

TESTADVANCE TEST-SYSTEM SPECIFICATION SERVICES (TSS)

Related Documents:

Testadvance Test-System Engineering

Testadvance Test-System Design (TSD)

Testadvance Test-System Optimisation (TSO)

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Assessment

Functional Requirements

Requirements Analysis

System Requirements Specification (SRS)

- Reduce lead-times, overheads, risk and re-work
- Minimise iterations in planning, budgeting and design
- Reduce effort in research, assessment and specification and relieve 'critical path'
- Considerations for optimisation, reliability and re-use

Testadvance Test-Specification services help engineers and managers accelerate engineering cycles and provide independent, complete and timely specifications for budgeting and deployment of testing

1 Introduction

Testadvance Test-Engineering Services provide test-engineers and managers with specification, design and optimization of Functional Test. The services integrate with the client's 'Test Life-Cycle'.

- **Test-System Specification**
 - **Requirements Analysis, Functional Design, System Requirements Specification**
- Test-Design
 - System-concept, Test-Architecture, System-architecture, Test-Plan
- Test-Optimisation
 - Scope, Analysis, Measures, Execution, Review

Services	Product/Service	Test-Engineering work-elements and deliverables	Production/Operation
▲ <i>Test-System / Test-Plan Optimisation</i>	<i>Feedback</i> <i>Test-data</i>	<i>Benchmark & Review</i> <i>Plan and execute implementation</i> <i>Design optimisation</i> <i>Analyse Test-System/-Stage</i> <i>Scope Optimisation</i>	<i>Monitor, leverage</i> <i>Outcomes</i> <i>Measures</i> <i>Test-Plan, Test-Data</i> <i>Target, extent</i>
▲ <i>Test-System / Test-Plan Design</i>	<i>Product Test-specification</i> <i>Test-Methods & Procedures</i>	<i>Benchmark performance</i> <i>Develop Implementation briefs (opt)</i> <i>Compile Test-Plan</i> <i>Design Test-Sequences, -Routines, -Cases et al</i> <i>Test-Layout</i> <i>Compile Test-System Specification</i> <i>Design Test-Architecture</i> <i>Design System Infrastructure/Interfaces</i> <i>Design Non-Measurement Subsystems</i> <i>Design Measurement Interface(s)</i> <i>Design Measurement Subsystem</i>	<i>Metrics, requirements</i> <i>build, deploy, ramp-up</i> <i>Manufacturing Test-specification</i> <i>Test-Process</i>
▲ Test-System / Test-Plan Specification	Test-Set-ups & prototype testing Product Test-specification Measurements Design-verification	Design System Concept Plan and budget (opt) Compile System Requirement Specification Design Functional Requirements Analyse Requirements	Operations Test-specification Sourcing Operations Test-specification Test-concept Volume, yields, cycle infrastructure et al

Table 1 Test-Engineering services in operations

2 Deliverables: System Requirements Specification (SRS)

1. Scope of Engagement (SoE/SOW Section 1)
 - Framework
 - Target process, product(s) and operations
 - Capabilities, capacities and budgetary planning
2. Performance Requirements
 - Key Measurement Performance (Capabilities)
 - Key Operational Performance (Capacities)
 - Attributes
3. Functional Requirements
 - Measurement Functions
 - Non-Measurement Functions
 - Interfacing, In-/Output
 - System control and automation
4. Budgetary Planning
 - Sourcing
 - Design Planning
 - Cost-estimates
 - Alternatives and Cost/Benefit assessment

3 Test-System Specification Process (TSSP)

Test-System Specification services address the first phase of the Test Life-Cycle.

SLC	Client Operations/Product Life-cycle(s)				
	Client Test Life-Cycle				
	Plan/Specify ►	Design ►	Build	► Implement / Deploy	► Operate / Maintain
	▲	▲		▲	
	Test-Specification	Test-Design		Test-Optimisation	
Execution	Compile SRS	Test-Plan		Execution	
Design	Functional/Performance Requirements	Instrumentation		Design	
Analysis	Requirements Analysis	Architecture		Analysis	
Scope	Scope	Scope/Concept		Scope	

Table 2 Test-System Specification in the Test Life-Cycle

A Scope of Engagement ensures proper alignment with the client's operations, timelines and desired outcomes. The Scope is provided prior to a financial commitment. Communication and change management are managed within the delivery process. Client staff/teams can be involved. Work is executed as concurrently as feasible and applies practices from Dynamic Systems Development Method (DSDM), Rapid Application Development (RAD) and Structured Analysis and Design (SA/SD). Test-Specification services consider optimisation, modularity and re-use, integration and forward testing, monitoring, reliability, utilisation and 'up-time'.

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| <ul style="list-style-type: none">i. Assessment<ul style="list-style-type: none">i. Define needs and outcomesii. Identify technology, constraints, operationii. Analyse Requirements<ul style="list-style-type: none">i. Identify measurement/test needs/outcomeii. Define operational requirementsiii. Define key measurement requirementsiv. Define capabilities and capacitiesv. Specify key Measurement Performancevi. Specify key Operational Performanceiii. Design Functional Requirements | <ul style="list-style-type: none">i. Specify measurement functionsii. Specify non-measurement functionsiii. Specify interfaces and in-/outputiv. Specify system control and automationvii. Consider alternativesviii. Weigh cost/benefits <ul style="list-style-type: none">iv. Execute Budgetary Planning<ul style="list-style-type: none">i. Investigate sourcing/deliveryii. Estimate scheduling/resourcesiii. Estimate costs/deliveryv. Compile and review SRS |
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Table 3 Test-System Specification Process (TSSP) Overview

3.1 Assessment

The Assessment establishes the client's objectives, priorities and constraints. It defines the work to be delivered, the operational and technical areas and context. The outcome is the Scope of Engagement (SoE). The SoE provides a clear framework of the requirements to be met and how Test-Specification will integrate with their specific operations, the teams, departments, processes and organisation. The SoE forms the basis of the Statement of Work (SOW) and is provided prior to a financial commitment from the client.

3.2 Requirements Analysis (RA)

The RA consolidates technological and operational requirements. A structured approach is applied. First, core capabilities are determined, typically the measurements required to test the device or service under test. Thereafter, the operational requirements, operational capacity and integration are determined (e.g. interfacing, throughput). Capabilities and capacities are then correlated to ensure proper interworking. 'Compound' requirements that result are established (e.g. switching, automation). Key Performance Requirements are identified. These quantify core measurements and core functions and assigned accordingly. Functional performance is defined at a specified interface, e.g. the DUT or an interface assembly and quantifies the quality of a system-capability (e.g. the accuracy of a measurement) Operational performance is defined at the specified boundaries to operations or as needed a sub-system of the overall system, e.g. a switch-assembly and quantifies a system-capacity (e.g. test-throughput).

3.3 Functional Requirements Design (FRD)

Functional Requirements Design defines how capabilities and capacities are provided. The objective is not to provide a system-design, but to specify requirements to a desired level of certainty, ambiguities minimised and alternatives comparable. Functional requirements applies a structured systems approach, defining sub-systems within the potential test-system. Typical sub-systems are the measurement and measurement-interface sub-systems. The structured approach provides adequate separation, allows development to be executed as concurrent as possible and reduces costs and lead-times. It is important to be clear that level and extent of Functional Requirements Design is defined by the client. Upon achieving the agreed level of detail, the individual functional requirements are compiled and correlated within the requirements profile. The individual sub-systems/elements are defined and correlated with the required performance. Attributes such as reliability, environmental, platform type, existing infrastructure, user and through-life needs are applied.

3.4 Budgeting and Planning

Budgeting and planning is executed concurrently to the Requirements Analysis and Functional Requirements Design. In essence, deliberations made in the FDR are captured and the commercial as well as technical criteria captured. This information is then used to determine availability and cost of key instruments and components, custom designs and/or builds, coding etc.

Scope, Requirements Analysis and Functional Requirements Design are compiled together with the Budgeting and Planning information with a structured System Requirements Specification. The SRS undergoes a final review with the client.

4 Appendix – TSSP Flowcharts



