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Analyzing A Better Approach for ITSM (IT Service Management) Development

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Abstract - *In this modern technology world where companies are using their best software practices to deliver the project with better quality, efforts and time. A well-defined methodology needs to be followed by the software companies for proper development of its product. This paper is putting forward a better approach i.e. either Waterfall or Agile or DevOps which can be used for ITSM (IT Service Management) development which is a general term that describes a strategic approach to design, deliver, handle and enhance the way businesses use information technology (IT). ITSM includes all the discrete activities and processes that support a service throughout its lifecycle, from service management to vary management, problem and incident management, asset management, and knowledge management*

***Key Words*: ITSM, Waterfall Development, Agile Development, DevOps Development.**

1. INTRODUCTION

1.1 Development Model:

The software development models are the numerous methods or methodologies which might be being decided on for the event of the challenge relying on the task's aims and goals [2]. There are numerous development lifestyles cycle fashions that are developed if you want to comprehend one of a kind required goals. The models specify the numerous levels of the technique and the order in which they're carried out [2].

While each design and development model features a different emphasis, all of them follow an equivalent basic waft of gaining knowledge of the desires ,design, implementation (coding), and verification or testing. The principle distinction is inside the implementation of those levels [5].

1.2 ITIL:

The acronym for ITIL is IT Infrastructure Library, ITIL is defined as a framework with a set of best practices for delivering efficient IT support services[4]. It enables organizations and individuals to deliver cost-effective IT Service Management, ITSM aligned with business vision, strategy and growth and acts as one point of contact between service provider and end users[4].

An ITIL Framework has 5 stages as shown in Figure 1,Each stage consists of a set of processes or functions that are aligned with IT organizational structure[4].

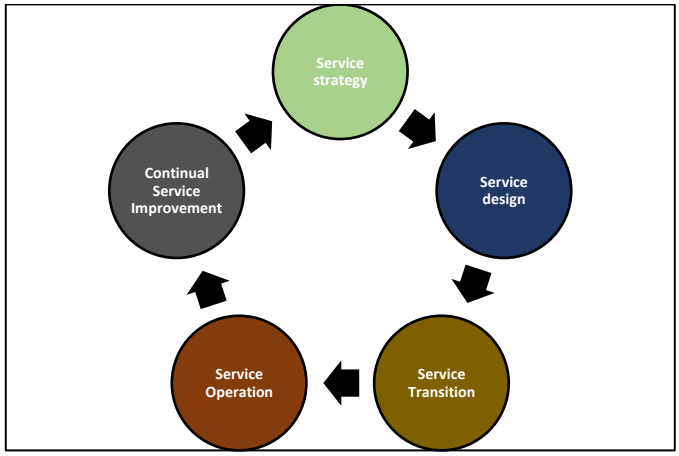

Figure 1- ITIL Framework

1.3 ITSM:

IT Service Management follows the basic guidelines of ITIL.

To manage IT offerings, companies need to control the carrier's capabilities, the way it plays, adjustments to it and what happens whilst it stories problems.

ITSM refers as to how every day technical groups layout, propose, and carry every day IT tactics daily their customers and agencies. As this era keeps everyday play an essential function in organizations, agencies want to locate new methods daily to seamlessly carry IT in day-to-day commercial enterprise operations.

For example, a sales team member must operate sales software each day, or a warehouse manager might need to use a supply chain platform to make sure shipments are sent and received properly. These quite tools require a minimum of alittle amount of technical skill. Likely, though, these employees don't have any technical background whatsoever. As such, IT solutions got to be integrated into these processes to make sure day-to-day business is running smoothly and every one workers are using technology to its full potential. That's what ITSM helps accomplish [16].

2. LITERATURE REVIEW

Vaishnavi Kannan , Smita Jhajharia , Dr Seema Verma [1] Every mission is exclusive and calls for to be dealt with differently. therefore, it is higher to not grip on one unique methodology. the dreams of the employer and challenge are subject to change often, and one desires to be elastic in the way to approach these tasks for them to achieve success.

Narges Shahsavarani, Shaobo Ji [2] We observed that researchers rarely applied theories in ITSM studies. The result shows that only few theories applied to study ITSM/ITIL adoption and implementation. We found that ITSM research is mainly focused on ITSM topics.ITSM should be based on an integration of theory and applied research.

Gaurav Kumar, Pradeep Kumar Bhatia [9] Adopting agile development methodologies features a positive impact on both the productivity and therefore the quality. Hence, development team and customer/user both should be satisfied with its implementation in software development processes.

Maximilien de Bayser , Leonardo G. Azevedo, Renato Cerqueira [12] Each works are often used to expand a framework that classify challenges, questions and great practices, and recommend techniques and roadmap of solutions in phrases of methods, models, technology, and tools, which guide DevOps-orientated scientific applications

3. COMPARTIVE STUDY FOR ANALYSIS

3.1 Waterfall Model:

From Earlier, Waterfall model has been the very first model of the SDLC Model which is widely used for Software development. In this before moving to the upcoming phase the previous process requires to be completed.

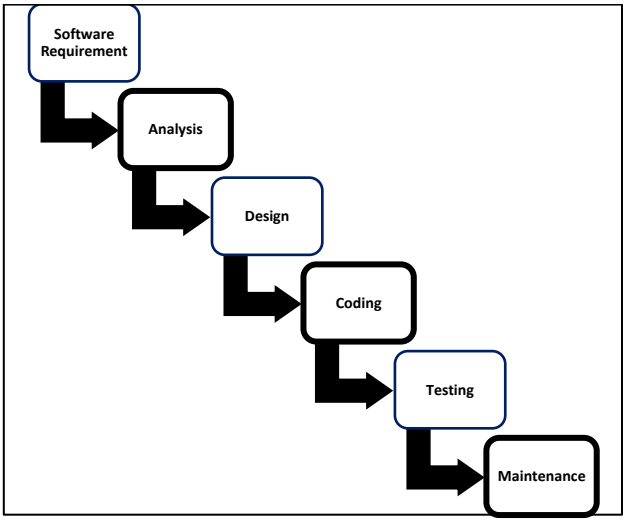

Figure 2 - Waterfall Stages

The waterfall model works nicely wherein the improvement of product is composed particularly of including constrained functionalities to an current set of functionality [1].

Example: Consider making a website for shopping mall which contains many shops. Making a website for a shopping mall is not a easy task because it require lots of time. It is also not possible to gather all the requirements of all the shops at once . So developing a Website for a mall the waterfall model is not appropriate [6].

Advantages:

(1) Majorly used for smaller projects and simple as well as easy to understand.

(2) No overlapping of Phases, each phase is processed and completed independently at one time.
(3) A proper technical document is formed that creates it easy or the purchasers to understand what they ought to expect from the software. The documentation also help within the process of maintenance [1].
(4) All the work is done on paper so a new joiner might find it easy to understand the documents before development

Disadvantages:

(1) This model is not appropriately good for long and ongoing projects.
(2) Majority of time is wasted while waiting for each of phase to be completed [1].
(3) Putting forward all the requirement at the start of the project is not possible.
(4) There is high amounts of risk and uncertainty [7].
(5) Having a look at the projects in between the phases of lifecycle is not possible , have to wait until the complete lifecycle.

3.2 Agile Model:

Also identified as the Incremental Model. Software is developed in incremental, iterative , rapid cycles[8]. Each new deliverance is majorly for 2-3 weeks and includes numerous crew's working concurrently on diverse stages such as requirement collecting, requirement elicitation, making plans, design, coding and testing [1].

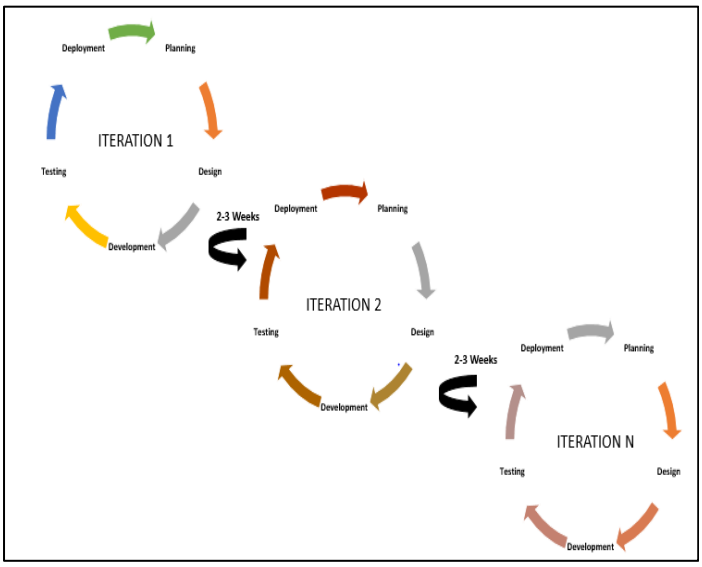

Figure 3 - Agile Iterations

The Agile model works well when software requirement is not fixed and keeps on changing as with the later phases of development. In agile new changes can be implemented at a totally low cost because of the frequency of latest increments which might be produced [1]. Giving developer and stakeholder more time and option which results into project continuation without worrying about failure.
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There are many popular agile methodologies amongst which we are currently describing the top two shortly

Scrum:
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Scrum is a project control framework that is relevant to initiatives with competitive closing dates with complicated requirements and a diploma of strong point [9]. In Scrum, progress of task is done through a sequence of iterations called sprints. every dash is generally 2-4 weeks lengthy. A typical scrum team size is about 5-6 people but it might grow up to hundred as well. The function of ScrumMaster is to make sure the group is as efficient as viable. The product owner is the project's main stakeholder [9].

In Scrum, projects progress via a series of iterations called sprints.

Extreme Programming:

In Agile model, excessive programming (XP) is taken into consideration as one of the most crucial software program improvement framework [10]. The major improvement which XP focuses is on software quality and responsive to customer requirements [10].

In XP developer implements user stories through a series of iteration. A User story is nothing but the requirement given by the customer but they aren't that minute. Now depending on User story, Metaphors are being proposed by the team.

Advantages of Agile

(1) There is rapid and continuous software delivery which results into customer satisfaction.
(2) Testing is carried out in the course of every generation, faults are detected earlier and may be fixed before it will increase in severity than with a plan-driven procedure model [14].
(3) It promotes group work. absolutely everyone involved inside the improvement procedure work collectively simultaneously on distinctive areas of the software.
(4) A working software program product is available within the early stages of the software

Disadvantages of Agile

(1) In case of a few software program deliverables, in particular the large ones, it is tough to evaluate the attempt required at the beginning of the software program improvement lifestyles cycle.
(2) Consumer involvement is a must, without the cooperation of customers the development manner might be hampered and might cause failure.
(3) As improvement in iterations errors and dangers are identified early and not perfect for initiatives with strictly defined requirements and scope.

3.3 DevOps Model:

It is made up of two important function i.e.. Development and Operations. Earlier, the software development use to happen in long development cycles and once when the software was stable enough within the development environment, it had been appropriated by the operations team[12].

It focuses on continuous integration and continuous delivery of value to our end users.

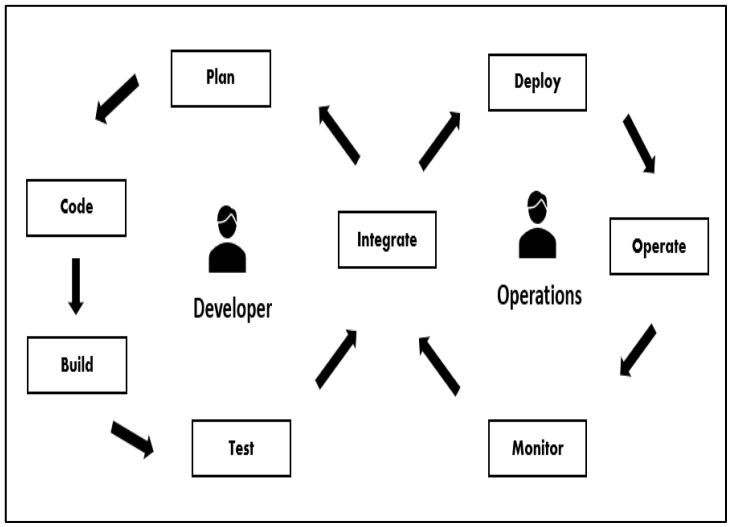

Figure 4 - DevOps Model

DevOps offers a better predictability towards failures, reduced the time to market ,reproducibility ,maintainability ,generate a good quality product ,less risk ,more cost efficient.

It mostly used with larger distributed applications i.e. E-Commerce websites or applications on cloud [13].

It ought to not be utilized in a project-crucial application like bank, strength and other touchy facts websites. Such applications want strict access controls at the production environment, an in depth exchange control coverage, get right of entry to manage policy to the data centers[13].

Advantages:

(1) As the Developer and Operation work together which helps in decision making and hence this helps to improve commercial enterprise agility which paves the manner for mutual collaboration, verbal exchange, and

integration throughout the worldwide IT environment.

(2) DevOps help enterprise to deliver nice software and to deal with purchaser needs for the same.

(3) DevOps permit IT groups to collaborate and bring services or products to customers with first-class faster, get remarks from customers, and make essential changes to the product upright.

(4) As teams collaborate with each other, it facilitates in smooth detection of defects since the testing crew isn't always separated and responsibilities are not divided for them. when the defects are detected, it is simple to correct it rapid and do the operations meticulously. This allows in supplying the nice services to the clients.

(5) The whole team is accountable for turning in new features in addition to the steadiness of antique software. This enables to show the trouble in the earlier stage of improvement and resolution instances are faster due to the fact the improvement crew doesn't need to await other teams for troubleshooting and checking out.

Disadvantages:

(1) Security is continually a problem. the safety team is commonly no longer a part of DevOps, and the DevOps group tends to pick velocity over safety when growing software program.

(2) Outsourcing your DevOps infrastructure calls for a positive degree of development know-how

4. COMPARSION TABLE

Table -1: Model Comparison

Points	Waterfall	Agile	DevOps
Project	Suitable for small projects without feedback	Projects are released in smaller cycles	Smaller release cycles with rapid feedback
Team	Only the developer team work until completion	Developer team works on the project but continuous feedback	Developer team and Operation team work together
Error factor	Errors and failures are detected later	Errors are detected early	Errors are detected and correct fast

5. CONCLUSION

From the comparative study regarding the three development models, it is understood that each model has its own way of doing a project along with its pros and cons. For IT Service Management the development would totally depend on what needs and type of project it is and choose accordingly, there are no magic ways to choose only a certain methodology.

6. REFERENCES

[1] Vaishnavi Kannan , Smita Jhajharia , Dr Seema Verma "Agile vs waterfall: A Comparative Analysis" http://ijsetr.org/wpcontent/uploads/2014/10/IJSETR-VOL-3-ISSUE-10-2680-2686.pdf

[2] http://tryqa.com/what-are-the-software-development-models/

[3] https://searchitoperations.techtarget.com/definition/ITSM

https://freshservice.com/itil/what-is-itil

https://www.sciencedirect.com/topics/computer-science/development-model

http://collegeburden.com/blog/waterfall-model-with-real-world-examples-advantages-and-disadvantages

http://tryqa.com/what-is-waterfall-model-advantages-disadvantages-and-when-to-use-it/

http://tryqa.com/what-is-agile-model-advantages-disadvantages-and-when-to-use-it/

[4] Gaurav Kumar, Pradeep Kumar Bhatia "Impact of Agile Methodology on Software Development Process" https://www.researchgate.net/publication/255707851_Impact_of_Agile_Methodology_on_Software_Development_Process

https://www.geeksforgeeks.org/software-engineering-extreme-programming-xp/

https://www.dotnettricks.com/learn/devops/what-is-devops-and-devops-advantages

Maximilien de Bayser, Leonardo G. Azevedo, Renato Cerqueira "ResearchOps: The Case for DevOps in Scientific Applications" https://www.researchgate.net/publication/283757158_ResearchOps_The_case_for_DevOps_in_scientific_applications

https://www.guru99.com/devops-tutorial.html

https://www.researchgate.net/publication/255707851_Impact_of_Agile_Methodology_on_Software_Development_Process

https://www.educba.com/advantages-of-devops/

https://www.dnsstuff.com/what-is-itsm#:~:text=ITSM%20refers%20to%20how%20technical,%2Dto%2Dday%20business%20operations.