



Tutorial

Tutorial: The Software Development Life Cycle (SDLC)

Introduction

The Software Development Life Cycle (SDLC) is an approximately five-phase process that describes the steps that every software development project undergoes. These days, the SDLC may be known as the application lifecycle management (ALM) due to the increasing focus on delivery and/or retirement of systems and applications. However the development phases of the SDLC and ALM are identical. No matter how large or small, every software application that is produced must pass through these stages – Planning, Implementation, Testing, Deployment, and Maintenance – in order to reach a successful conclusion and ship a quality product.

The degree of formalization of the Software Development Life Cycle will depend on the organization driving the project. On smaller, more agile teams such as those found at many technology startups, these steps may occur unconsciously, with individuals stepping into and out of the many roles involved in the software development process with fluidity. In larger organizations, however, hundreds or even thousands of individuals may be devoted to one project. In these situations, the Software Development Life Cycle is a valuable tool for understanding a complex project by breaking it down into discrete phases with distinct steps and clear owners.

Though there are many different models for managing the Software Development Life Cycle, most software projects adhere to the

same basic high-level phases. Following is an overview of the major steps of the Software Development Life Cycle.

1. Planning

The first stage in developing any software product is planning. During the planning stage, the company's management team sets out detailed business requirements based on market projections, the competitive environment, and other business drivers. The managers also determine acceptable levels of business risk and outline components of the budget and timeline.

Once it is understood what role the product is intended to play in the strategy of the business, the next step is for the business analysts (sometimes called project managers or program managers) to determine the feature requirements. To understand what features are needed, the business analysts create customer use cases with detailed scenarios of how the product is intended to be used and what problems the product will solve for the customer. By taking a close look at the customer experience, business analysts are able to prioritize which features are most essential to the product's success. They leverage this knowledge to define the scope of the project and create a specification document which details how each feature within the product should function.

Finally, the business analysts outline a thorough project plan with deadlines for major milestones in the feature development and release processes, taking into account the available personnel and any risk in the schedule.

Overview

The Software Development Life Cycle (SDLC) is a five-phase process that describes the steps that every software development project undergoes. The SDLC is comprised of 5 phases:

- Planning
- Implementation
- Testing
- Deployment
- Maintenance



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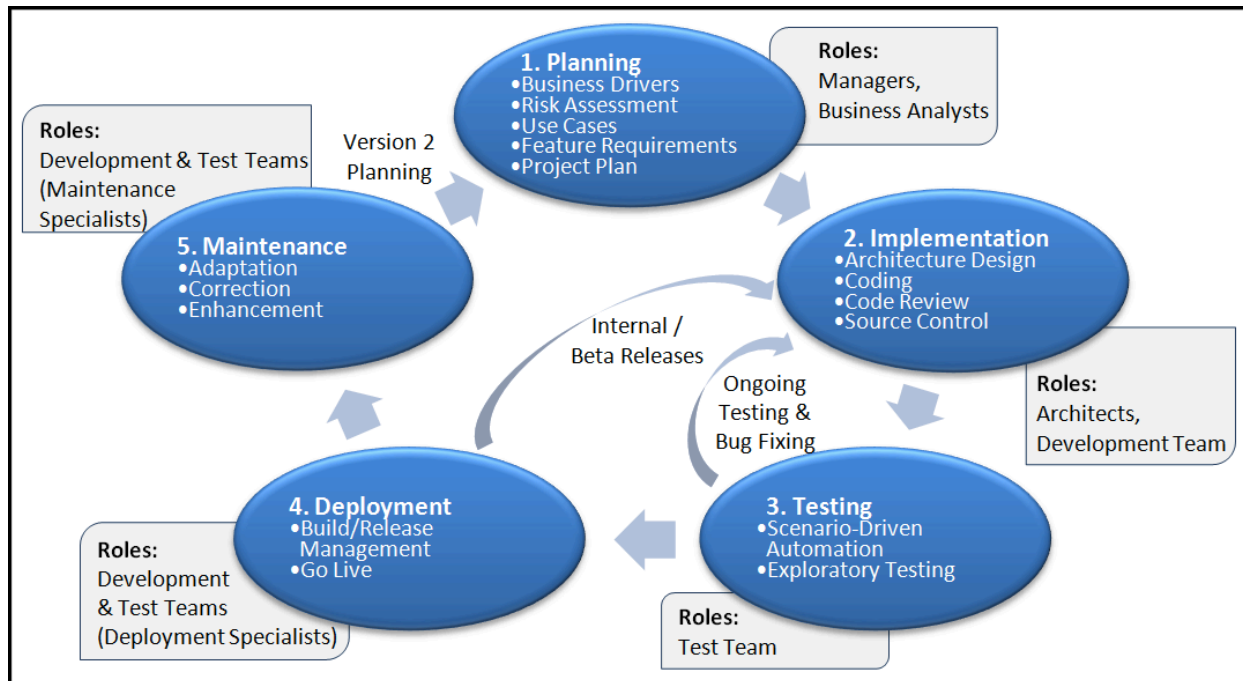
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Phases of the SDLC/ALM



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2. Implementation

During the implementation phase, the development team begins the process of writing the code for the product based on the planning completed in phase one. First, software architects evaluate the needs of the product and determine the best model and programming language to complete the project.

Once the coding environment is established, the development team begins writing code for each of the features specified by the business analysts, in the order dictated by the project plan. As developers complete features, they use the source control system to merge their work together and assist each other with code reviews to minimize code defects reviews

to minimize code defects (also known as bugs) and ensure quality work.

3. Testing

Once the developers have begun coding, the test team commences the quality assurance (QA) process. The test team implements a variety of strategies to ensure that all features outlined by the business analysts are functioning as intended. They also utilize QA techniques which seek to uncover any defects in the code. The test team may use automated scenario-driven test cases, manual testing, or exploratory testing.

When the test team finds a problem with the code, they report it back to the development team for fixing. In this way, the testing phase is not entirely discrete, but is an ongoing



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process that meshes with the implementation phase until the product is ready for deployment.

4. Deployment

The deployment phase is the stage at which the product is considered complete and released to customers. To reach this "Go Live" milestone, the product may first undergo multiple rounds of internal release or beta releases before the final version is complete. In addition to creating a preview version of the product, these early releases also allow the deployment team to try out the planned deployment processes and refine the deployment strategies before the final release.

During each of deployment milestone, specialists from the development and test teams manage the build and release process to merge all of the development and testing work to date into a cohesive, functioning software application. They may also be in charge of creating the software's customer-facing installation process and completing any required security signing for the application. After all of the internal or beta releases are complete, the deployment team steers the product through its final release to customers.

5. Maintenance

Once the product has been deployed to customers, it enters into the maintenance phase. During this stage, specialists from the development and test team monitor the product "in the wild" to see how it is adapting to regular customer usage. If customers encounter any unforeseen problems, the maintenance team takes corrective action and issues a fix to remedy the issue.

In addition, the maintenance team – which may also include business analysts – monitors customer feedback and begins to plan for enhancements for the next version of the software. Any ideas or suggestions for improvement will be incorporated into the planning phase when the Software Development Life Cycle begins anew for v2 of the product.

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