1.4.2_3 Test Analysis

During test analysis, the test basis is analyzed to identify testable features and define associated test conditions. In other words, test analysis determines “what to test” in terms of measurable coverage criteria.

Test analysis includes the following major activities:

- Analyzing the test basis appropriate to the test level being considered, for example:
  - Requirement specifications, such as business requirements, functional requirements, system requirements, user stories, epics, use cases, or similar work products that specify desired functional and non-functional component or system behavior
  - Design and implementation information, such as system or software architecture diagrams or documents, design specifications, call flows, modelling diagrams (e.g., UML or entity-relationship diagrams), interface specifications, or similar work products that specify component or system structure
  - The implementation of the component or system itself, including code, database metadata and queries, and interfaces
  - Risk analysis reports, which may consider functional, non-functional, and structural aspects of the component or system
- Evaluating the test basis and test items to identify defects of various types, such as:
  - Ambiguities
  - Omissions
  - Inconsistencies
  - Inaccuracies
  - Contradictions
  - Superfluous statements
- Identifying features and sets of features to be tested
- Defining and prioritizing test conditions for each feature based on analysis of the test basis, and considering functional, non-functional, and structural characteristics, other business and technical factors, and levels of risks
- Capturing bi-directional traceability between each element of the test basis and the associated test conditions (see sections 1.4.3 and 1.4.4)

The application of black-box, white-box, and experience-based test techniques can be useful in the process of test analysis (see chapter 4) to reduce the likelihood of omitting important test conditions and to define more precise and accurate test conditions.

In some cases, test analysis produces test conditions which are to be used as test objectives in test charters. Test charters are typical work products in some types of experience-based testing (see section 4.4.2). When these test objectives are traceable to the test basis, coverage achieved during such experience-based testing can be measured.

The identification of defects during test analysis is an important potential benefit, especially where no other review process is being used and/or the test process is closely connected with the review process. Such test analysis activities not only verify whether the requirements are consistent, properly expressed, and complete, but also validate whether the requirements properly capture customer, user, and other stakeholder needs. For example, techniques such as behavior driven development (BDD) and acceptance test driven development (ATDD), which involve generating test conditions and test cases from user stories and acceptance criteria prior to coding, also verify, validate, and detect defects in the user stories and acceptance criteria (see ISTQB Foundation Level Agile Tester Extension syllabus).