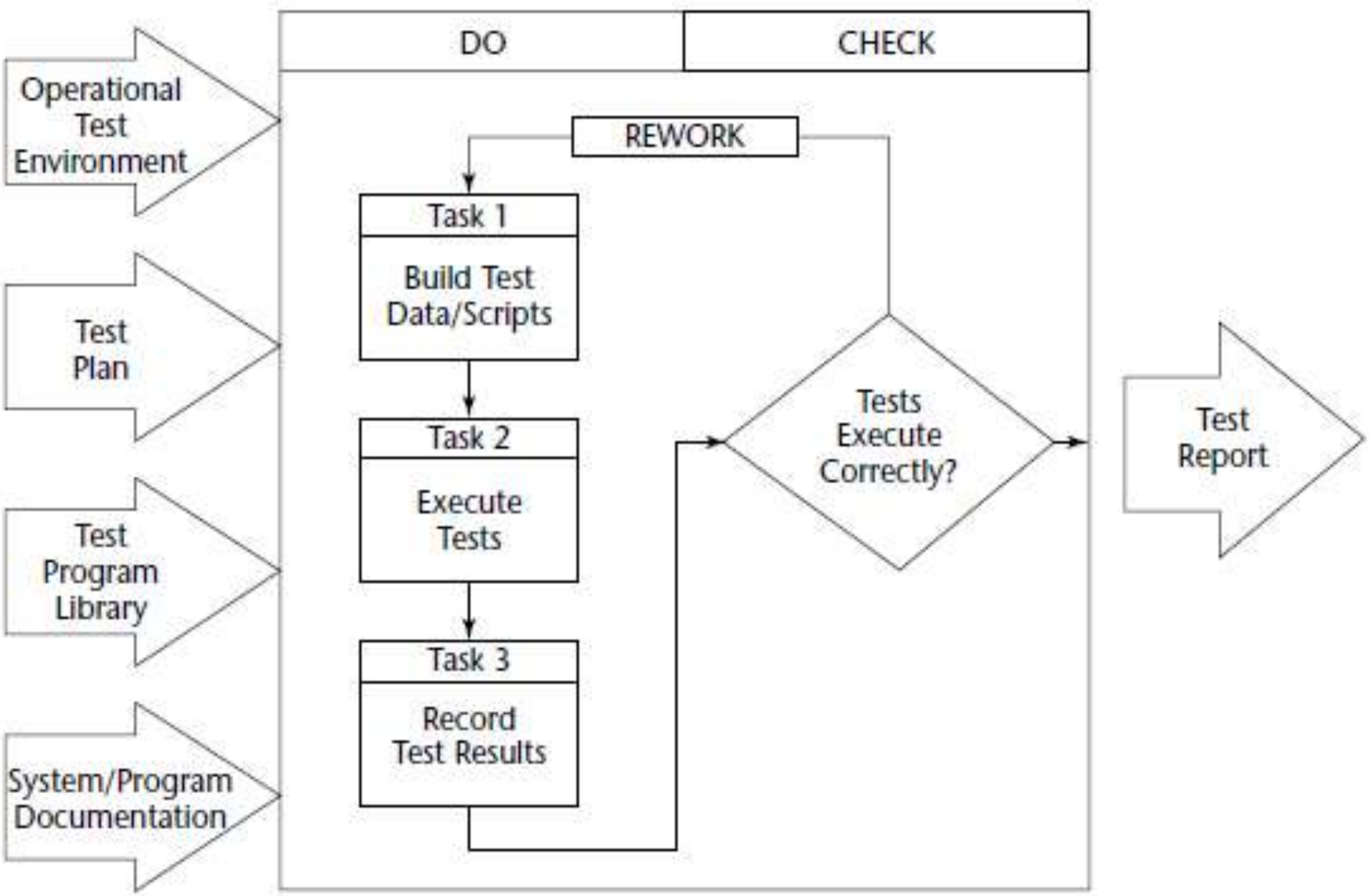

Figure 3: Workbench to execute and record test results

Step 7: Acceptance Test

- Enables users to evaluate the applicability and usability of the software in performing their day-to-day job functions

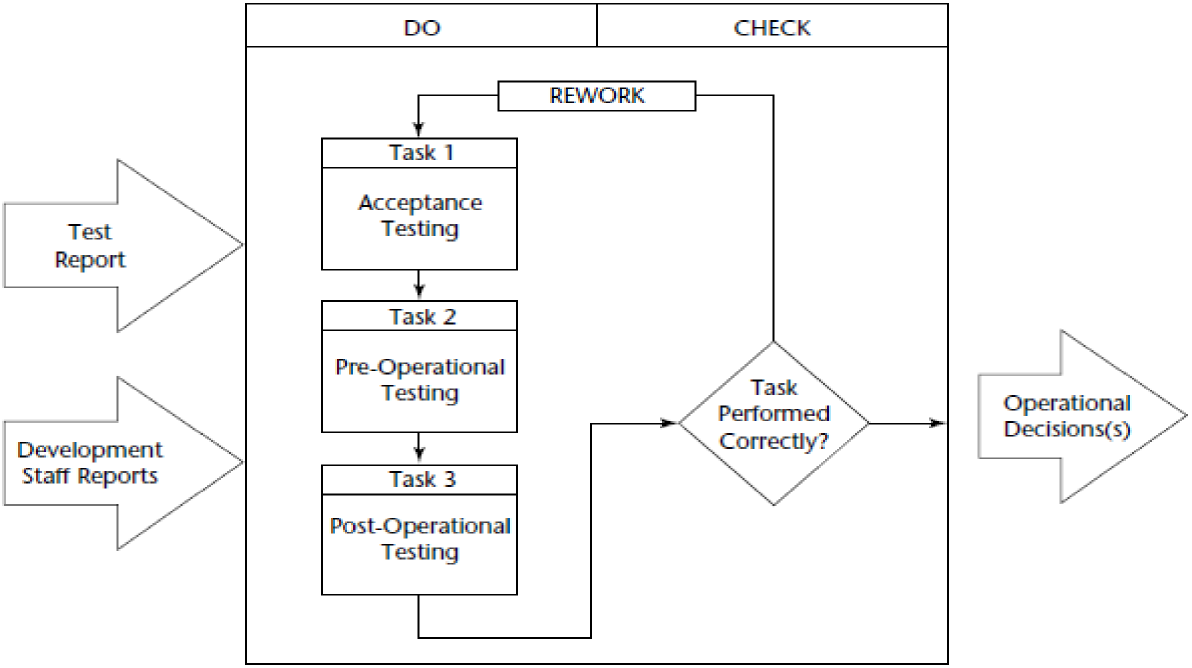

Figure 4: Workbench for Acceptance Testing

Step 8: Report Test Results

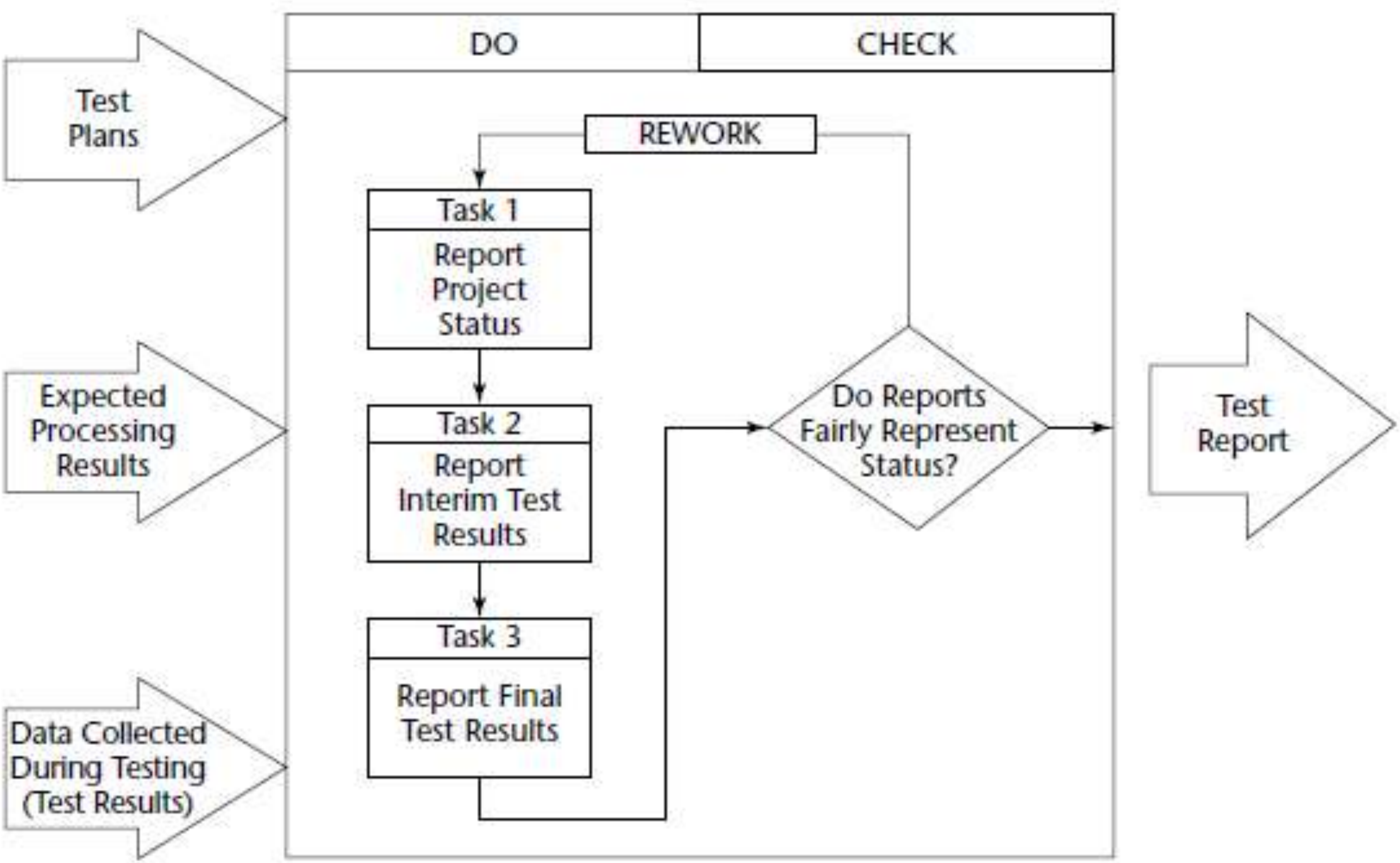
DO
CHECK
Test Plans
Expected Processing Results
Data Collected During Testing (Test Results)
REWORK
Task 1
Report Project Status
Task 2
Report Interim Test Results
Task 3
Report Final Test Results
Do Reports Fairly Represent Status?
Test Report

Figure 5: Workbench for Reporting test results

Step 9: The Software Installation

- Once the test team has confirmed that the software is ready for production use, the ability to execute that software in a production environment should be tested
- Installation phase poses two difficulties for the test team:
  - ➢ Installation is a process separate from the rest of the application development
  - ➢ Installation normally occurs in a very short time span

Step 10: Test Software Changes

- In the context of performing maintenance after the software is implemented, the concept is also applicable to changes throughout the implementation process

Objectives:

- Put changed application systems into production
- Assess the efficiency of changes
- Monitor the correctness of the change
- Keep systems library up to date

Step 11: Evaluate Test Effectiveness

- Testing improvement can best be achieved by evaluating the effectiveness of testing at the end of each software test assignment

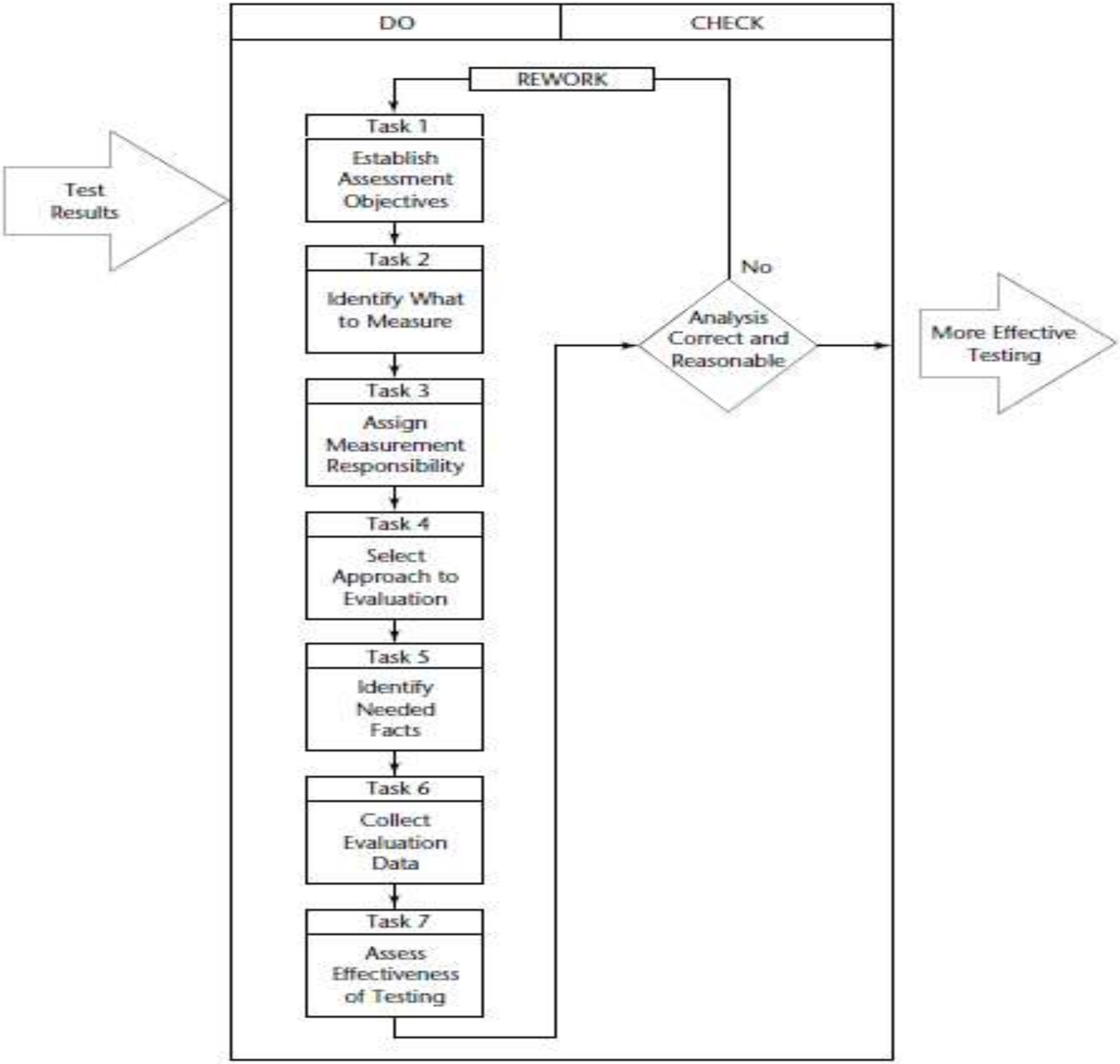

Figure 6: Workbench to evaluate the effectiveness of testing

Thank You

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