***Exploring DevOps Culture in Jewellery Web Application with Augmented Reality***

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*Abstract*— **Agile methodology and DevOps processes have become popular approaches in the IT industry due to their ability to enhance software development processes and support business objectives. When applied to jewellery application development, agile methodology helps teams prioritize tasks and break down large projects into smaller, more manageable components. This approach promotes continuous feedback and collaboration, enabling teams to adjust and adapt to evolving customer needs and requirements. DevOps processes can further streamline the jewellery application development process by promoting collaboration between development and operations teams. With a focus on communication, automation, and continuous integration and delivery, DevOps enables jewellery development teams to deploy software more frequently and with greater confidence. This approach helps teams minimize downtime, reduce errors, and respond quickly to any issues that arise. Together, agile methodology and DevOps processes can help jewellery application development teams deliver high-quality software quickly and efficiently. By leveraging these approaches, jewellery businesses can enhance collaboration, speed up software delivery, and ultimately improve customer satisfaction. The ability to adapt to changing requirements and deliver software quickly is essential in the highly competitive jewellery industry, and agile methodology and DevOps processes provide a solid foundation for achieving these goals.**

***Keywords—agile; DevOps; git; jenkins***

I. INTRODUCTION

To effectively implement DevOps within an Agile framework, it is imperative that the development team collaborates continuously with the operational team throughout the software development lifecycle. This collaboration enhances the team's comprehension of the business objectives and the limitations and constraints of the software[18][19] under development. DevOps is a culture that integrates the principles and practices of Development and IT Operations to bridge the gap between these two teams.

The primary goal is to merge both teams and enable fast software development. In DevOps, a single team is responsible for both development and operational tasks[2][3], including software development, deployment, and integration of various modules of a software product.

DevOps facilitates Agile's release cycle by allowing communication of specifications and design documents. Sharing these documents is crucial to comprehend the complexities of continuous development and integration of the product, which speeds up the entire process.

This paper highlights practical aspects of implementing DevOps in an jewellery web application project using various DevOps tools. The actual name of the client has been concealed for confidentiality purposes.

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1. NEED, MARKET AND IMPORTANCE OF DEVOPS TOOLS

DevOps engineers are currently in high demand worldwide, and this is due to the widespread adoption of the DevOps culture in many industries, which provides numerous benefits.

The success of organizations and IT industries that have embraced DevOps is impressive, as they have reported higher returns compared to those that still employ traditional software development approaches.

This is largely attributed to the continuous development and integration properties that DevOps offers. Despite the high demand for DevOps professionals, finding well-trained and qualified individuals is a challenging task[1]. Expertise in DevOps requires a significant amount of effort and dedication towards development and operations training.

In today's competitive jewellery landscape, customer satisfaction is a critical factor that businesses must prioritize. However, achieving this goal is not an easy task. Jewellery service providers must regularly update their services to keep up with changing customer needs and preferences.

This includes adding new and improved features to their applications. Continuous development and integration facilitated by DevOps can play a significant role in achieving this, as it enables the frequent updating of application[16].

III. APPLICATION OF DEVOPS IN JEWELLERY

PROJECT

1. *Project Background*

The project being discussed here is an online storefront for the jewellery company "Moodag Jewellery." This web application was created using an agile development process and a DevOps mindset. In this application, several stores in various parts of a city will register themselves on the website, along with their products, so that consumers in that area can examine the product online, see it in person, and buy it online.

A variety of payment methods will be available in this web application. It has the payment capability of the most widely used wallets. Software development will employ Scrum, one of the popular agile frameworks. wherein several product releases are split into sprints of four weeks [6] [7].

In practice, there are many agile frameworks that exist which are frequently used by organizations. Professionals at organizations, select the framework on the basis of many factors which may influence the entire work process of software development. These factors may include company size, available resources, team structure, and their capabilities, etc. However, Scrum is a framework which is applied by most of the professionals as they can handle complex problems much effective as compared to other frameworks [10] [17]. Professionals rely on the Scrum framework as it supports development teams to work collectively. Through which teammates can share and learn through ideas and experience sharing with each other.

B. Project Development Methodology

As the requirements of the projects are expected to change frequently, involvement of the client(s) is high and comparatively fewer risks are involved, the team has decided

that the model for software development should be Agile [4]

and to ensure the rapid development of the product, DevOps culture will support the agile model.

To bridge the gap between development and operational tasks, team has adopted some of the prominent tools of DevOps such as Git and Jenkins.

IV. DEVOPS TOOLS USED IN PROJECT

So many DevOps tools have been developed as the IT industry and software technologies advance. The development of software products is made faster and simpler by these technologies. Some of the most widely used tools are listed here for the requested work:

*A. Jenkins*

The core of DevOps culture is Continuous Integration and Continuous Delivery or Deployment (CI/CD). Actually, CI/CD is an open-source server that gives experts the ability to automate multiple aspects of the delivery pipeline. The entire procedure of a software project can be automated using Jenkins, an open-source continuous integration server.

It's incredible how this technology can give its users access to pipelines. Jenkins is utilised in this proposed work to automatically commit code into the code repository, perform test cases in accordance with those test cases, and also fetch the reports following testing.

*B. Git*

Git is one of the widely used version control systems in IT industries nowadays. It is now treated as a standard for version control. Through this system, professionals can change the code during developing software as well as permitted to keep track of development progress [13].

Git can also provide liberty to the professional as they can use it in a distributed manner. By accessing Git distributed, one can access code repository remotely. This repository can be accessed in offline mode as well. Once the work is committed locally, then a copy of the repository is synchronized with the copy residing at the server end. Due to its flexibility and popularity, Git is used in our project for version control.

*C. Ansible*

Ansible is a software tool that enables powerful yet straightforward automation for cross-platform computer support. Its target audience is IT professionals, who employ it for various tasks, including application deployment, workstation and server updates, cloud provisioning, configuration management, intra-service orchestration, and most activities a systems administrator performs frequently. One of Ansible's key advantages is that it doesn't rely on agent software or require additional security infrastructure, which makes deployment a breeze.

*D. Kubernetes*

In the IT industry, Git has become a widely adopted version control system and is now considered a standard for version control. Professionals can use this system to modify code while developing software and also to keep track of the development progress. One of the benefits of using Git is its distributed nature, which allows professionals to access code repositories remotely, even when offline. When work is committed locally, the repository is synchronized with the copy residing on the server. Given its flexibility and popularity, Git was selected as the version control system for our project.

E. Docker

Docker is a platform that enables the fast development, testing, and deployment of applications. It works by bundling software into standardized units called containers that include all the necessary components to run the software, such as code, runtime, system tools, and libraries. With Docker, you can efficiently deploy and scale your applications in any environment, confident that your code will execute as expected.

V.BENEFITS OF USING AGILE AND DEVOPS TOGETHR

Two of the most common strategies that organisations need to use to stay on top and competitive in the IT sector are DevOps and agile. These two strategies working together has fantastic advantages for organisations. Employee engagement and consumer satisfaction can be attained to a greater and noticeable degree through these two approaches. It is without a doubt the most important and important requirement for business in the present.

According to the report[8], compared to 30% of respondents who solely used agile, nearly 75% of respondents who used agile with DevOps experienced enhanced staff recruitment and retention. This is not just a fact, though. A 45% increase in professional productivity and a 30% increase in customer satisfaction with services received were both notable developments in the IT industry

Agile needs a DevOps culture in today's IT business settings to enable the timely delivery of software solutions. Moreover, a good DevOps culture requires agile, which should be mentioned.

VI. CHALLENGES OF USING AGILE AND DEVOPS TOGETHER

To remain competitive in the IT industry, organizations must adopt DevOps and agile methodologies. Combining these two approaches can bring significant benefits, such as improved employee engagement and customer satisfaction, which are essential for modern businesses.[9]

According to a report, 75% of respondents reported improved employee recruitment and retention when using a combination of agile and DevOps, compared to only 30% who used agile alone. In addition, the IT industry saw a 45% increase in productivity and a 30% increase in customer satisfaction with services provided.

Agile methodology alone cannot guarantee timely delivery of software products; a DevOps culture is necessary to achieve this goal. It is also important to note that DevOps culture cannot be successful without incorporating agile principles.

1. *The link between development and business solution is more crucial then ever.*

In today's business environment, the connection between development and business solutions is more important than ever[5]. However, the biggest challenge for organizations is to link DevOps practices with business solutions.

Although adopting agile methodologies can improve the development process, this approach may not always be directly connected to business metrics[12]. Therefore, organizations that adopt a DevOps culture must establish a link between the rapid release of products and business metrics to ensure that the results are aligned with business goals.

*B. DevOps is not just a methodology, It’s a culture.*

DevOps is not limited to being just a methodology but is rather a culture where developers and operational professionals share their thoughts, experiences, and processes. This exchange of ideas and practices can help to improve the development and integration of software systems, ultimately leading to effective CI/CD.

The culture of DevOps promotes transparency, communication, and collaboration between development and operations teams. These values are essential in successfully implementing DevOps and creating a work environment that encourages continuous improvement and innovation[12]

1. *Development moves faster, but compliance standards are still demanding.*

Even while development is advancing more quickly, regulatory requirements remain onerous. The demand for regular reporting is a high goal in agile and DevOps[, yet many organisations are having trouble adhering to this approach as intended. Professionals need to make sure that the DevOps and agile teams work together to guarantee that new releases adhere to regulatory requirements.

*D. Well prepparation is the key to success.*

Implementing DevOps cannot ensure that software products are released quickly. The timely delivery of goods is influenced by numerous factors. Rapid releases depend greatly on continuous integration, automation testing, and DevOps operations. Professionals in the operational teams must take care to prevent bottleneck and delay issues in the internal processes. The likelihood of quick releases can be increased by careful planning and prefetching.

VII. CONCLUSION AND FUTURE SCOPE

The proposed model aims to bring together operational teams to facilitate constant testing and delivery by striking a balance between agile methodologies and DevOps tools. The benefits and challenges associated with this approach are highlighted, providing insights into potential hurdles that teams may face.

The "vaishanvi Jewellery" project offers opportunities for improvement, as it has the potential to replace the existing management system on all office workstations. The new software can accommodate customer and goods data from the upcoming financial year, starting in 2020-21. Although some aspects of the project, such as online payment and customer feedback analysis, are yet to be completed, the project includes modules for online customer interaction.

VIII.REFERENCES

1. Mali Senapathi, Jim Buchan, and Hady Osman, "DevOps Capabilities, Practices, and Challenmges: Insights from a Case Study," EASE'18, Christchurch, New Zealand, pp. 1-11, June 2018.
2. Erich, F., Amrit, C. and Daneva, M. Report: Devops literature review. University of Twente, Tech. Rep (2014).
3. F.M.A. Erich, C. Amrit, and M. Daneva, "A qualitative study of DevOps usage in practice," Journal of Software: Evolution and Practices, pp. 1 - 20, May 2017.
4. Kamaljeet Kaur, Anuj Jajoo, and Manisha, "Applying Agile Methodologies in Industry Projects: Benefits and Challenges," Proceddings of International Conference on Computing Communication Control and Automation, pp. 832-836, July 2015.
5. Maximilien de Bayser, Leonardo G. Azevedo, and Renato Cerqueira. "ResearchOps: The Case for DevOps in Scientific
6. Kennaeth S. Rubin, “Essential Scrum: A Practical Guide to the Most Popular Agile Process”, First Ed., Addison-Wesley, USA, (2012).
7. Alistair Cockburn, “Agile Software Development: The Co -operative Game”, Second Ed., Pearson Education, Inc., (2007).
8. https://sdtimes.com/agile/report-agile-devops-provide-benefits-together-alone/ last accessed on 24 February 2020.
9. https://www.blueprintsys.com/blog/top-4-challenges-agile-and-devops/ last accessed on 24 February 2020.
10. https://www.scrum.org/professional-scrum-competencies/understanding-and-applying-scrum-framework/ last accessed on 21 February 2020.
11. https://blog.xebialabs.com/2016/03/21/essential-devops-terms/last accessed on 22 February 2020.
12. https://www.blueprintsys.com/blog/top-4-challenges-agile-and-devops / last accessed on 23 February 2020.
13. https://raygun.com/blog/best-devops-tools/ last accessed on 23 February 2020.
14. https://sourceforge.net/projects/nagios/ last accessed on 23 February 2020.
15. https://mvnrepository.com/ last accessed on 20 February 2020 .
16. https://www.einfochips.com/blog/how-devops-helps-jewellery-businesses-gain-a-competitive-edge/ last accessed on 15 March 2020.
17. https://www.atlassian.com/agile/scrum/ last accessed on 15 March 2020.
18. Aprna Tripathi, Varsha Kumari, Nikhil Govil, "Impacts of PLC Reducer on Software Design Cohesiveness", International Journal of Innovative Technology and Exploring Engineering, Volume-8 Issue-8, pp. 2871-2875, June 2019.
19. V. Kumari, A. Tripathi, N. Govil and S. Pundhir, "A Proposed Model: Linearly Extensible Triplet Network (LETN)," 2019 4th International Conference on Information Systems and Computer Networks (ISCON), Mathura, India, 2019, pp. 1-6.