

Development Methodology

We realize that most projects, even seemingly complex ones, are based on technologies that are quite mature and readily available. Therefore, success of a project is very rarely a matter of having the necessary technical expertise. Rather, it is a matter of having the necessary project management skills. These skills guarantee success through detailed specifications and a time schedule that is attainable. For every project, we follow the following model:

Online Project management / complete visibility

We use Activecollab an online project management tool for complete project management. This tool is used for tracking all project milestones, documents, issues and bugs. As soon as the project begins we will create an account for you in Activecollab. Having online project management / ticketing system ensure that issues / discussions are never lost in emails and are always tracked to closure.

Development process

Our development process primarily consists of 4 components

- Analysis and Design
- Implementation
- Quality assurance
- Continuous improvement / test automation



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Analysis and Design

We closely work with our client to understand and close on detailed requirements for the application. At the end of the requirements phase, we come up with a brief systems requirements document.

Design

In Our design phase two tracks run in parallel i.e. creative design and technical design.

Creative design

- We create mock up screens for the important screens in the application.
- These screens undergo multiple iterations based on inputs taken from clients.
- Clients have complete freedom to change / suggest different color schemes or layouts of the pages. Of course our experienced designers will make recommendations keeping in mind industry best practices.
- Once the home page design is closed, the creative designers handover the CSS (Style sheets) to the development team.

Technical Design

While the site designers are creating the creative design, our technology team works on the technology design and architecture of the application.

Technology design includes architecture for the project, selecting the best design patterns, creating the data model and creating the performance model. Prototyping is done to ensure the selected design model works. The development team starts implementing small functional units and releases the functionality to the clients as and when it starts getting ready.

Development

We have organization level development standards that are used for the development of the site. Our standards include:

- Coding standards
- Naming convention standards
- Design review process
- Code review process
- Performance review
- Unit testing of every unit of code
- Quality audits

We ensure extremely good quality of code from our developers by having frequent quality audits.

Testing and Quality assurance

We have extensive testing strategy for every application that we develop. We conduct the following types of testing for all our projects:

Unit testing

This testing is done by the developers to ensure that every single unit of the code is tested. Unit test scripts are created by the developers to ensure the same.

A unit is the smallest testable part of an application. A unit may be an individual function or procedure. Ideally, each test case is independent from the others. Unit tests are written and run by developers to ensure that code meets its design and behaves as intended. Its implementation can vary as per the requirement and the program in question i.e.

- Manual (pencil and paper)
- As part of build automation
- Automated using testing tools.

Integration Testing

Integration testing (sometimes called Integration and Testing) is the phase in software testing in which individual software modules are combined and tested as a group. It occurs after unit testing and before system testing. Integration testing takes as its input modules that have been unit tested, groups them in larger aggregates, applies tests defined in an integration test plan to those aggregates, and delivers as its output the integrated system ready for system testing.

System testing

System testing of software or hardware is testing conducted on a complete, integrated system to evaluate the system's compliance with its specified requirements. System testing falls within the scope of black box testing, and as such, should require no knowledge of the inner design of the code or logic.

This testing is done by the testing team to ensure that the site is working from end to end for every single scenario. This testing also ensures that all the integration points are working.

Stress Testing

It is a form of testing that is used to determine the stability of a given system or entity. It involves testing beyond normal operational capacity, often to a breaking point, in order to observe the results. In software testing, stress test refers to tests that put a greater emphasis on robustness, availability, and error handling under a heavy load, rather than on what would be considered correct behavior under normal circumstances. In particular, the goals of such tests is to ensure the software doesn't crash in conditions of insufficient computational resources (such as memory or disk space), unusually high concurrency etc. The stress testing tool we propose is LoadRunner.

Load Runner

LoadRunner emulates hundreds or thousands of concurrent users to put the application through the rigors of real-life user loads, while collecting information from key infrastructure components (Web servers, database servers etc). The results can then be analyzed in detail, to explore the reasons for particular behavior.

User Acceptance Test Results

This testing ensures that the user is comfortable with the site and can test that site has been developed according to the specifications. This is also known as end-user testing, site (acceptance) testing, or field (acceptance) testing. Acceptance testing

generally involves running a suite of tests on the completed system. Each individual test, known as a case, exercises a particular operating condition of the user's environment or feature of the system, and will result in a pass or fail boolean outcome.

Data Migration tests

In some cases if data is to be migrated from legacy systems to the new application that is being built we create different data migration scenarios as well. Once a migration has been executed, additional end to end testing will be executed. Migration is typically performed in a test environment and includes:

- Test the throughput of the migration process (number of records per unit time). This testing will be used to verify that the planned downtime is sufficient. For planning purposes, consider the time to verify that the migration process was completed successfully.
- Compare Migrated Records to Records Generated by the Destination System – Ensure that migrated records are complete and of the appropriate context.
- Summary Verification – There are several techniques that provide summary information including record counts and checksums. Here, the number of records migrated is compiled from the destination system and then compared to the number of records migrated. This approach provides only summary information and if any issue exists, it does not often provide insight to an issue's root cause.
- Compare Migrated Records to Sources – Tests should verify that fields' values are migrated as per the migration specification. In short, source values and the field level mappings are used to calculate the expected results at the destination. This testing can be completed using sampling if appropriate or if the migration includes data that poses significant business or compliance risk, 100% of the migrated data can be verified using an automated testing tool.