

Measurement Information Specification
 Test Procedure Maturity
 Version 2.1

Information Need Description	
Information Need	Evaluate the development of 80 test procedures to obtain a weekly assessment of progress and suitability for use in requirements verification.
Information Category	Schedule and Progress Product Quality

Measurable Concept	
Measurable Concept	Work Unit Progress Functional Correctness - Test Procedure Readiness (new measurable concept)

Entities and Attributes	
Relevant Entities	<ul style="list-style-type: none"> • Test procedures • Requirements
Attributes	<ul style="list-style-type: none"> • Number of requirements allocated to test procedure • Number of requirements allocated to test procedure, for which test procedure contains complete and correct verification steps

Base Measure Specification	
Base Measures	<ol style="list-style-type: none"> 1. Total number of requirements allocated to test procedure (TotReqs) 2. Planned number of requirements verifiable (PlannedReqsVerifiable) 3. Number of requirements from number 1 for which all steps (execution, data collection, and data analysis) are complete (ReqtswVerSteps) 4. Number of requirements from number 1 for which verification criteria are consistent with the requirement (ReqtswVerCriteria) 5. Number of requirements from number 1 for which all steps are complete AND all verification criteria are consistent (ActualReqsVerifiable)
Measurement Methods	<ol style="list-style-type: none"> 1. For each test procedure, count the number of requirements allocated. 2. Estimate the effort to prepare/review verification steps and criteria for each requirement, and define a target date for completion. Count the number of requirements that are planned to be completed in each week (PlannedReqsVerifiable). <p>For each requirement allocated to the test procedure:</p> <ul style="list-style-type: none"> • Read the requirement text. • Review the test procedure steps and verification criteria. <ol style="list-style-type: none"> 3. If the steps are complete, add 1 to ReqtswVerSteps. 4. If the verification criteria are consistent with the requirement text, add 1 to ReqtswVerCriteria. 5. If both conditions in numbers 3 and 4 are true, add 1 to ActualReqsVerifiable.
Type of Method	<ol style="list-style-type: none"> 1. Objective 2-5. Subjective (with well-defined rules for assigning values)
Scale	Integers from zero to infinity
Type of Scale	Ratio
Unit of Measurement	Requirement

Derived Measure Specification	
Derived Measure	None
Measurement Function	N/A

Indicator Specification																																																																														
Indicator Description and Sample	<p style="text-align: center;">Test Procedure Maturity Trend</p> <p style="text-align: center;">Test Procedure Maturity Test Proceecures CMD1--CMD5 Current Date: 3/21/02</p> <table border="1"> <caption>Approximate Data from Test Procedure Maturity Trend Chart</caption> <thead> <tr> <th>Reporting Period</th> <th>Total # Reqs</th> <th>Actual # Reqs Verifiable</th> <th>Planned # Reqs Verifiable</th> <th># Reqs w/ VerSteps</th> <th># Reqs w/ VerCriteria</th> <th>Significance Threshold</th> </tr> </thead> <tbody> <tr><td>1/31</td><td>110</td><td>0</td><td>0</td><td>0</td><td>0</td><td>10</td></tr> <tr><td>2/7</td><td>110</td><td>5</td><td>5</td><td>5</td><td>5</td><td>10</td></tr> <tr><td>2/14</td><td>110</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td></tr> <tr><td>2/21</td><td>110</td><td>15</td><td>15</td><td>15</td><td>15</td><td>10</td></tr> <tr><td>2/28</td><td>110</td><td>25</td><td>25</td><td>25</td><td>25</td><td>10</td></tr> <tr><td>3/7</td><td>110</td><td>40</td><td>40</td><td>40</td><td>40</td><td>10</td></tr> <tr><td>3/14</td><td>110</td><td>55</td><td>55</td><td>55</td><td>55</td><td>10</td></tr> <tr><td>3/21</td><td>110</td><td>70</td><td>70</td><td>70</td><td>70</td><td>10</td></tr> <tr><td>3/28</td><td>110</td><td>85</td><td>85</td><td>85</td><td>85</td><td>10</td></tr> <tr><td>4/4</td><td>110</td><td>100</td><td>100</td><td>100</td><td>100</td><td>10</td></tr> </tbody> </table>	Reporting Period	Total # Reqs	Actual # Reqs Verifiable	Planned # Reqs Verifiable	# Reqs w/ VerSteps	# Reqs w/ VerCriteria	Significance Threshold	1/31	110	0	0	0	0	10	2/7	110	5	5	5	5	10	2/14	110	10	10	10	10	10	2/21	110	15	15	15	15	10	2/28	110	25	25	25	25	10	3/7	110	40	40	40	40	10	3/14	110	55	55	55	55	10	3/21	110	70	70	70	70	10	3/28	110	85	85	85	85	10	4/4	110	100	100	100	100	10
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Analysis Model	<p>As test procedure development progresses, Actual Requirements Verifiable should be close to Planned Requirements Verifiable and steadily growing toward 100% of requirements allocated (Total Requirements).</p> <p>When a test procedure's maturity is 90% or greater, the test procedure is ready for use in requirements verification. If data for a specific collection of test procedures (e.g., for CMD area) falls below the Significance Threshold line (10%), investigate and implement corrective action as necessary.</p>																																																																													
Decision Criteria	Significance threshold is calculated as within 0-10% of Planned Requirements Verifiable, consistent with the staffing profile for this task. Only negative variances (behind schedule) are of concern.																																																																													
Indicator Interpretation	For this indicator, Actual Requirements Verifiable is well outside the decision criteria for this week (for the previous week it was slightly behind). An additional expert was reassigned to help complete the test procedures associated with the requirements that were behind schedule. The experts that were reassigned were developers who had knowledge of the detailed requirements.																																																																													

Data Collection Procedure (for each Base Measure) <i>Complete this section for each base measure listed on the previous page.</i>	
Frequency of Data Collection	1-2. At the start of test planning 3-5. Weekly, concurrent with test procedure review
Responsible Individual	1-2. Supplier management 3-5. Acquirer project engineer, assisted by software experts in the role of test procedure reviewers
Phase or Activity in which Collected	Code and Unit Test (i.e., during test procedure generation)
Tools Used in Data Collection	Supplier test procedures, and requirements and design documents Excel spreadsheet
Verification and Validation	Review with supplier test team
Repository for Collected Data	Acquirer Excel spreadsheet

Data Analysis Procedure (for each Indicator)	
Frequency of Data Reporting	Weekly
Responsible Individual	Acquirer project engineer, assisted by software experts in the role of test procedure reviewers
Phase or Activity in which Analyzed	Code and Unit Test (i.e., during test procedure generation)
Source of Data for Analysis	Acquirer Excel spreadsheet
Tools Used in Analysis	Excel spreadsheet
Review, Report, or User	Test procedure maturity report supplied to acquirer program management personnel and supplier development and management personnel.

Additional Information	
Additional Analysis Guidance	
Implementation Considerations	