2.1.1 Software Development and Software Testing

The development process adopted for a project will depend on the project aims and goals. There are numerous development life cycles that have been developed in order to achieve different required objectives. These life cycles range from lightweight and fast methodologies, where time to market is of the essence, through to fully controlled and documented methodologies where quality and reliability are key drivers. Each of these methodologies has its place in modern software development and the most appropriate development process should be applied to each project.

The models specify the various stages of the process and the order in which they are carried out. The life cycle model that is adopted for a project will have a big impact on the testing that is carried out. Testing does not exist in isolation; test activitiesare highly related to software development activities. It will define the what, where, and when of our planned testing, influence regression testing, and largely determine which test techniques to use. The way testing is organized must fit the development life cycle or it will fail to deliver its benefit.

If time to market is the key driver, then the testing must be fast and efficient. If a fully documented software development life cycle, with an audit trail of evidence, is required, the testing must be fully documented. In every development life cycle, a part of testing is focused on verification testing and a part is focused on validation testing. Verification is concerned with evaluating a work product, component or system to determine whether it meets the requirements set. In fact, verification focuses on the question 'Is the deliverable built according to the specification?'.

Validation is concerned with evaluating a work product, component or system to determine whether it meets the user needs and requirements. Validation focuses on the question 'Is the deliverable fit for purpose, e.g. does it provide a solution to the problem?'.