

# BENCHMARK YOUR TEST FUNCTION AGAINST A WORLD-CLASS TESTING ORGANIZATION

## PRACTICE OBJECTIVE

This practice will enable you to conduct an assessment of your testing organization, using eight criteria that QAI believes are associated with a world-class testing organization. At the conclusion of the Assessment, you will develop a Kiviatt Chart that shows your test organization's rating (your baseline) against QAI's world-class testing organization model. You can use the results for improving your test organization.

## PRACTICE TUTORIAL

During the past 18 years, the Quality Assurance Institute has been studying what makes software testing organizations successful. The results are that QAI has identified eight criteria that are normally associated with world-class testing organizations. These eight criteria are test planning, training of testers, management support for testing, user satisfaction with testing, use of testing processes, efficient testing practices, use of test tools, and quality control over the testing process. When these eight criteria are in place and working the result is a world-class testing organization.

The assessment process, developed by QAI, has five areas to address within each of the eight criteria. The more of those areas that are in place and working the more likely that category will contribute to world-class testing. **Figure 1** shows a cause effect diagram indicating the areas to address, called Drivers, that result in a world-class testing organization.

Software testing organizations can use the results of this assessment in any one of the three ways:

1. Determine your current software testing status versus a world-class testing organization.

The responses in the area to address will indicate your strengths and weaknesses compared to a world-class testing organization.

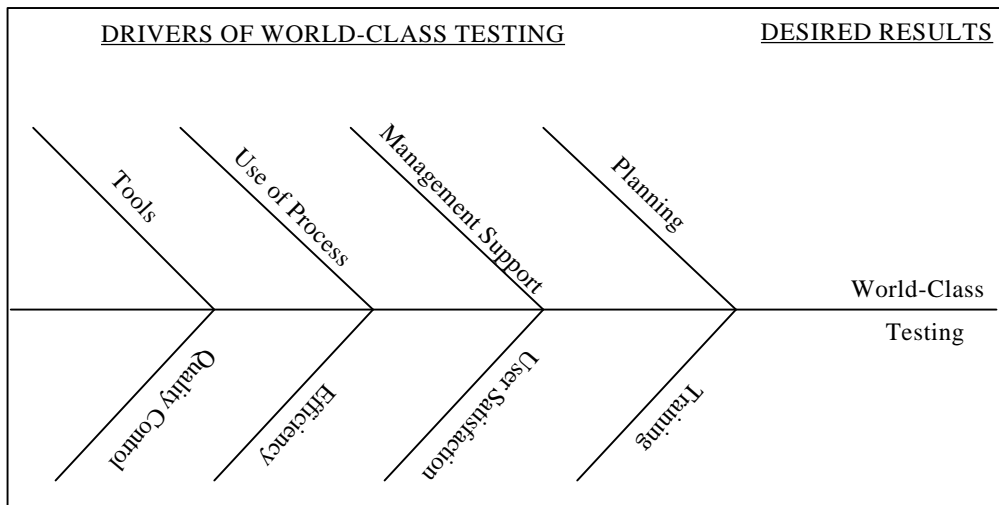
2. Developing a software testing goal/object to become a world class testing organization.

QAI's world-class model indicates a profile of a world-class testing organization. Achieving that profile can become a goal/objective for your software testing organization.

3. Develop an improvement plan.

By doing the assessment, you will develop a Kiviatt Chart that shows where improvement is needed. Those areas to address in which you are deficient becomes the means for improving your software testing organization.

**Figure 1**  
**Overview of the Test Assessment Process**



## PRACTICE WORKBENCH

This workbench (see **Figure 2**) is designed to lead you through an assessment of your software testing function. The workbench begins with knowledge of your software testing function. A four-step process is designed to lead you from building an assessment team to analyzing the results of the assessment process. Because it is difficult for any organization to make significant improvements until they know where they are and where they want to be, the assessment process becomes a key component in any effective improvement plan.

### INPUT PRODUCTS

The only input needed to perform this assessment is a knowledge of your organization's software testing activities. The knowledge is usually possessed by one or more of the Sr. Software Testers in your organization. Thus, the assessment can be performed by one very knowledgeable software tester, or several if the knowledge needed is spread among two or more people. In some instances, documented software testing work practices will be needed.

## IMPLEMENTATION PROCEDURES

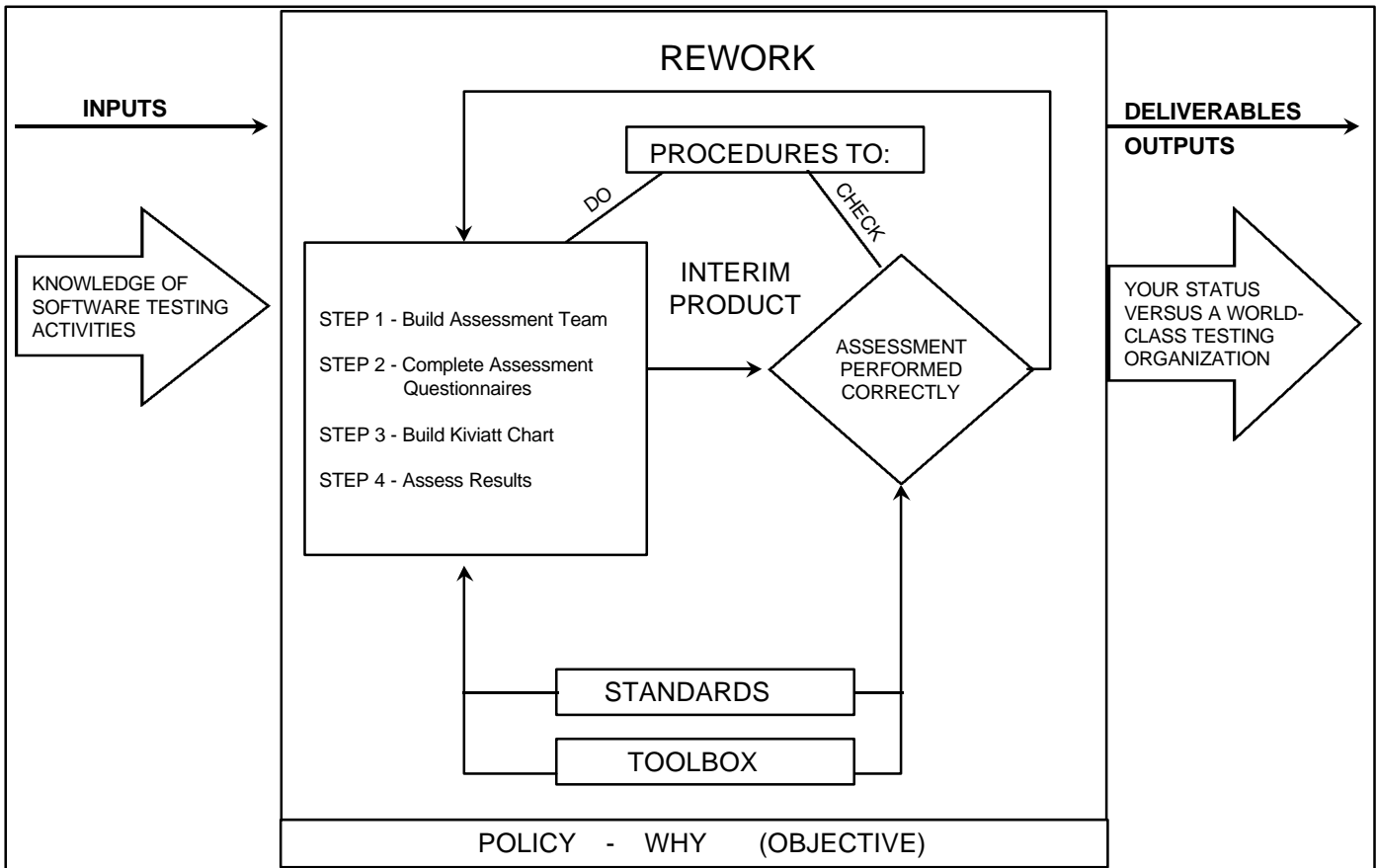
This practice involves performing four steps that are explained in the following subsections.

### Step 1: Build Assessment Team

The assessment team needs to be combined of one or more people who in totality possess the knowledge on how software testing is performed in your organization. Prior to establishing the team, the areas to address should be reviewed to determine the make up of the team. It is recommended that a Matrix be prepared with the areas to address on one dimension of the Matrix and the recommended assessment team on the other. The Matrix should be completed, indicating which assessment team member is knowledgeable about each of the areas to address.

If all areas to address have been associated with an assessment team member, it can be concluded that the assessment team is adequate to perform the assessment.

**Figure 2**  
**Software Testing Assessment Workbench**



## Step 2: Complete Assessment Questionnaires

The assessment questionnaire is comprised of eight categories and five areas to address for each category. A total of 40 areas to address.

For each area to address a “YES” or “NO” response should be made. The meaning of a “YES” or “NO” response follows:

A “YES” response means all of the following:

- Criteria is formal and in place.
- Criteria is understood by testers.
- Criteria is widely used, where applicable.
- Criteria has produced some possible results.

A “NO” response means any of the following:

- No formal item in place.
- Criteria is applied differently for different test situations.
- No consistency as to when used or used very seldom.
- No tangible results were produced.

The assessment team should read aloud each area to address. The team should then discuss how that area is addressed in their software testing organization. Using the “YES/NO” response criteria, the assessment team needs to come to a consensus on whether a “YES” or “NO” response should be indicated for that area to address. The result of that consensus should be recorded on **Questionnaire 1**. The assessment team may also wish to record comments that clarify the response and/or to provide insight in how that area may be improved.

## Step 3: Build Kiviatt Chart

Using **Worksheet 1** (Kiviatt Worksheet for Recording Software Testing Assessment Results) transcribe the results of completing Questionnaire 1. For each category the number of “YES” responses should be totaled. A “dot” should be placed on the Kiviatt Chart on the line representing the number of “YES” responses. For example, if there were three “YES” responses for test planning a “dot” would be placed on the test planning line at the intersection of the line representing three “YES” responses. A “dot” should be put on the line representing all eight categories for the number of “YES” responses. The dots are then connected by a line resulting in what is called a “footprint” of the status of your software testing organization versus a world-class testing organization.

## Step 4: Assess Results

Two assessments should be made regarding the “footprint” developed on the Worksheet 1 Kiviatt Chart. As follows:

1. Assess status of each category versus what that category should be in a world-class testing organization.

To do this you need to look at the number of “YES” responses you have recorded for each category versus a world-class organization, which would have five “YES” responses. For example, if you had three “YES” responses for test planning that would indicate that improvements could be made in your test planning process. The two areas that received “NO” responses are indications of where improvements are needed to move your test planning activities to a world-class level.

2. Interpret your software testing assessment Kiviatt Chart.

The “footprint” in your Kiviatt Chart provides an overview of the type of software testing your organization is performing. Given the “footprint” your assessment team should attempt to draw some conclusions about how software testing is performed in your organization. Three examples are given to help in drawing these conclusions. The examples are shown in **Figure 3, 4, and 5**.

## CHECK PROCEDURES

The following list of questions, if responded to positively, would indicate that the assessment has been performed correctly:

1. Does the assessment team comprise the knowledge needed to answer all of the areas to address within the eight categories?
2. Are the individual assessors free from any bias that would cause them not to provide proper responses to the areas to address?
3. Was there general consensus among the assessment team to the response for each area to address?
4. Are the areas to address appropriate for your testing organization?
5. Have the areas to address been properly totaled and posted to the Kiviatt Chart Worksheet?
6. Does the assessment team believe the Kiviatt Chart “footprint” is representative of your software testing organization?
7. Does your assessment team believe that if they improve the areas to address, that have “NO” responses, that the software testing organization will become more effective?
8. Does your software testing organization believe that the overall assessment made of the Kiviatt “footprint” is representative of your software testing organization.

## **DELIVERABLES**

There are two deliverables from this self-assessment. The first is the Kiviatt Chart Worksheet. The second is the analysis of the Kiviatt Chart “footprint.”

## **USAGE TIPS**

### **NOTE TO ASSESSEMNT TEAM:**

If your assessment team is having difficulty in drawing conclusions, send the results of your assessments to QAI, Managing Director, and QAI will provide you with an interpretation of your Kiviatt Chart.

## Questionnaire 1

### SOFTWARE TESTING ASSESSMENT QUESTIONNAIRE

<u>CATEGORY</u>	<u>AREA TO ADDRESS</u>	<u>RESPONSE</u>		<u>COMMENTS</u>
		YES	NO	
<b>Test Planning</b> Criteria 1: Business/Technical Risks	Do the testers identify the business and technical risks associated with implementing and operating software, <u>and</u> are those risks addressed in the test plan?			
<b>Test Planning</b> Criteria 2: Building a Test Plan	Is a test plan created for each software system? Does the plan identify the test requirements/objects <u>and</u> does it establish success criteria for each requirement?			
<b>Test Planning</b> Criteria 3: Involvement in Planning	Are the users actively involved in the development of the test plan, <u>and</u> does the plan include user involvement in testing?			
<b>Test Planning</b> Criteria 4: Test Plan is a Working Document	Are test plans followed? Is approval required to deviate from the plan, <u>and</u> are the plans changed to reflect changing test approaches and changing software requirements?			
<b>Test Planning</b> Criteria 5: Acceptance Criteria Established	Does the test plan contain the criteria that the software must meet in order to be placed into production <u>and</u> do the users agree with those criteria?			
<b>Management Support for Test</b> Criteria 1: Availability of Resources	Does management provide the resources necessary (including calendar time) to adequately train, plan, conduct, and evaluate results for software testing assignments?			
<b>Management Support for Test</b> Criteria 2: Life Cycle Involvement by Testers	Are testers involved from the inception through termination of software projects to ensure that testing concerns are continuously addressed?			

<u>CATEGORY</u>	<u>AREA TO ADDRESS</u>	<u>RESPONSE</u>		<u>COMMENTS</u>
		YES	NO	
<b>Management Support for Test</b> Criteria 3: Equality Between Development and Test	Does management allocate as many resources to the test processes and tools as it does to the development process and tools?			
<b>Management Support for Test</b> Criteria 4: Management's Personal Time Equality Between Development and Test	Does management spend as much personal time on test planning and test execution as it does on development planning and development execution?			
<b>Management Support for Test</b> Criteria 5: Knowledge and Skills	Is management knowledgeable and sufficiently trained in test theory, processes and tools to effectively manage test planning and execution, and understand and effectively act on test results?			
<b>Test Processes</b> Criteria 1: Testing Performed by Process	Do testers follow processes to plan tests, prepare test data, execute tests, and develop and report test results?			
<b>Test Processes</b> Criteria 2: Test Processes are Understandable and Usable	Can documented test processes be correctly interpreted by testers, so that the test procedures can be followed as intended during use?			
<b>Test Processes</b> Criteria 3: Test Processes are Complete	Do the processes provided for testing cover all the activities that are needed to perform effective testing?			
<b>Test Processes</b> Criteria 4: Test Process Maturity Plan	Has a plan been developed <u>and</u> put in place to mature the test processes, so they become more effective, efficient, and on time?			

<u>CATEGORY</u>	<u>AREA TO ADDRESS</u>	<u>RESPONSE</u>		<u>COMMENTS</u>
		<b>YES</b>	<b>NO</b>	
<b>Test Processes</b> Criteria 5: Testers Build Test Processes	Do the owners/users of the test processes (i.e., testers) build the processes used for testing?			
<b>Test Tools</b> Criteria 1: Capture/Playback Tool Available	Do testers use an automated tool to generate and reuse test data?			
<b>Test Tools</b> Criteria 2: Tool Needs Defined Prior to Acquisition	Are test tools selected in a logical manner? Meaning, test needs drive the search for/acquisition of test tools.			
<b>Test Tools</b> Criteria 3: Testers Trained Prior to Using Tools	Can testers only use test tools after they have received adequate training in how to use the test tools?			
<b>Test Tools</b> Criteria 4: Mandatory Test Tool Usage	Is test tool usage specified in the test plan? Meaning, usage of the tools is mandatory, not optional, or by the sole discretion of a tester.			
<b>Test Tools</b> Criteria 5: Tool Help Desk Available	Has a process for obtaining assistance in using test tools been established, <u>and</u> does it provide testers with the needed instructional information?			
<b>Test Training</b> Criteria 1: Training Plan for Testers	Does a career training plan for testers exist, <u>and</u> is it in use to develop a tester from an unskilled state to a master tester state?			
<b>Test Training</b> Criteria 2: Test Process Training	Are testers adequately trained in test processes before using those processes for testing?			
<b>Test Training</b> Criteria 3: Test Theory/Risk Training	Are testers trained in the theory of testing, risk analysis, the various approaches to testing, etc., so that they understand “why” they perform certain test tasks?			

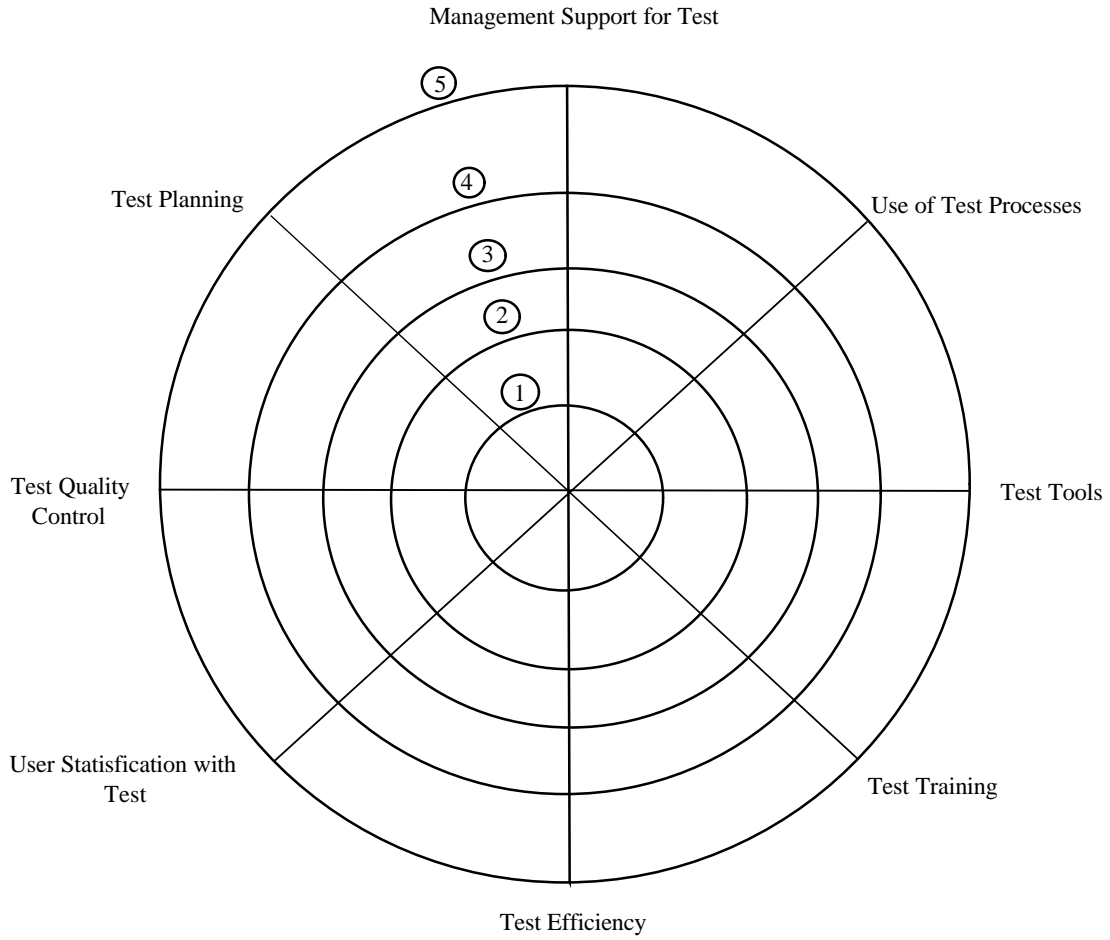
<u>CATEGORY</u>	<u>AREA TO ADDRESS</u>	<u>RESPONSE</u>		<u>COMMENTS</u>
		YES	NO	
<b>Test Training</b> Criteria 4: Statistical Training	Are testers trained in statistics, so they understand the level of confidence they can provide a user by different test approaches and how to interpret test results?			
<b>Test Training</b> Criteria 5: Process Management and Improvement Training	Are testers trained in how to measure process performance, <u>and</u> do they use the results of that measurement to improve the test processes?			
<b>User Satisfaction</b> Criteria 1: Test Reports	Do users get the information they need to track test progress and assess results prior to placing software into production?			
<b>User Satisfaction</b> Criteria 2: User Survey	Are user surveys conducted to determine user satisfaction with test planning, test execution, test results, communications, etc.?			
<b>User Satisfaction</b> Criteria 3: User Involvement in Acceptance Test	Do users participate in tests that determine whether or not the software is acceptable for use?			
<b>User Satisfaction</b> Criteria 4: User Approves Test Plan	Are users presented with a plan for testing, <u>and</u> do they “approve” (i.e., agree) that if that plan is followed, they will consider testing to be satisfactory?			
<b>User Satisfaction</b> Criteria 5: User Activities Included in Test	Are the user support activities such as data entry, output usage, terminal usage, manual usage, etc., validated as part of testing?			
<b>Test Efficiency</b> Criteria 1: Test Focused on Risks	Has the test planned been developed, so that the test resources will be allocated to validate that the major risks are addressed prior to minor risks?			



<u>CATEGORY</u>	<u>AREA TO ADDRESS</u>	<u>RESPONSE</u>		<u>COMMENTS</u>
		<b>YES</b>	<b>NO</b>	
<b>Test Efficiency</b> Criteria 2: Test Process Measured/Efficient	Has a measurement process been installed to measure the efficiency of the test processes?			
<b>Test Efficiency</b> Criteria 3: Budget/Schedule Met	Is compliance to the budget and schedule measured and variances addressed effectively?			
<b>Test Efficiency</b> Criteria 4: Tool Efficiency Measured	Is tool usage measured to assess the contribution received from automated testing?			
<b>Test Efficiency</b> Criteria 5: Defect Removal Efficiency Measured	Is the percentage of defects removed versus the total defects eventually attributable to a development phase measured?			
<b>Test Quality Control</b> Criteria 1: Test Defects Recorded	Are defects made by testers during testing recorded and effectively addressed?			
<b>Test Quality Control</b> Criteria 2: Test Plans Reviewed/Inspected	Is the test plan reviewed/inspected during/after completion by peers for adequacy and compliance to test standards?			
<b>Test Quality Control</b> Criteria 3: Test Plan Includes Quality Control	Does the test plan include the procedures that will be used to verify that the plan is executed in accordance with the plan?			
<b>Test Quality Control</b> Criteria 4: Individual Test Quality Control Reports Prepared	Are regular reports prepared that show the full status of testing individual software systems?			
<b>Test Quality Control</b> Criteria 5: Summarized Test Quality Control Reports Prepared	Periodically, are the individual quality control reports summarized to show the efficiency and effectiveness of testing in the entire information services organization?			

**WORKSHEET 1**  
**Assessment Kiviatt Chart**

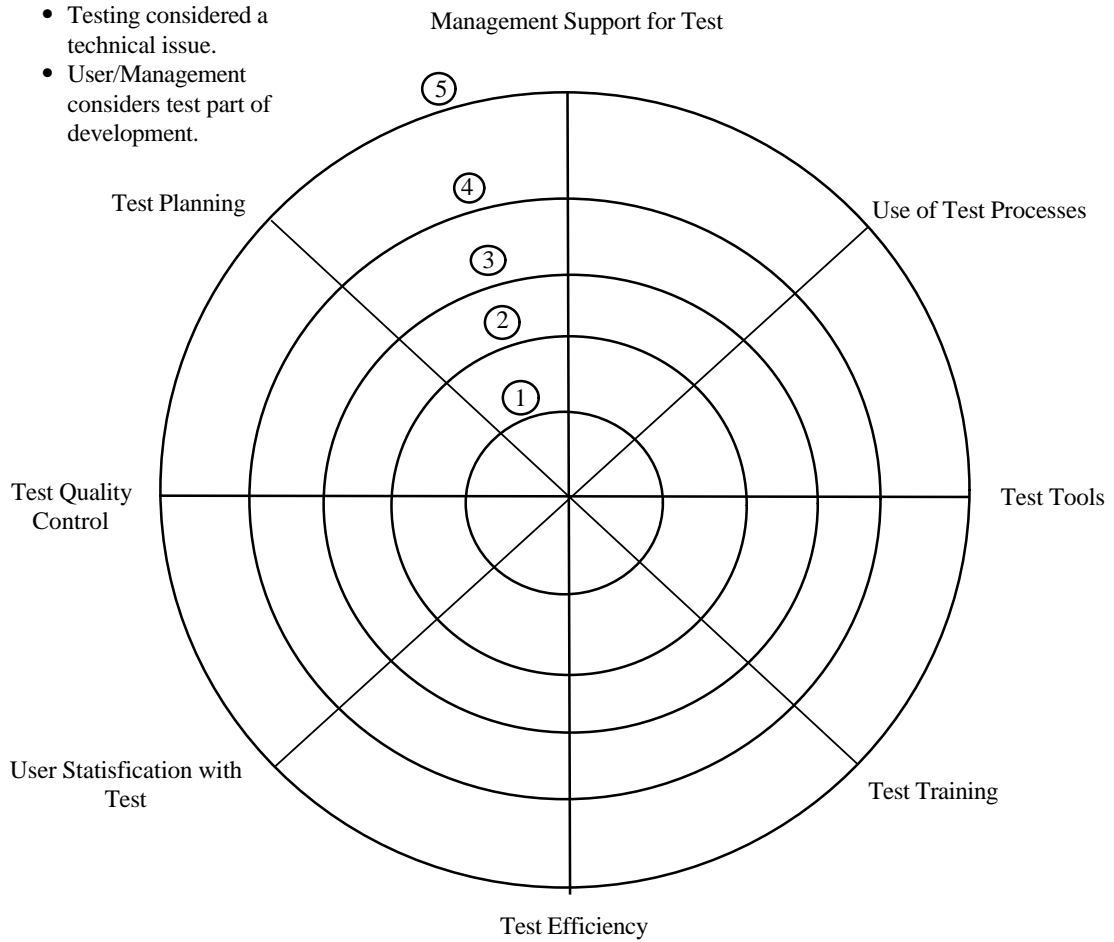
**ASSESSMENT KIVIATT CHART**



**Figure 3**  
**Example of a World-Class Software Testing Organization**

INTERPRETATION:

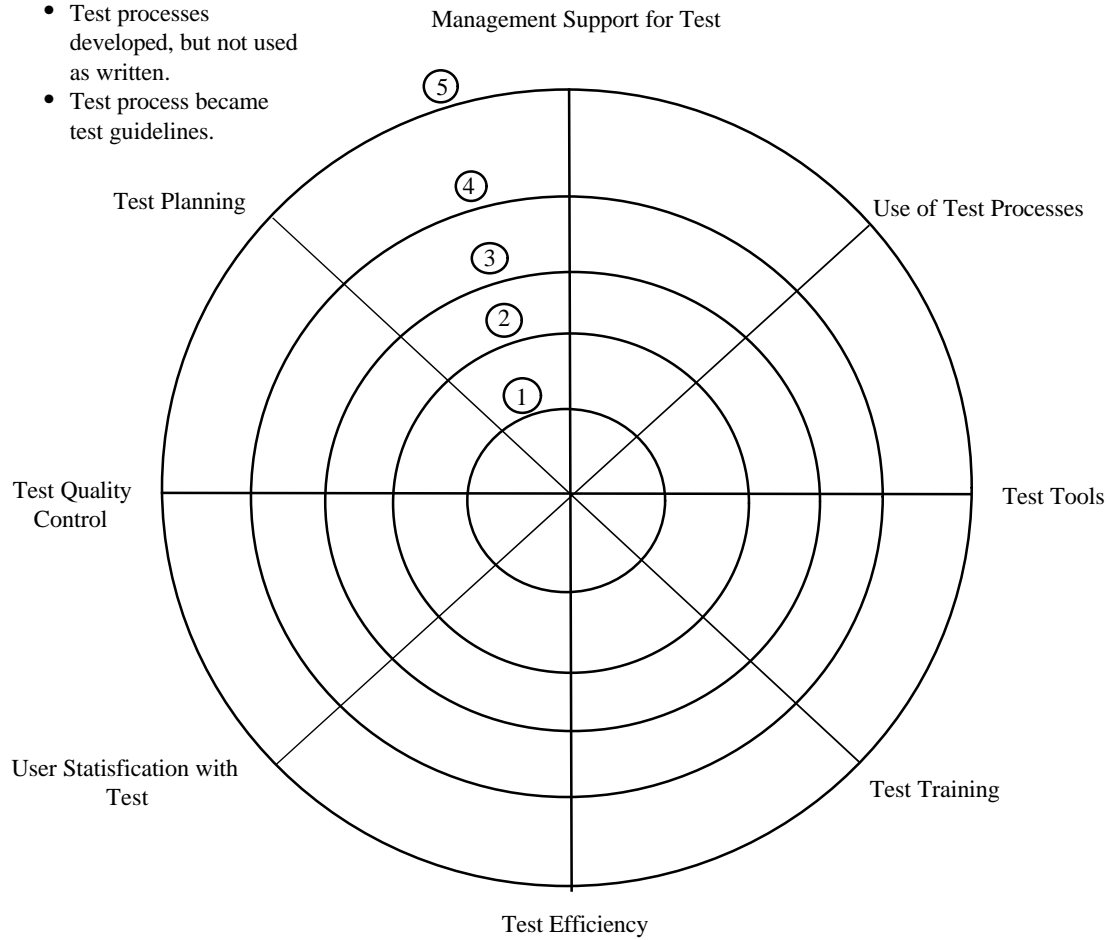
- Testing considered a technical issue.
- User/Management considers test part of development.



**Figure 4**  
**Example of a World-Class Software Testing Organization**

INTERPRETATION:

- Test processes developed, but not used as written.
- Test process became test guidelines.



**Figure 5**  
**Example of a World-Class Software Testing Organization**

INTERPRETATION:

- Testing is an art/craft focused on doing what the customer wants.

