



Software Development Life Cycle

Contents

Aim of the document	3
SDLC [Software Development Life Cycle]	4
1. Roles and Responsibilities.....	4
2. Project Management Tools	5
3. The Version Release Process.....	6
4. Notes	8
Code Review Documentation	9
Example:.....	9
Application Versioning Process.....	10

Aim of the document

This document aims to provide detailed information about 24online's development life cycle, its code review process carried out at the time of each version release. Also, the versioning process followed is illustrated here.

SDLC [Software Development Life Cycle]

1. Roles and Responsibilities

Cross Functional Team

Marketing, Sales/Pre-sales, and Support team members come under the cross-functional team category. Apart from Product Management team, they initiate the change management process for the product. They are responsible for determining and putting forward the changes required in the product version release as per the customer expectations.

Product Management Team

Product Management team includes Product Managers, Technical Lead, and Product Head. This team is responsible to control and prioritize the list of changes proposed and finalize the implementation plan before the new changes are considered for product development. Moreover, this team is also responsible to analyse the market scenario for designing roadmap accordingly and prioritizing version release.

The implementation plan is prepared mutually after considering all important aspects like risks, impacts, etc. They are also responsible for scheduling, co-ordinating and continuously monitoring the work actions performed by development and QA team.

Product Development Team

Development team is responsible for successfully implementing the changes assigned to them according to the Cross Functional team requirements and the roadmaps designed. The development of features and enhancements to be integrated in the version is to be completed by team members within the time assigned.

QA Team

QA team is responsible to develop the test plans and start with the testing process once development is done by the team. Their key responsibility is to test and run all functionalities of the version and report bugs necessary for product quality assurance.

Documentation Team

The key responsibility of creating all technical and marketing related documents for the product is of documentation team. These documents include user guides, quick start guide, version release notes, troubleshooting guide, etc. These documents are helpful for end users while marketing new version features adopted and published.

2. Project Management Tools

JIRA Server

JIRA server is a tracker server useful to plan and build great products. By using JIRA, the team members can capture and organize features, assign work to different team members, and follow-up all activities performed by whole team regularly for staying updated.

The features and enhancements request are placed under JIRA by Sales/Pre-sales, Marketing, and Support teams. The impact of the required changes listed can be illuminated here along with their scope and future benefits.

Based on the prioritization of the requests placed under JIRA, Product Management team allocate tasks to the development team by appropriately assigning unique JIRA ID for each task under the specific version branch. Number of tasks and sub-tasks can be managed and tracked here by project managers and developers along with proper descriptions, comments, and updates. This way the follow-up and time-tracking for each task gets easier and they can monitor the progress regularly.

Moreover, it also makes easier for QA team to perform testing activities in an organized manner.

SVN Server

SVN Server is used as a central server for developer's repository to efficiently maintain and keep a track of source files of all different product versions.

Branches of each version are created in SVN server under which team of developers can easily save and merge their developments to make commits successfully.

3. The Version Release Process

1] Requirement Gathering

Cross Functional team gathers complete advanced requirements from the existing and new clients to put forward the features or enhancements required in the product version.

This list of features and enhancements will be proposed by them under **PRAT** project in 24online's **JIRA server**.

2] Plan Assessment and Scheduling

Product Managers and Project Leader's pre-screens all the change requests and considers the scope of each that will be beneficial for the product.

Final plan is then scheduled for final version release along with specific date of each phase.

3] Development Phase

For every feature and enhancements to be covered in a quarter, unique JIRA ID is created for each task.

1. Technical Leads create respective JIRA for each task and assign them to respective developers categorized according to the product module ownership.
2. Each developer designs the flow document for the changes and submits it to Product Lead and Product Manager for their review.
3. Next step is the start of the development process and continuous tracking for the same against the pre-defined deadlines.
4. A weekly status meeting is conducted for each developer where they are required to update about their tasks status and queries faced by them during their developments.
5. After successful completion of tasks, Product Lead carry out review process as per the designs and requirements along with flow code review.
6. Completed tasks are submitted for SVN commit.
7. Product Management team provide rights to Developers to commit their development into SVN with their respective JIRA IDs.
8. With mapping of JIRA ID and SVN commit, all changes for respective JIRAs can be easily tracked.
9. Developers prepare dev-build for verifying new committed code and testing it against the existing and new features integrated in the product.
10. As per the pre-defined schedule, build is created and integration testing is executed by each developer.

11. On successful completion of this, build is handed over to QA team by Product Management team.
12. Simultaneously respective flow documents and demonstration are executed by Product Development and QA teams known as Knowledge Transfer Process.

4] Testing and Evaluation

QA team creates test plans and test cases for performing system testing systematically and in a defined flow.

After development phase, QA team starts with system testing. The testing phase is specifically divided into multiple phases – pre-sanity testing, functional testing, regression testing, load testing, and post-sanity testing.

1. Development team shares knowledge about their developments with QA team members which helps them to understand functionality thoroughly.
2. Based on Knowledge Transfer sessions provided, QA team identifies the scope of each new feature and prepares scope document for the same.
3. Review and approval of scope document is done by each stakeholder that includes members of Product Management team, Technical Leads, Development team, QA team, and Cross Functional team (in some specific required cases).
4. On the base of scope document and new features added to the product, test cases are created by QA team which is shared with stakeholders for their review.
5. The build provided by Development team passes through entire software test life cycle process [STLC].
6. Once the sanity testing is completed successfully, QA team starts with functional testing of the product parallel to its automated regression testing and load testing.
7. On completion of functional testing of each feature, bugs and gaps are identified with respect to their scope.
8. The changes required to be done are approved by Product Management team, Technical Lead and respective QA team Lead.
9. Integration testing is performed on every new build before handing over to QA team for functional testing.
10. On successful completion of STLC, version gets released for beta server testing.
11. After successfully executing beta server upgrade, product version is released in the market for customer deployments.

4. Notes

- Pre-sanity testing is a run-through of the functionality of a system and its complete analysis to ensure that no errors exist in the system.
- The functional testing done by QA team includes complete test of the functions expected to be performed smoothly and correctly by the system. This ensures that all the functions are correctly implemented according to the terms and specifications. Moreover, the system installation and setup process, and the core functions are also checked during this process.
- Beta build is created for post-sanity testing once the functional testing is done thoroughly. Post-sanity is performed only after confirming that system is performing all functionalities accurately and QA team is convinced for further testing.

Code Review Documentation

The code review process is carried out by Product Lead after developer's successful completion of specific tasks based on the requirements placed. In this process, complete flow of code for that task is reviewed thoroughly along with its database objects review, test cases review, load average testing and assessment/review of dependent areas or modules.

Example: The general format followed for code review process is as under -

Module/Feature Name:		
File Name(s):		
Developer Name:		
Reviewer Name:		
Date:		
Total Duration:		
	Yes/No/NA	Description
Efficient Logger Level Maintained		
<ul style="list-style-type: none"> JAVA Specific Rotation from log4j Properties and Source Code 		
<ul style="list-style-type: none"> Script Specific Log Rotation from log rotated binary 		
Optimization Required		
Logic/Flow Simplification Required		
Database Specific Changes		
<ul style="list-style-type: none"> Required Database Indexes Created 		
<ul style="list-style-type: none"> Table need to be added in frequent Vacuum List 		
<ul style="list-style-type: none"> Oracle Compatibility Maintained 		
<ul style="list-style-type: none"> Query execution from migration Script for Default Schema/Factory Reset 		
<ul style="list-style-type: none"> Any other Database Aspects 		
HA Specific Aspects		
<ul style="list-style-type: none"> Synchronization of Properties/Related Things Required 		
<ul style="list-style-type: none"> Slony specific changes required 		
Dependent Areas/Modules Reviewed/Tested		
Load Testing Required		
Test Cases Review		
Naming Convention and Coding Standard Followed		
<ul style="list-style-type: none"> Scripts 		
<ul style="list-style-type: none"> JavaFiles/JSPs 		
<ul style="list-style-type: none"> Database Objects [Tables, Indexes, Functions, etc.] 		
Any other Aspects		
Code Review Related Additional Comments:		

Application Versioning Process

The current 24online solution version is X.3.6.5.0 where,

- 'X' stands for identifying the series of 24online solution where value of 'X' is '8' for 24online SMS series solutions and '3' for 24online HIA [Hospitality Internet Access] series solutions
- '3' stands for major release progression
- '6' stands for feature release progression
- '5' stands for minor release progression and
- '0' stands for hot fixes progression.

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