

## Software Quality and Testing

TURKCELL TECHNOLOGY  
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## TEST MANAGEMENT

- TEST TEAM
- TEST TEAM ROLES & RESPONSIBILITIES
- TEST PLANS, ESTIMATES & STRATEGIES
- TEST PROGRESS MONITORING & CONTROL
- CONFIGURATION MANAGEMENT

## TEST TEAM ORGANIZATION

### Levels of Independence

- Developers perform testing within the developer team (no independence)
- Group of testers working with developers but report to the development manager (low independence)
- Separate group of testers reporting to project manager (medium independence)
- Separate test team reporting to the test manager at a level equal to development manager (complete independence)



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## TEST TEAM ORGANIZATION

### Independence Test Team

#### Advantages of Independence Test Team

- Increase the quality of software
- Different point of view about the defects in the system



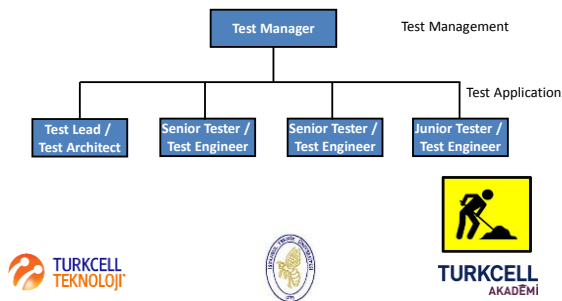
#### Risks of Independence Test Team

- Loss of communication with the development team
- Development team relies too much on the test team. This decreases the quality level of the software.



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## TEST TEAM ROLES & RESPONSIBILITIES



## TEST TEAM ROLES & RESPONSIBILITIES

### Responsibilities of a Test Manager

- Manage the Testing Department
- Communicate with Business analyst, Technical team and with QA team
- Allocate resource to projects
- Review weekly Testers' status reports and take necessary actions
- Escalate Testers' issues to the Sr. Management
- Estimate for testing projects
- Enforce the adherence to the company's Quality processes and procedures



## TEST TEAM ROLES & RESPONSIBILITIES

### Responsibilities of a Test Manager

- Decision to procure Software Testing tools for the organization
- Provide technical support to the Testing team
- Continuous monitoring and mentoring of Testing team members
- Attend weekly meeting of projects and provide inputs from the Testers' perspective
- Immediate notification/escalation of problems to the Sr. Test Manager / Senior Management



## TEST TEAM ROLES & RESPONSIBILITIES

### Responsibilities of a Test Lead / Test Architect

- Prepare the Software Test Plan
- Check / Review the Test Cases document
- System, Integration and User Acceptance prepared by test engineers
- Analyze requirements during the requirements analysis phase of projects
- Keep track of the new requirements from the Project
- Forecast / Estimate the Project future requirements



## TEST TEAM ROLES & RESPONSIBILITIES

### Responsibilities of a Test Lead / Test Architect

- Arrange the Hardware and software requirement for the Test Setup
- Escalate the issues about project requirements (Software, Hardware, Resources) to Project Manager / Test Manager.
- Assign task to all Testing Team members
- Organize the meetings. Prepare the Agenda for the meeting, for example: Weekly Team meeting etc.
- Send the Status Report (Daily, Weekly etc.) to all the project team



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## TEST TEAM ROLES & RESPONSIBILITIES

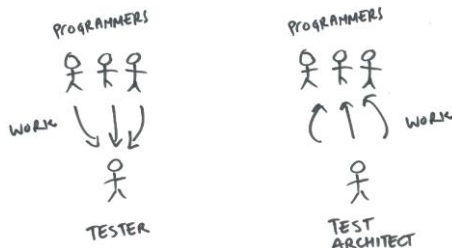
### Responsibilities of a Test Lead / Test Architect

- Act as the single point of contact between Development and Testers for iterations, Testing and Deployment activities
- Assist in performing any applicable maintenance to tools used in Testing and resolve issues if any
- Review various reports prepared by Test engineers
- Attend weekly Team Leader meeting
- Motivate team members



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## TEST TEAM ROLES & RESPONSIBILITIES



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## TEST TEAM ROLES & RESPONSIBILITIES

### Responsibilities of a Tester / Test Engineer

- Understand project requirements
- Prepare / Update the Test case document for testing of the application from all aspects
- Prepare the test setup
- Deploy the build in the required setup
- Execute all test cases
- Find bugs and log the defects in Defect tracking tool / Bug Report. Verify defects
- Discuss doubts/queries with Development Team / Client



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## TEST TEAM ROLES & RESPONSIBILITIES

### Skills That Testers Need

- *Application or business domain:* A tester must understand the intended behavior, the problem the system will solve, the process it will automate and so forth, in order to spot improper behavior while testing and recognize the 'must work' functions and features.
- *Technology:* A tester must be aware of issues, limitations and capabilities of the chosen implementation technology, in order to effectively and efficiently locate problems and recognize the 'likely to fail' functions and features.
- *Testing:* A tester must know the testing topics - in order to effectively and efficiently carry out the test tasks assigned.



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## TEST TEAM ROLES & RESPONSIBILITIES



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## TEST PLANS, ESTIMATES & STRATEGIES

### Test Plan

- Writing a test plan forces us to confront the challenges that await us and focus our thinking on important topics.
- The test planning process and the plan itself serve as vehicles for communicating with other members of the project team, testers, peers, managers and other stakeholders.
- The test plan also helps us manage change. During early phases of the project, as we gather more information, we revise our plans.



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## TEST PLANS, ESTIMATES & STRATEGIES

### IEEE 829 STANDARD TEST PLAN TEMPLATE

Test plan identifier	Test deliverables
Introduction	Test tasks
Test items	Environmental needs
Features to be tested	Responsibilities
Features not to be tested	Staffing and training needs
Approach	Schedule
Item pass/fail criteria	Risks and contingencies
Suspension and resumption criteria	Approvals



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## TEST PLANS, ESTIMATES & STRATEGIES

### Understanding The Purpose of Testing

- What is in scope and out of scope for this testing effort?
- What are the test objectives?
- What are the important project and product risks?
- What constraints affect testing (e.g., budget limitations, hard deadlines, etc.)?
- What is most critical for this product and project?
- Which aspects of the product are more (or less) testable?
- What should be the overall test execution schedule and how should we decide the order in which to run specific tests?



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## TEST PLANS, ESTIMATES & STRATEGIES

### Test Approaches or Strategies

The choice of test approaches or strategies is one powerful factor in the success of the test effort and the accuracy of the test plans and estimates.

- Analytical
- Model-based
- Methodical
- Process- or standard-compliant
- Dynamic
- Consultative or directed
- Regression-averse



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## TEST PLANS, ESTIMATES & STRATEGIES

### Which Strategies?

- *Risks*: Testing is about risk management, so consider the risks and the level of risk.
- *Skills*: Strategies must not only be chosen, they must also be executed.
- *Objectives*: Testing must satisfy the needs of stakeholders to be successful.



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## TEST PLANS, ESTIMATES & STRATEGIES

### Which Strategies?

- *Regulations*: Sometimes you must satisfy not only stakeholders, but also regulators.
- *Product*: Some products such as weapons systems and contract-development software tend to have well-specified requirements.
- *Business*: Business considerations and business continuity are often important.



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## TEST PROGRESS MONITORING & CONTROL

### Monitoring Test Activities



- Give the test team and the test manager feedback on how the testing work is going, allowing opportunities to guide and improve the testing and the project.
- Provide the project team with visibility about the test results.
- Measure the status of the testing, test coverage and test items against the exit criteria to determine whether the test work is done.
- Gather data for use in estimating future test efforts.



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## TEST PROGRESS MONITORING & CONTROL

### Reporting Test Status

- Notifying project stakeholders about test results
- Enlightening and influencing project stakeholders - this involves analyzing the information and metrics available to support conclusions, recommendations, and decisions about how to guide the project forward or to take other actions
- Need to collect specific metrics during and at the end of a test period to generate the test status reports in an effective and efficient fashion.



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## TEST PROGRESS MONITORING & CONTROL

### Test Control

Guiding and corrective actions to try to achieve the best possible outcome for the project.

- A portion of the software under test will be delivered late, after the planned test start date. Market conditions dictate that we cannot change the release date. Test control might involve re-prioritizing the tests so that we start testing against what is available now.



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## TEST PROGRESS MONITORING & CONTROL

### Test Control

- For cost reasons, performance testing is normally run on weekday evenings during off-hours in the production environment. Due to unanticipated high demand for your products, the company has temporarily adopted an evening shift that keeps the production environment in use 18 hours a day, five days a week. Test control might involve rescheduling the performance tests for the weekend.



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## CONFIGURATION MANAGEMENT

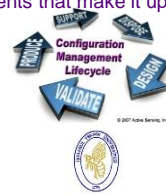
- Determining clearly what the items are that make up the software or system - source code, test scripts, third-party software, hardware, data and both development and test documentation.
- Making sure that these items are managed carefully, thoroughly and attentively throughout the entire project and product life cycle.



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## CONFIGURATION MANAGEMENT

- Allows the testers to manage their testware and test results using the same configuration management mechanisms
- Supports the build process, which is essential for delivery of a test release into the test environment
- Allows us to map what is being tested to the underlying files and components that make it up



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