

A SYSTEM OF SERVICES FOR THE SYSTEM OF TEST

This paper provides a brief overview of the rationale behind
our Knowledge Services offerings

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testadvance – for excellence in test-engineering

1 The System of Test

Test is a system. It has its own internal sub-systems and is itself a sub-system of the larger system of operations and business. Test is a multi-layered, dynamic and distributed system. It comprises procedures, data and processes, instruments, test-systems and infrastructure. It is subject to requirements, interactions and influences from across departments and operations. Test-departments use their competence to plan, specify, design, implement, deploy, maintain, upgrade, support and manage testing and test-infrastructure. Test is often technically complex. Yet Test also needs to accommodate a whole raft of influences and factors such as business strategies and budgets, marketing and production schedules, cross-departmental collaboration, market and technology developments. How well Test delivers depends on how well its elements perform, how well they work together and how well they interact with entities outside Test itself.

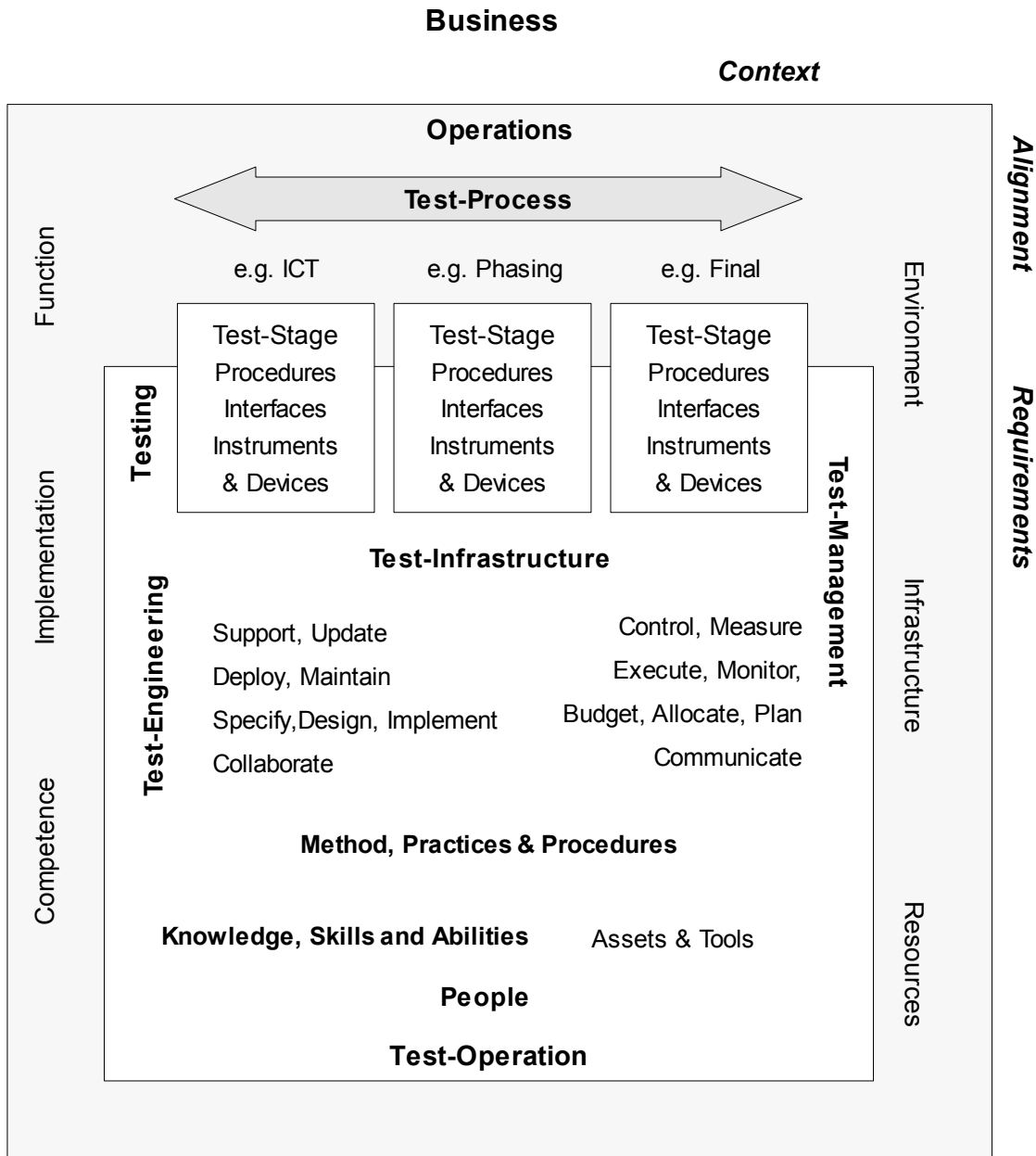


Figure 1 The System of Test

2 A System of Services for the System of Test

Testadvance Knowledge Services reflect the system of Test and its structure, processes and elements. The services embody a 'Systems Thinking' approach to both Test and the inputs and improvements they provide.

Systems thinking applies that a system is best understood through the interactions with other systems in its environment, its elements and their relationships and interactions with each other. To correctly measure and improve the performance of a system requires understanding its behaviour. To understand why and how a behaviour occurs requires understanding the elements involved, how they interact with each other and in relation to the whole.

Test comprises people, assets and know-how. People contribute effort and individual knowledge, skills and abilities. Assets provide tools, platforms, instruments etc. Know-how is developed and translated into operational competence through common procedures, practices and knowledge.

Businesses in the electronic industry invest in Test because they need to. They make substantial expenditures on test-instruments and devices, applications, platforms and tools. They maintain staff and departments that engineer and manage Test. Testadvance Knowledge services help clients maximise the returns on those investments.

Testadvance Knowledge services are specifically designed for departments that provide, execute and manage electronic testing. Our service portfolio is designed, maintained and updated to provide the best possible fit of effort and solutions across three key criteria:

- Timeliness: Urgent, immediate, short-, mid- and long-term, ongoing
- Operational Function: Testing, Engineering, Management, Staff Development
- Focus: Specific, individual elements; segments or areas; departments and operations

Testadvance Knowledge Services are a structured portfolio of individual service-units and work-elements. These reflect the elements, procedures and work-structures of Test. Services are structured by function, engagements by timeliness and focus. Engagements are configured to provide the best fit for the client's specific situation, needs, objectives and constraints. Each engagement can include services and work-elements from all areas and all levels of the portfolio.

- Training furthers competence
- Test-Engineering advances delivery
- Test-Consulting solves issues and improves performance

2.1 Objectives & Key Success Factors of Testadvance Knowledge Services

The purpose of Testadvance Knowledge Services is to improve the value (returns) of testing and test-engineering to the client. We can *generically* define the Value of Test as:

$$\frac{(\text{found flaws} / \text{shipped flaws}) \times (\text{cost} - \text{of} - \text{shipped} - \text{flaw} [\$]) \times (\text{brand advantage} [\$]) }{\text{cost} - \text{of} - \text{test} [\$]}$$

- Found vs shipped flaws: The key purpose of testing is to capture a defined % of flaws before they are shipped for a given/targeted pristine yield. I.e. if pristine yield (before testing and re-work) always meets targets, testing is theoretically redundant. Conversely, for low pristine yields to e.g. reduce R&D and BOM, more testing is needed to achieve the same quality and volume of output
- Competitive advantage of brand quality: The cost customers are willing to incur beyond the perceived benefit or usefulness from the functionality of the product
- Cost-of-test: All direct and indirect costs, including e.g. the cost of reduced throughput, per unit

Meeting the client's expectation of 'value' is the primary objective of our services. Value always comes back to how well the needs, objectives and constraints of the client are met. It is different for each stakeholder. Businesses focus on profitability and market-success. Operations need to meet production schedules, targets and costs. Test-departments need to deliver the required test-capability and -capacity at a given cost, timely and reliably. In the above equation, each of these concerns is embedded in the qualitative definitions.

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For example 'flaws found' will relate to pristine yields, trade-off's between investments in R&D, selected components (BOM) and production; cost-of-test will include direct costs, costs to production, e.g. through lower throughput and again trade-off's; competitive advantage relates to business strategies et al. For each client, each operation and each situation, the elements of the equation are different and hence each service engagement needs to be different. Our aim in each engagement is to best meet all objectives and needs and provide the best balance of timeliness, function and focus to the client.

2.1.1 Key objectives

- Provide the best-fitting solution to the client's specific situation, needs and priorities, objectives and constraints as quickly, efficiently and effectively as possible
- Sustainably and cost-effectively further the client's productivity and quality in testing, test-engineering and management of test
- Minimise risk, disruption, delays, impacts and costs to the client
- Deliver returns to the client that significantly outweigh the cost of the services
- Enable clients to better capitalise on and increase returns from test-engineering and its learning's

2.1.2 Key success factors

- We respond quickly and effectively to our client's needs with fitting answers, advice and solutions
- We credibly demonstrate our commitment
- Engagements are quickly and cost-effectively configured to the client's specific situation
- We maintain low overheads and eliminate redundancies
- Services and processes are flexible, transparent and open
- Delivery and quality are managed effectively and efficiently
- We provide knowledge transfer and further the people, their competence and their work
- We align with the client's work and operations

2.1.3 Key services strategy and features

- The services, their process and deliverables reflect and align with the work of test-engineers and managers
- Each engagement determines and documents the client's specific situation, needs and priorities, objectives and constraints, at our cost
- Services are flexible and combinable, scalable and extendible by adding, removing and developing new service-elements
- All major services and their processes are by default pre-configured for a worst-case scenario and readily 'stripped down' for a specific engagement
- Services and processes definitions and documents are openly available
- Configuration-, delivery- and quality-management are embedded in the services; service-elements include metrics and procedures for evaluation of fulfilment and quality
- The modular and encapsulated service-elements are cost-effective and efficient to develop, tailor, deliver and maintain
- Learning and development of our people and services is built in to our company and operations